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Landscape Strategies in Architecture

Daniel Jauslin

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Daniel Jauslin

A+BE | Architecture and the Built Environment | TU Delft BK

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Landscape Strategies in Architecture

Dissertation

for the purpose of obtaining the degree of doctor
at Delft University of Technology
by the authority of the Rector Magnificus, prof.dr.ir. T.H.J.J. van der Hagen
chair of the Board for Doctorates
to be defended publicly on
Tuesday, 3 December 2019 at 10 o'clock

by

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Architect MSc ETH Zurich, Switzerland
born in Zurich, Switzerland

TOC

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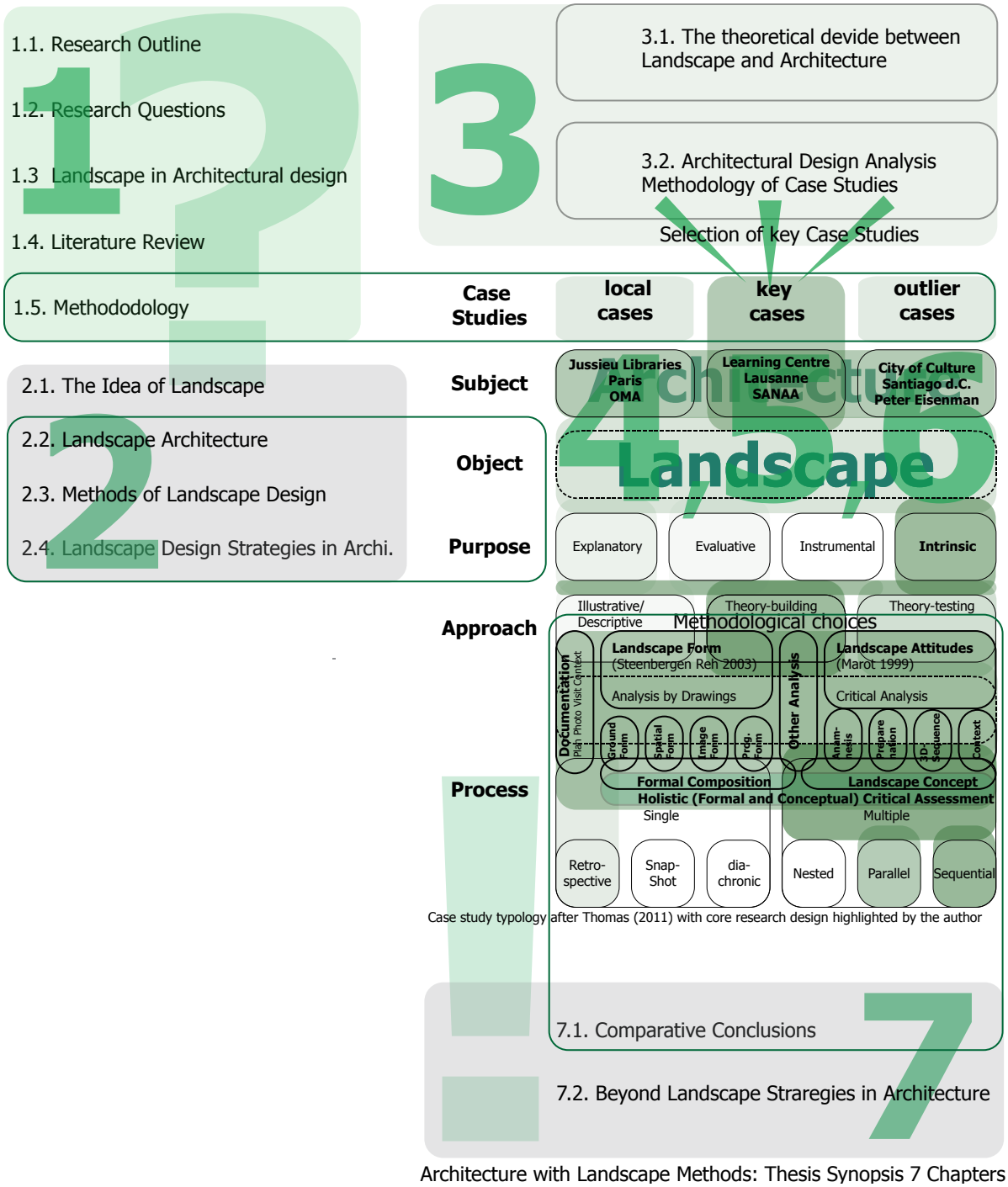
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Summary

The central question and purpose of the thesis is to understand how landscape as a design concept is changing our understanding of architecture. It explores the ways in which landscape is relevant for design strategies in architecture.

Buildings that have been designed like landscapes have become a topic in contemporary architecture and in the recent literature about it. The apparent distinction between architecture and landscape is questioned in exemplary theoretical works and building designs with increasing interest in landscape as a phenomenon of contemporary architecture.

To understand this phenomenon this thesis first explores the term of landscape and its design. The introduction focuses on the exploration of the idea of landscape and how it is applicable in architectural design. Strategies of landscape design as they are discussed in contemporary landscape architecture are defined and illustrated with specific examples. This view is contrasted with the idea of nature in architecture.

Architecture's concepts of nature reveal some crucial problems that lead to the polarity of 'wild' nature and 'human' architecture. With a critique of these common architectural theories and within the methodological differentiation the thesis reveals the necessity of research through analysis of landscape spatial composition in architecture.

The core of this thesis is three case studies of architectural designs that approach a building like a landscape. A selection of analytical techniques is applied to key cases in three central chapters. The main analytical model for landscape architectural composition that Steenbergen and Reh (2003) developed for the European Gardens of the Renaissance, Baroque and Enlightenment is applied as a drawing analysis of the formal composition of three selected contemporary architectural projects in a period from 1992 to 2015. Each of the three building designs is studied with the same four-layer method of design analysis. In conjunction with this comparative analysis, a project specific method that reveals unique aspects of each design has been developed.

The first case is OMA's unbuilt Jussieu design for two university libraries in Paris. In 1992 Dutch architect Rem Koolhaas and his collaborators at OMA proposed the Jussieu project at a turning point of the discipline, where new forms of architecture with landscape design strategies were being explored. Though this project has not been realised, this thesis makes it possible to describe the building in a guided walk-through. This visualisation of the design as it could have looked if built is also the specific analytical method chosen for this example.

The second case, the Rolex Learning Centre at EPF Lausanne, has been clearly declared 'landscape' as architecture by its designers. This competition winning design from 2004 and opened in 2010 is the largest scale international building of Japanese Architects Kazuyo Sejima and Ryue Nishizawa (SANAA). The specific analytical method used for this case is a visual space analysis of the project using 3D-isovists.

The third case is the City of Culture of Galicia in Santiago de Compostela by American architect Peter Eisenman. This project was initially designed in 1999 in a process of layering - in principle, similar to the layer model analysis of this thesis. However, the four tenets of the thesis layer model

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– ground form, spatial form, metaphorical form and programmatic form – will alter the reading of this project. This execution of the giant public project of "City of Culture" was interrupted half-way in 2015, with great political difficulties fo Galicia. The specific analytical method used for this case is an experiment that uses the ruins of unbuilt architecture as the base for a landscape architectural design. This design of a temporary garden mimics the design principles of architect Peter Eisenman. This experiment shows that landscape strategies developed for the design of a building can be applied in reverse for designed landscapes.

In conclusion, this thesis will compare the three case studies of architectural designs with each other. While some design instruments, strategies and methods are specific, others are commonly applied in several or all of the projects.

In a broader scope, the analysis is transposed into the greater societal and theoretical realm to explore whether landscape design strategies change architecture. For the discipline of architecture in general, the thesis explores how far landscape could lead the profession further as a new concept to build a sustainable human environment. Evoking potential applications and the reach of landscape in architecture in the perspective of future development, the thesis ultimately discusses unexplored potentials for landscape design strategies in the architectural discipline.

Samenvatting

Het doel van dit onderzoek is te achterhalen op welke manier het maken en interpreteren van architectuur wordt beïnvloed door het concept van landschap. Het is een onderzoek naar manieren waarop landschapsarchitectonische ontwerp-strategieën relevant zijn voor de architectuur. In literatuur over hedendaagse architectuur is meer belangstelling ontstaan voor het ontwerpen van gebouwen alsof het landschappen zijn. Een lang bestaand onderscheid tussen architectuur en landschap wordt hiermee in twijfel getrokken.

Het eerste deel van dit boek beschrijft de verschillen en overeenkomsten tussen het ontwerpen vanuit architectonische en landschappelijke strategieën. Om te beginnen staat het historisch idee van landschap centraal en de relevantie daarvan voor het architectonisch ontwerp. Daarna volgt een bespreking van ontwerp strategieën die toegepast worden in hedendaagse landschapsarchitectuur. Vergeleken hierbij kent het puur architectonische begrip van natuur een aantal fundamentele problemen. Met name een al te sterke polariteit tussen 'wilde' natuur en 'menselijke' architectuur verdient kritiek.

De conclusie van het eerste deel maakt aannemelijk dat er een nieuwe analysemethode nodig is om de ruimtelijke aspecten van een landschappelijke compositie te beschrijven. De basis van deze nieuwe methode ligt bij het analytisch model voor het beschrijven van beroemde Europese tuinen uit de renaissance, barok en verlichting (Steenbergen & Reh, 2003), verwerkt tot een grafische analyse van de ruimtelijke onderdelen van architectuurprojecten.

Het middendeel van dit boek bestaat uit het toepassen van deze analysemethode op een selectie van drie uiterst relevante projecten tussen 1992 en 2015. Op elk van deze projecten wordt volgens dezelfde 4-laags methode geanalyseerd waarbij bewust ruimte blijft voor aanvullende onderzoeksvragen.

Het ontwerp 'Jussieu' (OMA, 1992) voor twee universiteitsbibliotheken in Parijs is nooit uitgevoerd. Toch is juist dit project relevant omdat de Nederlandse architect Rem Koolhaas met zijn bureau OMA hiermee een nieuw type architectuur introduceerden, met sterke verwijzingen naar landschappelijke kenmerken. Omdat het gebouw nooit gerealiseerd is, is de onderzoeksmethode hier uitgebreid met een speciaal voor dit doel ontwikkelde visualisatie van het mogelijk eindbeeld.

Het 'Rolex Learning Centre' (SANAA, 2004) op de universiteit van Lausanne werd door de ontwerpers expliciet als een landschappelijk ontwerp voorgesteld. Het is het winnend ontwerp van een internationale prijsvraag, gewonnen door de Japanse architecten Kazuyo Sejima en Ryue Nishizawa en werd geopend in 2010. Er wordt een aanvullende visuele analyse toegepast (3D isovist) om dit reusachtig gebouw te beschrijving.

De 'City of Culture of Galicia' in Santiago de Compostella (Eisenman, 1999). De Amerikaanse architect Peter Eisenman heeft een gelaagd ontwerp gemaakt dat sterke overeenkomsten vertoont met de landschappelijke methodiek die binnen dit onderzoek wordt uitgewerkt. Toch levert het uiteenleggen in 'grondvorm', 'ruimtevorm', 'metaforische vorm' en 'programmatische vorm', een aanvullende interpretatie op. De enorme schaal van dit project bleek een politiek dilemma waardoor de bouw in 2015 halverwege is stopgezet. Deze bijzondere situatie nodigt voor deze casus uit tot een derde specifiek toegepaste analysemethode. De ruïnes van het onvolmaakte museum en

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operahuis zijn verwerkt in een ontwerp voor een fictieve en tijdelijke tuin. Hieruit concludeer ik dat Eisenman's architectonisch ontwerp kan worden aangevuld met landschappelijke strategieën zoals die in mijn onderzoek centraal staan. Hiermee is aannemelijk gemaakt dat een analysemethode ook omgekeerd gebruikt kan worden, als een ontwerpstrategie voor een landschap.

In het derde en laatste deel van dit onderzoek zijn alle beschrijvingen van de drie architectuurprojecten met elkaar vergeleken. Hiermee wordt inzichtelijk welke ontwerp instrumenten, strategieën en methoden algemeen voorkomen en welke specifiek zijn voor het beschrijven van de landschapsarchitectonische ontwerp-strategieën die, al dan niet expliciet, zijn toegepast door de verschillende architecten.

Dankzij dit onderzoek is het mogelijk om beter beargumenteerd te onderbouwen dat de landschapsarchitectuur het domein van de architectuur beïnvloedt. Zowel maatschappelijk als theoretisch is het voor de architectuur relevant om nieuwe concepten voor landschappelijke ruimten te ontwikkelen. De recente maar zeker ook de toekomstige toepassing van landschappelijke ontwerp-strategieën in de architectuur is hiermee aangetoond..

Zusammenfassung

Das zentrale Anliegen und das Ziel der vorliegenden Arbeit ist die Frage, ob und wie landschaftliche Mittel unser Verständnis für und unseren Entwurf von Architektur verändern. Dafür untersucht sie, in wieweit Landschaft als Konzept für den Architekturentwurf relevant ist.

Gebäude, die wie eine Landschaft gestaltet wurden, sind in der zeitgenössischen Architektur und der neueren Architekturtheorie ein wichtiges Thema. Die augenscheinliche Trennung von Architektur und Landschaft wird in exemplarischen theoretischen und gebauten Werken hinterfragt, mit wachsendem Interesse für Landschaft als Phänomen der modernen Architektur.

Um dieses Phänomen zu verstehen, untersucht die Arbeit im ersten Teil den Begriff „Landschaft", deren Gestaltung und architektonische Gestaltungsmittel. Im Fokus der Einleitung steht die Vorstellung von Landschaft und wie sie im Architekturentwurf Anwendung finden kann. Es werden die in der aktuellen Landschaftsarchitektur diskutierten Entwurfsmodelle vorgestellt und mit typischen Beispielen illustriert. Dieser Sichtweise wird die Vorstellung von Natur in der Architektur gegenübergestellt.

In architektonischen Naturkonzepten werden einige entscheidende Probleme sichtbar, die zur Polarität von „wilder" Natur und „menschlicher" Architektur führen. Mit einer Kritik dieser herkömmlichen Architekturtheorien und im Rahmen methodologischer Differenzierung zeigt die Arbeit die Notwendigkeit einer Untersuchung mithilfe der Analyse der landschaftsräumlichen Gestaltung in der Architektur.

Herzstück der Arbeit bilden drei Fallstudien von Architekturentwürfen, die mit landschaftlichen Methoden untersucht wurden. In drei zentralen Kapiteln werden ausgewählte Analyse-Techniken auf Schlüsselfälle angewandt. Insbesondere die Analyse-Methode für Landschaftsarchitektur, die Steenbergen und Reh (2003) für die grossen europäischen Gärten von Renaissance, Barock und Aufklärung entwickelten, wird hier eingesetzt für die Entwurfsanalyse dreier ausgewählter Architekturprojekte im Zeitraum von 1992-2015. Jeder der drei Entwürfe wird mit derselben Vier-Lagen-Analyse untersucht. Neben dieser dem Vergleich dienenden Methode wurde jeweils zusätzlich eine projekt-spezifische Untersuchungsmethode entwickelt, die die singulären Aspekte des betreffenden Entwurfs aufzeigt.

Der erste Fall ist der nicht realisierte Entwurf von OMA für zwei Pariser Universitäts-Bibliotheken von Jussieu. Der niederländische Architekt Rem Koolhaas und sein Team von OMA legten den Jussieu-Entwurf 1992 vor, an einem Wendepunkt der Disziplin, als man neue Formen der Architektur mit landschaftlichen Mitteln erprobte. Auch wenn der Entwurf nicht realisiert wurde, bietet die vorliegende Arbeit einen erklärenden Durchgang durch den Bau. Diese bislang ersten Visualisierungen zeigen, wie der Entwurf – wenn gebaut – hätte sein können und sind zugleich die für diesen Fall gewählte projektspezifische Untersuchungsmethode.

Der zweite Fall, das „Rolex Learning Center" der EPF Lausanne wurde durch seine Entwerfer als „Landschaft" vorgestellt. Der Wettbewerbsentwurf der japanischen Architekten Kazuyo Sejima und Ryue Nishizawa (SANAA) von 2004 ist deren grösster und bedeutendster Bau im Ausland und wurde 2010 eröffnet. Neben der vergleichenden 4-Lagen-Analyse wird für diesen Fall als Methode für die projektspezifische Analyse eine visuelle Raumanalyse mit 3-D-Isovisten angewandt.

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Der dritte Fall ist die „City of Culture of Galicia" in Santiago de Compostela des amerikanischen Architekten Peter Eisenman. Dieses Projekt von 1999 war ursprünglich in einem Prozess von Überlagerungen entworfen, der sich im Prinzip nicht wesentlich von dem von uns angewandten Analyse-Modell unterscheidet. Doch führt unser Modell einer Analyse von Grund-Form, Raum-Form, metaphorischer Form und programmatischer Form zu einer anderen Lesart des Entwurfs. Die Ausführung dieses riesigen Projektes der „City of Culture" wurde 2015 auf halbem Wege abgebrochen, was grosse politische Schwierigkeiten für Galizien zur Folge hatte. Ausgehend von den Überresten nicht-realisierter Architektur als Basis für ein landschaftsarchitektonisches Experiment folgt mein Entwurf eines Gartens auf Zeit den Entwurfsprinzipien des Architekten Peter Eisenman. Dies zeigt, dass die für Gebäude entwickelten landschaftlichen Methoden auch umgekehrt für Landschaft anwendbar sind.

Abschliessend im dritten und letzten Teil vergleicht die vorliegende Arbeit die drei Fallstudien architektonischen Entwerfens miteinander und zeigt Gemeinsamkeiten und Unterschiede in der Anwendung landschaftlicher Mittel, Strategien und Methoden in den Entwürfen verschiedener Architekten.

Mit dieser Studie ist es möglich, besser argumentiert darzulegen, wie landschaftliche Entwurfsstrategien die Domäne der Architektur beeinflussen. Sowohl gesellschaftlich als auch theoretisch ist es relevant für Architektur, neue Konzepte zur Errichtung der menschlichen Umwelt zu entwickeln. Die vorliegende Arbeit zeigt deshalb neuere aber auch zukünftige Anwendungsmöglichkeiten landschaftlicher Mittel in der Architektur.

Glossary

The following key terms and concepts of this thesis are to be interpreted within these definitions. They are all further discussed in the sections and chapters referred to below (in brackets). This list contains all the specific terms that are either newly introduced, not used in the common sense, or specialised to the fields of Architecture and Landscape. The first four most crucial terms are discussed and defined within the chapters.

Although I tried to follow a consensus of terminology in my two academic fields of Architecture and Landscape Architecture, the terms may be used differently in each field. Different expressions from other authors (such as 'Terratektur', 'Groundscapes' or 'Landscape Urbanism') may appear in the reference literature (chapter 1.4.), but not in this glossary. Different meanings that other authors give for the same expressions (such as for 'Theory' or 'Context') should be read within their own definitions in the literature review or theoretical discussion (mainly chapters 1.4. or 3.1) and are not included in this glossary.

This glossary follows a logical structure; it is not an alphabetical index. Therefore I suggest reading the glossary from beginning to end before reading (other parts of) the thesis.

Landscape - (chapter 2) is a crucial term defined in a dedicated chapter. It is scenery composed of all the features of an area of land including both the natural and the man-made (Oxford Dictionary 1989 p. 699). For this thesis I will look at landscape as a human aesthetic appropriation of nature. The aesthetic experience does not describe nature's physical properties but elevates it into the realm of human experience. Landscape is not nature. It is rather a concept that goes beyond nature. It is sometimes referred to as 'the second nature' of land cultivated for human usage; and 'the third nature' of the designed landscape or garden (Hunt 2000, quoting Bacon 1625).

Nature - (ch. 2) is a crucial term, different than landscape, defined in a dedicated chapter. If nature is defined as 'the whole universe ... and every not man-made thing' (Oxford Dictionary 1989 p. 825) it is by this definition opposed to man-made architecture. This differentiation cause of the problem that this thesis is discussing.

The 'first nature' (Bacon 1625) is the extreme wilderness of the world uninfluenced by man. In a philosophical sense it only exists as an ideal, as the extreme wilderness uninfluenced by man would already be altered by it's description or by any other influence of humans onto it.

The different terms "nature" and "landscape" in architecture theory are being conflated, if not confused. Neither the subtle differentiations (as laid out in chapter two) nor the simple rule that nature is not the same as landscape seem to be followed in architecture theory.

Architecture - (ch. 3, 4, 5, 6, 7) is defined more precisely and differentiated from Landscape and Nature in five chapters. It is the main subject of this thesis and is commonly defined as the art and science of designing and constructing buildings (Oxford Dictionary 1989 p. 51) and the academic discipline which this thesis discusses. As every project (see below) uses and redefines architecture, in this thesis the term is an operational one; its definition is constantly questioned and discussed throughout the thesis. To develop architecture as a discipline with focus on a certain aspect is the aim of this thesis.

Landscape Architecture - (chapter 2) a crucial but "awkward" term (Dixon Hunt 2000), defined in a dedicated chapter. In short, the discipline of designing many types of outdoor environments (Vroom 1995) at different scales, such as gardens or parks, as well as whole regions and urban spaces other than buildings.

Landscape design strategies -throughout the text, Landscape design strategies refer to strategies that are used by the designers of the three cases and other architects or landscape architects. This expression is, not to be confused with the analytical Methodology (see below) or 'study methods' used by the author, nor with Academic Methods (see there) of architecture.

Methodology - (s. 1.5.) the 'study methods' and the scientific approach to the subject of this thesis. Distinct for its subject (the 'Landscape design strategies', see above); the methodology is the research apparatus. The methodology is the scientific approach of an architect and landscape architect; it cannot be purely philosophical or anthropological nor empirical or mathematical. The methodology of this thesis explicitly includes the specific views of the architecture and landscape architecture disciplines onto their subjects. See also Four Layers Model and Four Attitudes

Academic Methods - of architecture is the body of knowledge that is used and developed to study, teach and Practise architecture. It involves the Theory and Practise of architecture and their sometimes problematic interaction, and can best be explained as described below.

Practise - (ch. 4 to 6) the activity of architects and landscape architects in the design and planning of buildings and landscape transformations. Practise's separation from Theory for both disciplines is an important distinction to make.

Theory - (s. 1.4, 3.1) the theoretical position and body of knowledge of architecture and landscape architecture. Architectural theory is also a field of knowledge taught in most universities with a relatively distinct body of knowledge. It is often separated from Practise, which is to be discussed at several points of this thesis. The particular part of architectural theory related to landscape is studied in the literature review of this thesis. Departing from that review I define the thesis' own methods and aims to contribute to architectural theory.

Form - (s. 1.4.9.) the architectural or landscape architectural form or shape. A discussion of form is sometimes avoided in other architectural research, but here, the appearance of landscape forms in architecture is the core subject. The assumption that a scientific study of architecture can be conducted regarding its form is crucial for understanding this thesis.

Layer Model - (s. 2.3.1) an important term in landscape architecture, introduced by Ian McHarg (1969) and propagated by many authors of the field (notably Vroom 1995, Steenbergen & Reh 2003). A Layer Model describes a landscape as the composition of several separate source layers. It is an essential method of drawing analysis and design composition. A broader discussion of the most essential layer models is included in chapter 2.3.1.

Four Layers Model - (s. 3.2.4.) one variant of a layer model developed by Steenbergen and Reh (2003) to describe the landscape architectural composition of parks and gardens of the Italian Renaissance, French Baroque and English Enlightenment. They are derived from the four terms used by Paul Frankl (1914) - Raumform, Körperform, Bildform and Zweckgesinnung - to describe buildings. In their work, Steenbergen and Reh show how gardens follow architectural principals. Described in more detail below, the layers are:

1 Ground Form - (s. 3.2.3., 4.5.1., 5.5.1., 6.5.1.) the way in which the natural landscape is reduced, rationalised and activated. In the case of architecture, we must consider also landscapes that are generated artificially and the tension between grown morphology and built topography (Steenbergen Reh 2003). This can be the physical datum or ground level being manipulated in all three case studies (chapter 4 - 6). The term ground also opens a broader discussion as to figure - ground vs. ground - ground, which will be discussed in chapters 6 and 7.

2 Spatial Form - (s. 3.2.3., 4.5.2., 5.5.2., 6.5.2.) the experience of the landscape space, including circulation paths, framed views, and picturesque compositions. The relation and manipulation of the horizon is an essential design aspect of this layer (Steenbergen Reh 2003).

3 Image or Metaphorical Form - (s. 3.2.3., 4.5.3., 5.5.3., 6.5.3.) the use of iconographic and mythological images of nature, always connected to the other layers and mostly represented in one of the others (Steenbergen Reh 2003).

4 Form of the Program - (s. 3.2.3., 4.5.4., 5.5.4., 6.5.4.) the division of functions and organisation of their relationships influencing the composition. The programmatic form incorporates the tension between business (negotium) and contemplation of nature (otium) in a constant search for balance from the classical landscape to the present (Steenbergen Reh 2003). The same term program (see below) is used in architecture to describe the usage of spaces.

Composition - (s. 3.2.3., 4.5.5., 5.5.5., 6.5.5.) relating to the four layers described above, in accordance with Steenbergen and Reh (2003). The composition is not only the separation of the layers, but also the connection between them. Crucial elements of a design connect the layers and form the architectural composition. This concept of understanding a design is used in the three case studies of this thesis, specifically to understand a building rather than a conventional landscape.

Landscape Elements - the different components that make up a composition. They can either be distinctly of a certain function in a composition, and thus be attributed to a layer, or connect multiple layers by covering several of these functions. The element is the raw appearance of a single entity that the analysis is trying to put into a logic of a landscape design strategy as a whole.

Four Attitudes - (s. 2.3.) used in this thesis according to the definition of Marot (1999) as the working attitude of landscape architecture as a discipline towards a site. In this thesis, these attitudes are juxtaposed with the architect's approach to landscape for sake of comparison. The attitudes refer closely to the specific design strategies of landscape architecture. The four attitudes are also introduced to show how the architectural project gets enlarged into the discipline of landscape architecture - or rather, to test how much that is the case, and to show its limitations. They all include a temporal dimension that extends to development as opposed to the static formal analytical method of the Four Layers Model.

1 Anamnesis of the Landscape - (s. 2.3.1., 4.7., 5.7., 6.7.) Integrates the history that led to the present state of a landscape. Traces of history are visible and readable in most landscapes (Marot 1999). Marot (1999) introduces this term from medicine, and alludes to the connection of the current state of the landscape (in medicine the patient's current state) to it's past history (in medicine the record of past diseases). In medicine, anamnesis is part of the diagnosis of a health problem and it's cause. In landscape architecture, the term is useful to express the wider temporal relationship of a project with the past and future of the site.

2 Landscape Process - (s. 2.3.2., 4.7., 5.7., 6.7.) Process (Marot 1999) in landscape is similar to anamnesis but more focused on the actual ecological, anthropogenic, and seasonal transformations taking place in the landscape over time.

3 Spatial Sequencing - (s. 2.3.3., 4.7., 5.7., 6.7.) (Marot 1999) a landscape design approach often related to spiritual storytelling or ritual processions. The route through a landscape is a crucial part of any landscape design, drawing a connection between the experience of views and the landscape itself. In architecture it was translated into the promenade architecturale (Corbusier 1923, Blum 1988).

4 Landscape Context - (s. 2.3.4., 4.7., 5.7., 6.7.) a landscape is not just a reaction to an existing context but the context is itself generated by landscape designs (Marot 1999). This specific design attitude generates dense functional, visual, and spatial relations and constellations. Designed landscapes oftentimes need to define their own limits and field of intervention and determine the context.

Context - (s. 2.3.4., 4.2., 5.2., and 6.2.) the context of a building, meaning it's physical surroundings in other buildings, infrastructures, and landscape, but also (in dedicated sections 4.2., 5.2., and 6.2.) the designed and built urban and landscape context of each case as well as the wider societal and historical context of each cases's creation and use. The understanding of context by architects -as opposed to that of landscape architects described as the 4th Attitude (see above, Marot 1999, s. 2.3.4) is a crucial part of this thesis investigation and discussion in the conclusion (ch. 7)

Program- (ch. 4, 5, and 6) is used in architecture to describe the usage of spaces. The friction and overlap in use of the term with Program Form from the Layer Model (see above, Steenbergen Reh 2003, s. 3.2.4) is part of this thesis investigation.

Pro-Construction - (s. 4.6) a term specifically developed for this thesis (with gratitude to Steenbergen). It combines the terms project and re-construction. It refers to the representation of an unbuilt project and consequently its analysis with the use of computer generated imagery (CGI), as in the case study for the Jussieu project.

Project - (ch. 4, 5, and 6) the architectural project is the creation of a designer - more precisely a team of designers inside a design studio. Projects contain world views of societal relevance, but for the sake of this thesis, always crystallise in the material form of a building or several buildings. Allusions to a greater social or political project are largely a rhetorical device to aid the flow of the narrative. That said, a potentially greater relevance for each project, outside of its autonomy within the architectural discipline, is a discussion with different positions among each of the chosen case studies.

General Introduction

The title of this thesis is an association of two quite complicated words - landscape and architecture. Their connection with strategies in suggests that the second could derive design strategies from the first. This thesis is the result of several years of research into that association, and contains a search for explanations of these words as well as an exploration of the vast field that unfolds between them in both general terms and in specific cases studied. Based on on reviews of studies by other authors this study identified the need to define landscape design strategies within a disciplinary framework. It analyses the workings of such strategies in concrete cases of building designs. This involves understanding how buildings where designed as landscapes and how they would be experience as such. I explore the landscape designs in architecture with specifically applied model of drawing analytics (the 4 layer model in chapter 3.2) and a critique the resulting designs with focus on a set preliminary established categories (the attitudes in chapter 2.3).

My primary aim is that the designs researched here should be a contribution to the development of both disciplines - 'architecture' and 'landscape architecture' - and to their fruitful interchange. As designers, most of us are associative thinkers more than logicians. Some of the great designers I have encountered and studied in this thesis work with association of architecture and landscape.

Associative thinking is a method too: a method for curing a disease relies on the logic of the medicine's action and the patient's positive physiological reaction; a method for solving a mathematical problem would be proven by a good solution. But the method of design is different. A design is a living process that must be imagined - it is more successful if based on associative thinking and intuition than if relying exclusively on logic and determinism - I shall therefore use the broader term design strategy.

Landscape spaces are generally appreciated by a wide audience - the beauty of landscapes motivates many people to travel to remote areas and to explore them by vehicle or on foot. People used to send picture postcards with landscapes, or collect photographs - now they post views or 'selfies' with landscapes on the internet. For centuries many cultures have been recreating natural landscapes in the vicinity of their homes and cities in gardens and parks, adjacent to buildings and neighbourhoods.

The dual relationship of landscape and architecture has a long tradition that can be traced back to the Renaissance, when 'nature' was often seen as a counterpart to - and also as an origin of - architecture, but architecture was generally either opposed to the landscape, or physically or intellectually elevated above nature.

In this thesis, I will introduce how architectural theory has led to an intellectual separation from an integral understanding of nature. Particularly in the Western context its disciplinary development across centuries has moved humans away from a natural habitat into an artificial environment of it's own making. A discipline long regarded as a key to cultural progress, architecture positioned itself as master of order and simplicity - historic development of architecture points away from the natural habitat of humans, regarded at various instances (to be further explained) as primitive, unhealthy, immature and uncivilised. Architecture became not a follower but a leader in humanity's total estrangement from the natural environment.

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FIG. I.1 Hoizontal Skyscraper, Steven Holl, 2011



FIG. I.2 Blur Builing, Arteplage Yverdon-les-bains Extasia, DS+R 2002



FIG. I.3 Hedge House Art Gallery & Chicken Barn Wijlre, Wiel Arets 2001

The development of the discipline of architecture reached new heights as it distanced itself further from nature. In the 20th century the estrangement through architecture was critiqued as "the inhospitality of our cities" by one of its contemporaries, the German psychologist Alexander Mitscherlich (1965). While 20th century architects even proclaimed being 'modern' as the societal role of the discipline of architecture - the 'modern city', manifested in the post-war decades of the 1950s and 60s, quickly became so problematic it served as an illustration for greater problems of societal development.

At some instances, I believe, the introduction of landscape into buildings is more of a reaction to that critique on the role of architecture in post-war culture. Bridging the gap between architectural space as a limited object and landscape space as a unlimited environment, a new breed of buildings with novel relationships to landscapes have recently appeared. Landscape itself has been used as a metaphor or conceptual reference for an increasing number of architectural projects in the last two decades. While publications appear, as studied in the following pages (ch.1), the definition of 'landscape' still urgently requires explanation within the context of architecture, which is one purpose of this study (ch. 2). In some recent buildings the integration of landscape concepts with indoor spaces goes far beyond simply replicating gardens or parks. Some examples, among dozens of such buildings, are Toyo Ito's Grin Grin Greenhouses in Fukoka, Japan, Zaha Hadid's Cairo Expo City in Egypt, or Steven Holl's Horizontal Skyscraper in Shenzhen, China. In such exemplary new buildings, landscape's representation in an urban context is not only built into gardens and parks but also used as a conceptual reference and for public buildings. Even office buildings like VPRO in Hilversum, The Netherlands, and housing complexes like the Mountain in Copenhagen, Denmark have incorporated these ideas. Regarding their work, this younger generation of architects like the Dutch MVRDV have said 'the building is the landscape' (MVRDV 1999), or the Danish BIG simply name the building a 'mountain' (BIG 2009). The phenomenon seems to be a substantial innovation in architecture with an interesting potential for artistic, social and ecological gains for the discipline and needs to be studied more thoroughly.

The blurring of the borders between the disciplines of architecture, urbanism and landscape architecture was noted around the turn of the century (Wall 1999) and has since been discussed by a range of authors (Corner 1999, Mostafavi 2003, Waldheim 2006). These studies focus on the regional scale – while landscape architecture as a discipline works on many scales, from micro-biotic or tactile, to global ecological or climate systems. Leatherbarrow coined 'architecture as landscape' (Leatherbarrow 2004) and concentrated a study on aesthetic aspects of topography and outdoor relationships. He explains how, for example, at the Neurosciences Institute in La Jolla, California by Williams and Tsien (1992 - 95) the "site – or (...) ambient landscape - is no longer what surrounds and supplements the building, but what enters into it" (Leatherbarrow 2004 p.21). Most other studies provide a wide catalogue of recent examples, which were used to introduce a few hypotheses or statements on the subject. This new conceptual integration of landscape elements and concepts into buildings has been given many names by these authors. With different terms like Landscapers (Betsky 2002), Groundscapes (Ruby 2006), Landform Building (Allen McQuade 2011)

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or Groundwork (Balmori Sanders 2011), these authors explore the interface between landscape and architecture in many fascinating facets. These statements encourage our study, but are not themselves sufficient. In this literature no deeper knowledge of the working of landscape-inspired architectural design processes has been developed.

No detailed analysis has explored the spatial potential of these designs and actually assessed their landscape qualities, nor compared them in testing the theoretical arguments of critics or architects. I intend to study individual cases of actual spatial designs through analysis in a manner that has not been done in our reference studies. Architectural studies are seldom analytical to the extent that this thesis seeks to redraw and redesign the composition of the spaces being analysed (noted by Graafland 2007, regarding Eisenman 1963).

The reasons for a lack of analytical studies about landscaped architectural designs appear to be twofold: existing studies (see 1.4.) either struggle with the notion of 'design' and 'landscape' or avoid exploring them. 'Design' is a multi-fold, complex, non-linear and often intuitive creative process. 'Landscape' is similarly a very broad term with many, sometimes diverging, definitions. To understand how architecture works with landscape design strategies, this thesis investigates the notion of both design and landscape in a more profound manner. If buildings designed like landscapes are to be understood as spatial compositions, the spatial system of landscape itself needs to be explained -and then a number of buildings need to be analysed according to an established 'landscape' framework that is valid for 'design' compositions.

The analyses in this study are aimed at understanding buildings that have been designed as landscapes. The core of this study seeks to understand the spatial composition of buildings designed like landscapes. In graphic analyses I will explore landscape compositions in architectural design. The specific approach to this core subject is to elucidate the formative elements of a spatial composition by a method we defined as 'research by design' in the context of the chair of landscape architecture at TU Delft (Nijhuis, Bobbink, Jauslin 2011). More specifically, I will apply research through drawing: put simply, our method consists of redrawing the existing architectural designs for each case, and evaluating them within our own hypothetical models developed for landscape architecture - generally referred to as plan analysis (Steenbergen Nijhuis Meeks 2008 p.20). This procedure enables to test three building designs and to reveal specific and general landscape composition principles for architecture. For each in-depth case study the formal composition is critically reviewed in its design strategy, following landscape attitudes (Marot 1999) – and together these two analytical models, intertwined with each other, form a holistic assessment of the building's formal and conceptual elements and their various interrelations.

After a statement of our questions and goals within the research context and a literature review I set out the framework of spatial composition analysis in chapter 1. The research questions and methodological approaches to this study are framed within that introduction. The existing literature is examined leading up to the specific gap that I intend to study.

In chapter 2 I will introduce our working definitions of the term "landscape" and its relevance for architectural design at developing strategies from there. This chapter makes it possible for our thesis to develop a theory for architecture, retracing conceptual innovations of designing architects, and transferring knowledge from the discipline of landscape architecture (Deming Swaffield 2011 p.9-11). The definition of 'landscape' will here be explored for the specific context of this study as a design task and category of conceptual framing for architecture. In order to understand how the idea of landscape influences architecture I will have to discuss and establish our own working definition of 'landscape design strategies' in 'architecture'.

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Chapter 3 will give a short overview of the development of western architecture theory away from nature, as well as our design assessment methods. This will lead to our argumentation for the selection of projects to be examined more deeply in three case studies.

Chapters 4 to 6, the core of this study, present three selected buildings. These analytical studies will derive graphic interpretation (Deming Swaffield 2011 p.9-11). Each is similarly structured. Taking the example of the 'Jussieu Libraries' section 4.1 will explain our choice of the project, in 4.2 each of these buildings will put in its historical, social and regional context, and in 4.3 explored in a first-hand walk-through account. Furthermore, in section 4.4, as a building as a landscape is not only a novel design approach but also a technical challenge.

The core of each is the analysis of the architectural composition in our design analysis method of scaled isometric drawings as in section 4.5. The analysis employs a 4-layer model - Ground Form, Spatial Form, Image (or Metaphorical) Form, and Form of the Program – that was initially developed to analyse classical European gardens and landscapes (Steenbergen & Reh 2003). The focus is not merely on the division into these four layers but on understanding their juxtaposition and mutual influence through connections that are made between several or all of the layers - what we call the architectural composition (Steenbergen & Reh 2003). Beyond general and comparative analysis, each building requires specific methods of design analysis, which I will develop and use in a separate section 4.6.

An initial conclusion for each field-trip will show which design strategies are used and how. From the project analysis individual conclusions will be drawn. The general explanation of landscape architectural attitudes which may be found through design analysis, in source material, or in interviews with architects will be explored in section 4.7. Section 4.8 concludes each field-trip with my own theoretical reflections on landscape strategies in architecture. This structure is repeated for the projects in chapter 5 for 'Learning Centre' and 6 for 'City of Culture'.

Chapter 7 will develop a comparison of our analysis of the three cases. This will be reached by first simply comparing our drawings, at a uniform scale, in a synopsis. I will identify both general and specific elements in all the cases. This should lead us to a taxonomy of elements, and allow a comparison of different landscape concepts expressed in the projects, also in regard to common influences of the projects or cross influences among them. From this comparison I will establish specific design instruments that can be seen as universal landscape design strategies for recent and future architecture.

Comparisons in chapter 7 will lead to our conclusions on the use of landscape design strategies in buildings. In order to answer the general research question about the way landscape design strategies will change how we understand and create architecture. I will explain how the use of a landscape composition differs from other architectural approaches. Our analysis explores what landscape proposes to the architectural composition in relation to context, space, image and program. This will not only highlight some key design strategies that lead to more successful public buildings but moreover to the development of the discipline of architecture. In chapter 7 I will take a distance to observe more critically what the limits of our analysis actually are. Besides the discussion of the benefit of landscape strategies to individual designs, and how a landscape approach changes architecture in these cases I will make proposals for architectural theory in general an question what more is needed from landscape for architecture in the future.

1 Context and Precedent Studies

The first chapter introduces the central questions and purpose of the thesis and explores the ways in which landscape could again become relevant for architecture. I will establish the background to our spatial analysis by defining landscape and architecture in a theoretical elaboration of their crucial interrelations.

I will give an outline of the the context of this research (1.1) and state the research questions (1.2). I will open the next section by stating the context of discussion: apparent distinction between architecture and landscape in exemplary theoretical and practical works (1.3).

I will then review and reflect on the literature that touched on the subject of this thesis, buildings that have been designed like landscapes, focusing on the aspects that are particularly relevant to the thesis (1.4). These reflections will not only show an increasing interest in landscape as a phenomenon of contemporary architecture but also position the emerging landscape strategies in architecture that I will demonstrate as both critical and urgent towards architects in design practice.

Section 1.5. will introduce the methodology in relation to these precedents.

"Landschaft gibt es gar nicht."[1]

Lucius Burckhardt (1925 - 2003) (Weishaar 2014 p.29)

1 "There is no such thing as Landscape" Lucius Burckhardt teaching Spaziergangswissenschaft at Kasseler Willemshöhe, quoted by his former student Betram Weishaar Deutsches Architektenblatt 6-2014 p. 29, transl. by the author.

1.1 Research Outline

In the past two decades, landscape has been used as a metaphor or conceptual reference for an increasing number of architectural projects. A handful of critics (see section 1.4.) propagated this phenomenon as a substantial innovation in architecture with meaningful potentials for artistic, social, and ecological advantages.

The increasingly frequent creation of buildings that imitate or simulate landscape forms and experiences since the 1990s has drawn the attention of several specialist studies. But landscape as a concept in architecture, although studied, remains rather schematic. To better understand and critically review these projects it is important to better understand the notion of landscape.

The relevance of a novel approach to fundamentally rethink architecture could be seen in the face of environmental crises. Although it is important for this research (and for our discipline) to find a sustainable approach to dwellings in the environment, this was not the scope of this thesis. The focus here is on the projects I investigate, where the building (interior) and landscape (exterior) do not merely interact, but where the building is designed as an artificial landscape of its own. Landscape exists within and without – the landscape to architecture relationship is internalised. This is an important shift between 'inside' and 'outside', which was formerly treated in western architecture as oppositions of one another – excluding 'landscape' not only from the built object but also from many ways of thinking about architecture.

In an overview I explore the prevailing understanding of landscape in recent architecture through existing literature. This exploration will show the need for a more specific analysis to better understand landscape design strategies in architecture and their workings in the composition of buildings.

In identifying the criteria that make landscape qualities explicit, this research develops a methodology of holistic critical assessment by looking into a wide variety of aspects and by connecting them in a structured analysis and critical review. The subject of this study is buildings designed by architects that are either explicitly or implicitly understood as landscape. The methodology here is to select a set of three buildings and test them with a set of analytical instruments, addressing landscape qualities in holistic depth and later placing them in a wider critical review of architecture in general. The focus of the critical assessment of these cases is on how each applies landscape in different ways.

The thesis develops how landscape design strategies are applicable to architectural practice and theory. Analysis and critique of specific cases will contribute solidifying and improving architectural design with a landscape approach. As a body of research on novel designs, it contributes to the discipline of architecture as the landscape approach leverages new potentials for the design of built environments.

1.2 Research Questions

The overarching research question of this thesis is:

- **In what way do landscape design strategies change how we understand and create architecture?** (Q. 1.1.1.)

Subsequently, I elaborate on the working definition of landscape design strategies for this thesis as

- **What landscape strategies are applicable to architectural design?** (Q. 1.1.2.)

With this questions in mind, I will investigate the questions:

- **How do architects apply landscape design strategies in architecture? What are their motives and goals to do so and what do they accomplish?** (Q. 1.1.3.)

Speaking of transdisciplinary knowledge from landscape to architecture, the idea of landscape must first be understood in its philosophical dimension:

- **Which landscape elements are applied to architecture; what concepts of landscape are applied in architecture; and how is their formal composition developed?** (Q. 1.1.4.)

To understand buildings designed like landscapes as spatial composition, the spatial system of landscape itself needs to be understood. There are differences in the depth of theoretical approach to landscape between architecture and the separate discipline of landscape architecture. In landscape architecture the idea of landscape has always been discussed both strategically and instrumentally – as a field of research and for project design. Landscape architecture's varied methods of research and it's specific design strategies are closely related to varying definitions of the term landscape. In architecture however, that theoretical approach to landscape is still in the early stages of development.

Its exploration will also raise another practical question with regard to our cases in a theoretical frame:

- **How do architects understand the idea of landscape and its design for application in architecture?** (Q. 1.1.5.)

Chapter 2 will explore the term landscape in order to answer this question and try to find a working definition of relevant landscape design strategies. After that we will ask how these landscape design strategies are applied to the theory and practice of architecture and what knowledge we could derive from built examples for the future practice and theory of architecture.

I will answer the fourth question by way of investigating the first one:

- **What kind of landscape design strategies are successfully applied to the design of these different cases of architecture?** (Q. 1.1.6.)

The evaluation of the general context of landscape and architectural design strategies (in chapters 1 and 2) and the selection of cases (in chapter 3) frames a methodological question. That question will be addressed in the choice of our cases (chapter 3.3.)

— **With which research apparatus can we better understand the idea of landscape and its design strategies - specifically for application in architecture? Which analytical methods best reveal landscape compositions in architecture?** (Q. 1.1.7.)

Landscape is understood as a composition of natural, cultural, urban, rural and architectonic elements in relation to ecological, social, and economic parameters. We understand it by means of morphological research (Steenbergen and Reh 2003). According to this morphological way of thinking, there is a relationship between form and content. The content of the landscape architectonic object consists of material, topographic, technical, cultural and economic substance. The form defines the juxtaposition of each part of the content. Formal analysis is the key to the way in which the parts are assembled into a composition (Steenbergen, Meeks, and Nijhuis 2008; Nijhuis, Bobbink, and Jauslin 2011).

Through in-depth case analyses, I derive specific landscape methods in architectural design. Landscape can, in specific cases, counteract established dogmas. It can liberate architecture from aesthetic conventions of beauty. Landscape serves as a progenitor of new approaches to construction techniques supplementing inherent tectonic logic. I assert that landscape acts dynamically as an anti-dogmatic force, and does not create new dogmas.

In reviewing critically selected cases we are led back to our initial question with a set of broader questions to be answered in chapter 7.

— **What is the benefit of landscape to architectural design?** (Q. 1.1.8.)

— **How do landscape design strategies contribute to architectural theory?** (Q. 1.1.9.)

— **What additional landscape design strategies are still missing in architecture?** (Q. 1.1.10.)

The plural 'strategies' expresses not a small number of features but a wide array of interests filtered though a set of 'lenses' or 'priorities'. Thus the choice of several cases with diverging results will widen the horizon of architecture and not limit it to one new recipe: The 'alchemy' of design (Cornubert in Appendix 1.1.1.) will not be formulated in a prescribed process or formula.

The selected case studies may thus limit reproducible or quantifiable results, as well as generalisation of the derived knowledge. The structure of this research employs as many analytical methods and data sources as deemed appropriate in order to grasp each case as fully as possible. I have employed certain analytical tools in order to compare the cases, while others remain specific to each case. The chosen case study methodology (further described in section 1.5.) monitors the holistic (formal and conceptual) value of selected cases of architecture designed using landscape methods.

1.3 Landscape in Architectural Design

The division between the disciplines of architecture and landscape has been crossed from both sides. Innovative practitioners of architecture have designed parks with landscape-specific concepts like Bernard Tschumi's or OMA's designs for Parc de La Villette (1987) (Tschumi and Choay 1985; Vidler 1992). Landscape architects themselves began to create a new breed of constructed landscapes, like West 8's Schouwburg Plein in Rotterdam (1991) (Wall 1999) or the Kremlin at Leijdse Rijn Park (1997). It is now widely accepted that the boundary between the disciplines of landscape architecture and urbanism is blurred (Vroom 2006 p.14).

In the 1990s, a new generation of design professionals desired to expand notions of theory and practice outside of their specific disciplines (see Corner 1999 p.1-25). As Stan Allan put it, the design professions should get past the limitations of "dumb practice" or "dumb theory" (Allan 2000 p.XVI-XVII). Rather, many contemporary theorists and practitioners would explore the unknown "intersection of architecture's inside and outside" (Allan op.cit. p. XIX) or landscape's outside and inside. The fact that this change might turn some of our notions inside-out has prompted others to suggest that the adoption of landscape themes within the architectural design could even be a "revolution" (Repishti 2008).

The phenomena we are interested in could be described as 'landscape as architecture' in which the building as interior and the landscape as exterior do not simply interact as figure-ground: The building is designed as an artificial landscape on its own. Landscape constitutes the interior. The landscape-to-architecture relation is, in these cases, turned inside-out. In some cases, this artificial landscape relates to the site through its shape, while in some others it depends on - or even opposes – the surroundings. As dealing with the site is essential to all landscape strategies, we will thoroughly investigate them under the analytical concept of ground form.

Landscape strategies in architecture define a new order in the relation between built and unbuilt space. The common feature of the selected cases in this thesis is not a new intensive relation to the landscape, but rather the fact that each design makes its own landscape as interior. These projects often leave behind certain other elements typical to architecture - walls or level floors, pitched or flat roofs for example - and replace them with hills, slopes, cliffs and other features and spatial phenomena borrowed from landscapes. Moreover, these projects generally integrate many or all aspects of a landscape design into a building: besides the manipulation of the ground, there are landscape spatial systems, imagery and materials referring to landscapes and less determination of how to use a space.

Despite the rhetoric of the modern avant-garde of the 1920s (Doesburg e.a. 1918, Corbusier 1923) the change in relation to landscape between classical and modern architecture was not quite so radical. Nor were the counter movements, preoccupied with architecture's own intertextual or cultural relations with postmodernism in the 1970s (Klotz 1988) or deconstructionism in the 1980s (Johnson and Wigley 1988) relating to the outside of the discipline. With exceptions to be discussed, landscape as a constituting element of the architecture, is seldom explored so intensely as from the 1990s onward. The big change was the actual integration of landscapes into actually built (or almost built) architecture. This phase has passed slightly, reflected on only by a few pamphlets or heroic academic disputes that modernism, postmodernism and deconstructionism have held with their manifestos.

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A building can be (and very often is) regarded as an object autonomous from its context. It is just such definitions of architecture that have been challenged by introducing landscape as a concept. Or more precisely: in challenging the object vs. context distinction in architecture, landscape was introduced.

I investigate design strategies that apply landscape architecture to buildings in order to formulate a 'practical theory'. It provides a new set of design tools for the challenges of human environmental design beyond disciplinary borders. This research attempts to establish the idea of landscape in architecture as the aesthetic mediator between nature and humankind.

A number of authors have expressed an increasing interest in the subject (see section 1.4.), but it is addressed from either an avant-garde opposition within architectural theory or from a rather cursory understanding of landscape, as the literature review (1.4) will reveal. In the course of this study it has become apparent that a more thorough understanding of landscape, and a better definition of the design strategies implicit to it, is urgently needed.

Even if neither architecture nor landscape can be fully covered in this thesis, it is necessary to clarify some common aspects. This clarification will focus on space and the human experience of space, which is the underlying common connection between architecture and landscape. I will explore and abstract the forms of landscape, their cultural meaning, and their aesthetic expression in order to illustrate how other aesthetic disciplines could apply them with regard to architecture. The design of landscape forms evoking space in experiential and measurable qualities is notated in a formal analysis. I will touch upon other scientific or practical aspects of landscape architecture - such as botanic and plant sociology, ecosystems, geology, hydrology or social and programmatic issues - even if they are less transferable between the two disciplines than spatial and design subjects.

The purpose of this interdisciplinary research is to enrich architectural theory and design practice with a broader theoretical understanding of landscape, transferring certain spatial concepts and design-related knowledge of landscape architecture into the discipline of architecture.

Buildings are designed like landscapes more frequently. One indicator is the increasing number of publications that have appeared on the subject since the turn of the century and the rich collection of architectural projects since the 1990s. An introduction to the most relevant literature here can expose the significant gaps for further study in the understanding of how those designs work. Later in this thesis I will propose a selection of three case studies, which should lead to a deeper understanding of the phenomenon.

1.4 Literature Review

In the decade that passed since the turn of the millennium a series of publications have appeared that noted the increase of landscape related design strategies as a phenomenon of contemporary architecture.

The literature reviewed in the following about the appearance of ‘landscape’ in ‘architecture’ forms a basis for further theoretical discussion. There has been a number of noteworthy publications on the subject but nothing really allows us to call this loose series of publications a coherent school of

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thought. Thus I have not treated the convergence of both subjects in the literature overview. The cross references between the handful of existing studies on this subject are very few. That makes it even more urgent for this subject to be studied in the form of a structured thesis here. Even in the literature on the same subject, none of the works cited below refer to any of the others.

1.4.1 Terratektur

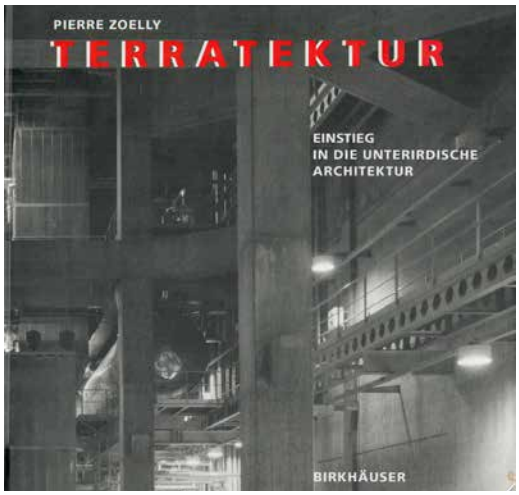


FIG. 1.4.1.1 Terratektur (Zoelly 1989 Cover)



FIG. 1.4.1.2. Land (Zoelly 1989 p.159)

The Swiss architect Pierre Zoelly's "Terratektur" provides one early example of a focus on landscape in architecture. In his illustrated book, "Einstieg in die unterirdische Architektur" (Zoelly 1989), Zoelly provides a wide source of the history of architectural and infrastructural subterranean buildings. This book is a more specific and systematic approach to the subject, especially in regard to the fact that most of the case study projects in this thesis are built after Zoelly's active period 1946-1997 (NZZ 6.1.2004). At the time this book was one of the few systematic approaches available to this emerging interest, focusing however on the specific connection of landscape and architecture in underground buildings.

Zoelly calls the landscape oriented architect a "terratect" ("Terratekt" Zoelly 1989 p.14)[2] and puts his interest in the context of the emerging environmental movement as the "Limits of Growth" of the Club of Rome (Meadows e.a. 1972). He openly addresses a feeling of guilt ("Schuldgefühl" Zoelly 1989 p.14)[3] that architects destroy nature - and proposes building without land use as an alternative to a ruthless growth of the modern city (Zoelly 1989 p.14). "Terratektur" provides as an introduction to a new way of thinking about design while also providing an argument for earth-related architecture as an approach to the erection of buildings above ground. Zoelly structures his argument in a series of chapters that treat spatial archetypes of terratecture with artistic, constructive and technical solutions in the sequence of geometry, grotto, apsis, structure, slope, tunnel, light, entry, courtyard and land[4] (Zoelly 1989 p. 7). The chosen examples are often

2 translated by the author

3 translated by the author

4 “Grotte, Apsis, Struktur, Hang, Tunnel, Licht, Eingang, Hof, Land” (Zoelly 1989 p. 7, transl.by the author)

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primitive forms of habitation alternative to the "cabane rurale" (Laugier 1753). In other cases they are infrastructural or garden constructions. In the most relevant chapter for us, "Land" (Zoelly 1989 p. 159 ff.), Zoelly refers mostly to works of artists and landscape architects (Christo, Michael Heizer, Richard Long, Isamo Noguchi and Ernst Cramer) and only one of his contemporary architects Emilio Ambasz for the Farm in Pembroke, Georgia. In the last chapter entitled "Projects", Zoelly selects some of his own works such as the Watch Museum in La Chaux de Fonds and the Red Cross Museum in Geneva. Zoelly himself reflects on the concluding collection of his own projects, "Relative to the randomness of commissions one can derive neither a logical continuity nor formal development" from his own subterranean buildings (Zoelly 1989 p. 172)[5]. The book remains a collection of fragments - deeply reflective but not critically revised.

Speaking pragmatically of a terratecture movement ("Terratekturbewegung" p.16)[6] and quoting contemporary and historic precedents, Zoelly was either a specialist or a visionary ahead of his time with his fascination. Zoelly's book is a collection of widely scattered examples of his subject from many cultural contexts and with a wide variety of purposes. His writing, design and documentation of precedents preceded the soon-to-be increasing number of buildings that use landscape concepts. Both the writing and architecture of Zoelly may now appear as an early precedent or preliminary sign of a later movement, increasing the integration of landscape into architecture.

1.4.2 Landscape Urbanism

The occurrence and discussion of 'landscape urbanism' covers roughly the same period of time since the 1990s that four of the five present studies investigate. The subject of 'landscape urbanism' and the subject of landscape strategies in architecture are quite different.

The term 'landscape urbanism' has been promoted by authors such as Mohsen Mostafavi (2003), James Corner (1999), Charles Waldheim (2002, 2006), and Chris Reed (2014) (see Nijhuis and Jauslin 2014). Counter positions or extensions have been discussed, like 'landscape infrastructures' with Pierre Belanger (2013, 2017). At the Architectural Association School of Architecture 'landscape urbanism' has become a dedicated program of study in the form of a master course or design studio, as in several other predominately English-speaking universities. Landscape urbanism might be best briefly introduced as a large scale design applying landscape design principles to urban design.

What landscape could contribute to architecture was much discussed in architecture schools and theory in the late 1990s under the term 'landscape urbanism'. This debate however turns around the larger scale of planning. The problem of disciplinary division into scales is reflected in the division of architecture and urbanism departments within a faculty, while only urbanism "focuses on the urban landscape as a scale continuum" (Nijhuis, Stolk, Hoekstra 2017). For landscape architects or garden designers, it is no surprise that landscapes can be represented in much smaller scales - multi-scalar work - and working 'through the scales' is everyday practice for most practising landscape architects, and consequently a part of any serious academic educational program (Vroom 2014).

5 "Entsprechend der Zufälligkeit der Aufträge kann daraus weder eine logische Kontinuität noch eine Formentwicklung abgeleitet werden" (Zoelly 1989 p. 172, transl. by the author).

6 translated by the author

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The tendency of 'landscape urbanism' could also be regarded as just 'a problem' (See the interview with Peter Eisenman in 2014, Appendix A1.3.1). However different the object of the research, more similarities lie in the broader scope of Landscape Urbanism and this thesis. Acknowledging that "Urbanisation has become a landscape-architectural design task" (Sijmons 2003 p.413) will further underline how the simultaneous change in urbanism and architecture, with both embracing landscape, is certainly relevant, because, as Charles Waldheim put it in "Landscape Urbanism":

"Landscape is a medium, it has been recalled by Corner, Allen, and others, uniquely capable of responding to temporal change, transformation, adaptation, and succession. These qualities recommend landscape as an analog to contemporary processes of urbanization and as a medium uniquely suited to the open-endedness, indeterminacy, and change demanded by contemporary urban conditions. As Allen puts it, "landscape is not only a formal model for urbanism today, but perhaps more importantly, a model for process."(Allen 2001 p.118-126)" (Waldheim 2006 p.36)

In terms of scale and process, urbanisation is always connected to landscape in one way or another. The very beginning of urban culture is connected to the beginning of agriculture - both indicating different ways of cultivating the land. Architecture deliberately detached itself from landscape, returning to it only occasionally or, as a larger movement, only recently.

1.4.3 Urban Surface, Field Condition, and Megaform

Even if we take the distance between architecture and landscape from the context of 'Landscape Urbanism', it is fair to quote a primer to this research in James Corner's collection of essays entitled 'Programming the Urban Surface' (Wall 1999 in Corner 1999). In 1999, Alex Wall identified a resurgent tendency in contemporary design: the carefully guarded disciplinary borders between architecture, landscape architecture and urbanism were becoming less relevant, evidenced in such cross-disciplinary schemes as OMA's and Bernard Tschumi's competition entries for the Parc de la Villette (1982-1998) (Wall 1999 p.237). This competition, one of the most landscape-oriented of Mitterrand's grand projects, was taken out of the hands of the landscape architecture establishment and given to Bernard Tschumi, an architect who introduced deconstructivist avant-garde architecture into the realm of the urban park, in Paris of all places that had long maintained the lineage of the baroque French Garden.

Wall also cites West 8's Schouwburgplein in Rotterdam (1991-1996) as an example of border-crossing in the opposite direction: a landscape architect designing a public space as an architectural interior, using materials common to industrial harbours, featuring staged lighting and a plinth-like detachment from the ground (Wall 1999 p.242). To Wall, the Yokohama Ferry terminal design was one of the most compelling examples in the tendency of architecture integrating landscape concepts and as such quoted by Wall as a beginning to a new set of transdisciplinary design objects that would not differentiate between urban, architectural and landscape designs of public spaces anymore in the future (Wall 1999 p.243-44).

In that same year, Stan Allen also wrote about the 'Field Condition', experimenting with crossing disciplinary borders in his own practice (Allen 1999 p.92-102). He follows Sanford Kwinter (1986) in defining space as a field of forces expressed in vectors and speed rather than matter or materials. Exploring different modes of compositional configuration in modern art and music, Allen deplores the lack of innovation in modern architecture (Allen 1999 p.101). While expanding the classical typological canon with new programs and building techniques, architecture is still preoccupied with functionally arranged spatial relations. Allen proposes "a more radical shift" (Allen 1999 p.101)

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and explains how "a library or museum today is concerned with an entirely new set of expectations" than an "orderly deposit of knowledge arranged in familiar and agreed-upon categories" (Allen 1999 p.102). In search of adequate design strategy for public buildings, Allen concludes: "Instead by forming the institution within a directed field condition, connected to the city or the landscape, a space is left for the tactical improvisations of future users. "Loose fit" is proposed between activity and enclosing envelope. ... The field condition implies an architecture that admits change, accident and improvisation. It is an architecture not invested in durability, stability, and certainty, but an architecture that leaves space for the uncertainty of the real." (Allen 1999 p.102)

Allen as a practitioner, theorist and educator would continue his interest in landscape, especially in his collaboration with landscape architect James Corner in 'Field Operations'. More than a decade after the 'field condition', Allen published one of the more comprehensive monographs of precedent literature for this study, 'Landform Buildings' (2011, see chapter 1.4.7.).

In 'Landform Buildings' Allen also includes the term Megaform and a revised publication of the lecture 'Megaform ...' from the same year (1999) by Kenneth Frampton. Frampton was inspired by Vittorio Gregotti (2010) and Fumihiko Maki (1965) to coin the term 'megaform' to describe a new architectural typology, citing a whole list of representative projects including again the Yokohama Ferry Terminal by Foreign Office Architects (1995-2002) (Frampton 1999, 2011, also Wall 1999).

Also in 1999, one of the last issues of the architecture journal Daidalos entitled 'Architecture goes Landscape', featured a series of project critiques with another of our authors (Ruby 1999 p.88) and a disciplinary discourse on Infrastructure, Architecture, and Landscape that compares the critical 'discovery' of Land Art in Rosalind Krauss' 'Sculpture in the Expanded Field' (Krauss 1979) to Rem Koolhaas critical stances on the 'End of Urbanism' summarised in his SMLXL (Koolhaas 1995). In this emerging debate by the turn of the century, the subject of landscape became apparent in the architectural discourse. But that discourse was yet too fragmented to become a theoretical foundation. 'Landscape' in architecture remains diffuse, besides a common association (and confusion) with the emerging tendencies in the architecture of buildings with the other subjects of 'landscape urbanism'.

It was however obvious in many projects that landscape would become a major subject in architectural design. Around the turn of the century the subject of integrating architecture and landscape architecture became widely supported in some practises and was more often shown by built works and theories derived from them than by a theoretical foundation prior to the work, as I will further show in the literature review.

While more architectural projects involving landscape emerged, five critical studies dealt with such projects as new interdisciplinary phenomena in a single decade between 2001 and 2011. Apparently while the tendency emerged in the 1990s, only after the turn of the century, the time was ripe to write overviews about the subject. This led to a small selection of publications, that can be introduced here more in detail.

The following five books in some way discuss similar topics (Betsky 2002; Leatherbarrow 2004; Ruby and Ruby 2006; Allen and McQude 2011, Balmori and Sanders 2011). A comparative literature review on the subject should identify gaps and lead to a solid basis for our study of landscape strategies in architecture. For the five books, I will briefly introduce each author's approach to the subject and construct this study in relation to them. The books either historiographically document or theoretically explain and illustrate similar phenomena. They do not only explain the relationship between landscape and architecture in architectural projects but also describe the immersion of landscape-related concepts into the core of the spatial conception of architectural designs. Each share a similar subject, but employ different methodologies for analysis.

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1.4.4 Landscrapers

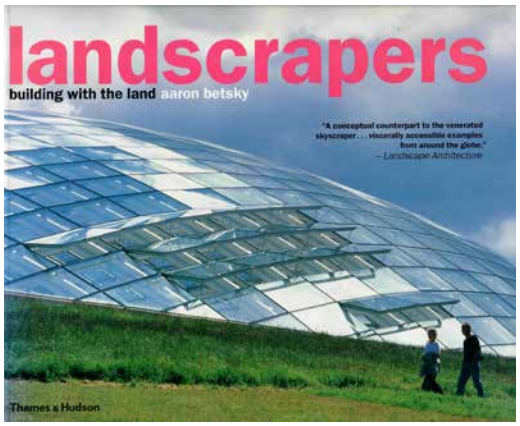


FIG. 1.4.4.1 Landscapers (Betsky 2002 Cover)

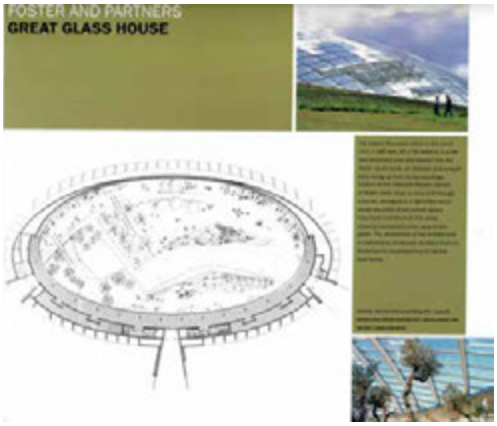


FIG. 1.4.4.2 Engineered Utopia (Betsky 2002 p.33)

The first monograph was written by the architectural historian, theorist and educator Aaron Betsky, while director of the Netherlands Architecture Institute (NAI) in Rotterdam. Betsky includes many of the architects involved in the Dutch context.

"Landscrapers: Building with the Land" (Betsky 2002) gives a wide range of examples in rich illustrations and straightforward categorisation. Still many of them are more concerned with the interaction of landscape with architecture than about landscape forms integrated into the building. The book is mainly a project catalogue, organised in four parts, each portraying 12 to 15 projects by mostly well known architects. The categories - Engineered Utopias, Caves and Caverns, Unfolding the Land and A New Nature - suggest a kind of evolution or progression from a play of distanced disciplines (engineering - earthwork, (Betsky p.16) to a total merging and integration of 'the natural with the human' (Betsky p.136).

This juxtaposition (and even the 'synthesis') is one of the rather traditional contextual dialectics between object and landscape. The book does not concentrate on the immersion of landscapes into buildings; rather, it gives a wide overview on a variation of landscape related concepts. As two others (Allen McQuade 2011 and Balmori Sanders 2011) that I will mention in this literature review, Betsky's book shows the general problem in this type of catalogue collection publication in that there is little critical depth as the included authors tend to just propagate projects and support their own bias regarding the subject.

Betsky proposes landscrapers as alternative to skyscrapers. He borrows the term from the architect Antoine Pedrock, the architect of the American Heritage Centre and Art Museum in Laramie, Wyoming USA 1986-93 (p.128). For an art critic, Betsky's argumentation for landscrapers is moralistic rather than aesthetic. He introduces the subject with a text "Buildings replace the land. That is architecture's original sin" (p.5.) ending with "These landscrapers give us back the land and architecture. By making us aware of the ground we inhabit, we can regain a sense of the reality of place in a culture that is more and more dependent on the abstraction engendered by the mass production of real and virtual spaces, (...)" (p.192).

The argument of this book relies heavily on the idea as a counter concept to architecture as sinful, male, object-fixated, erect, disconnected from the ground and defencive. Betsky thus refers to counter qualities such as environmentally conscious, female, organic, immersed, connected to

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the earth. In an avant-gardist tones he even compares architectural practice to the guerrilla tactics of Maoists in The Long March. No doubt the philosophical references to the Situationists and to Post-Structuralist French Philosophy and to readings of 'obscure' (p.9) texts of Heidegger could be proven with more research. They have a certain relevance inside an increasing fashion among certain architecture theorists and practitioners to augment their works with such quotes. However, this mode of theoretical argument with the sheer mass and impressiveness of multitudes of examples from 'established' architects leaves little space for critical reflection. Landscrapers tells us about architecture that deals with the landscape 'differently'. Anything 'else' is bad and that all 'landscrapers' are good, beautiful, and nice to look at. Potentially they form an alternatively designed better world, repeating the mantra of modernist architecture with a 'better alternative' in a moralistic tone. Betsky's argument, in my view, posits that, with opposite means from the modernist architecture, landscapers could fulfill the same promise. Even if glossy and loud, the argument remains shallow – unproven by deeper research than placing a few plans and images per project and categorising it for the sake of the argumentation. This book offers little new knowledge about the workings, structure, and composition of the featured projects, with no mention of shortcomings, failures and mistakes of landscrapers. Too many cases in the book are represented simply by images and in general lack analytical drawings and straightforward critical text. Perhaps most importantly, the reflections on the featured designs in regard to their specific context, how they have become what they are and what the methods employed are remain obscure.

1.4.5 Topographical Stories

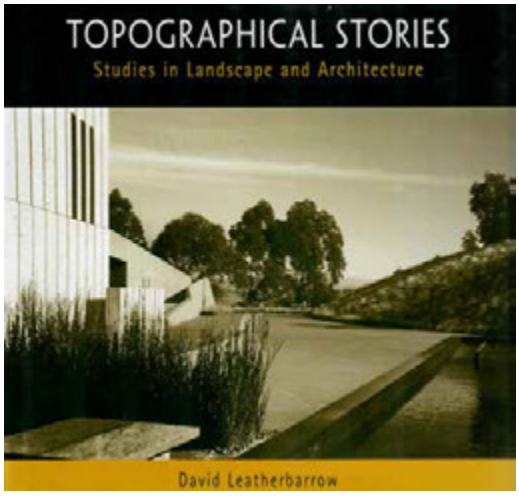


FIG. 1.4.5.1 Topgraphical Stories (Leatherbarrow 2004)

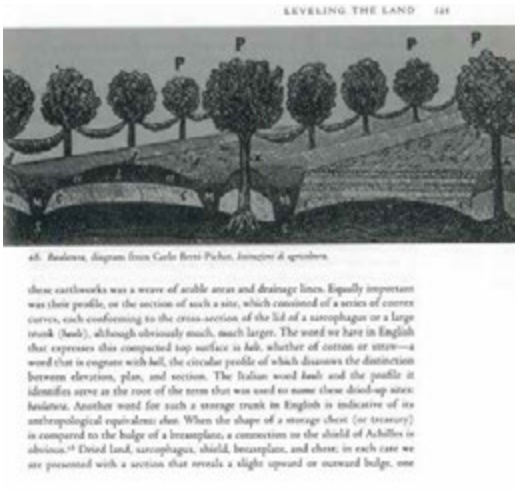


FIG. 1.4.5.2 Leveling the Land (Leatherbarrow 2004 p.123)

Topographical Stories, Studies in Landscape and Architecture (Leatherbarrow 2004) circles around many essential concepts of architecture and landscape in, but without the drawn-out evidence of a compositional scheme for any of the designs. The text is more an art criticism to explain architecture and landscape to contribute to 'everyday existence' (p. 16) than it is a substantive comparative analysis of the workings of architecture or landscape designs.

It is fair to say however Leatherbarrow's inspires and motivates this thesis. My initial thesis proposal could be a test of the theoretical framework of Leatherbarrow applied to other books available then, namely Betsky & Ruby and on some projects they mentioned. Leatherbarrow sets the tone and asks the questions we would ask in our case studies but ultimately makes different choices and gives different answers.

It is rather puzzling that Leatherbarrow provides the most clearly structured thoughts in the least systematically structured book. Formally "Topographical Stories" is a collection of 7 essays about different projects or authors ranging from buildings to gardens with an introduction and conclusion. The selection of the projects discussed differs completely from the other books covered in this literature review. Leatherbarrow does not select projects with a lot of media attention. Rather, he more carefully, but also less systematically, picks exotic examples. He draws each chapter from his previously published articles in journals, his own PhD thesis, or his lectures. As he worked steadily on the convergence of architecture and landscape between 1984 and 2004, Leatherbarrow could be easily called one of the experts in the field. Leatherbarrow subtly connects each essay with the newly introduced use of the word 'topography', adding a bridging narrative between chapters.

Leatherbarrow introduces 'topography' to draw a parallel between architecture and landscape. The word is usually a technical term to describe a drawing of heights in grading, land measuring and cartography and is often used more generally as a description of the shape of a landscape. Leatherbarrow understands topography as a linkage between two disciplines but much beyond a common denominator. Briefly but clearly he analyses the debates which propose that landscape architecture and architecture are either just all the same, or in fact entirely different. He explains this crucial term in the very beginning of the introduction:

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“Not really the same, nor entirely different, landscape and architecture are simply similar to each other. Topography is the topic (theme, framework, place) they hold in common” (Leatherbarrow 2004 p. 1).

This similarity is discussed as a qualitative feature to a series of projects. The examples develop the context relation of each discipline. Leatherbarrow develops his own critical position that opens possibilities of thought to design in the consecutive chapters. Finally he establishes topography as a high means of artistic articulation. He develops similar criteria for the tasks of a design in the context of nature – either a landscape or a building -that each discipline is at its best in the vicinity of the other. Topography describes the condition of both landscape and architecture in its actual existence as “inescapably ambient” (p. 12).

Leatherbarrow’s “concern with landscape and architecture has been to see one as if it were the other, making no claim that either indeed is” (p. 14). I still miss a systematically drawn analysis of projects to reveal the inner mechanics of composition, which is actually missing throughout all of the existing literature. Leatherbarrow’s book shows projects are illustrated in few photographs or plans of the projects; intentions sometimes quoted from the authors; and sometimes derived from the appearance by the interpreting critic Leatherbarrow himself.

Leatherbarrow’s thoughts about design of architecture and landscape beyond building and nature are not yet re-translated into the means and techniques of composition, nor presented in drawings. Instead, he offers his thoughts in order to inspire professional practice and design education

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1.4.6 Groundscapes

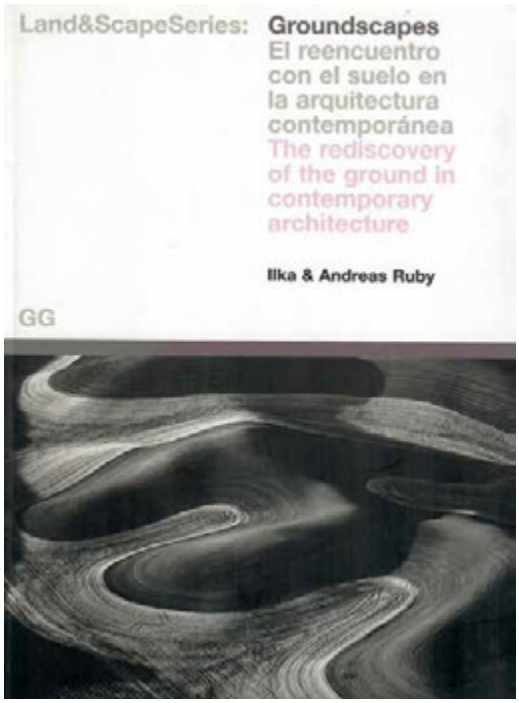


FIG. 1.4.6.1 Groundscapes (Ruby and Ruby 2006)



FIG. 1.4.6.2 OMA Jussieu (Ruby and Ruby 2006 p.27)

"Groundscapes: The Rediscovery of the Ground in Contemporary Architecture" (Ruby and Ruby 2006) gives a very clear introduction to the abundance and reintegration of topographical ground into architecture. The book belongs to a series that involves 'landscape in the widest sense of the word' (Colafranceschi, Editor of Ruby and Ruby 2006 on the back cover).

Groundscapes is the only volume of this series wholly dedicated to only buildings. It is a good catalogue with dozens of examples for a dozen categories of ground shapes, which are carefully selected, but still too briefly introduced to delve into them more intensely.

The explanatory argument also has shortcomings. The authors introduce groundscape as counteracting modernist architecture that was disconnected from the ground by Le Corbusier and abstracted from nature by Mies van der Rohe. They cite few exceptions throughout the history of modern architecture and then attempt to bring forward as much evidence as possible. In this they remain undifferentiated and suggest a relationship that is questionable and offers little other than a polemic.

The descriptive texts lack comprehensive overview or argument. The short introduction treats a number of key projects and positions - including OMA and Eisenman - as a counter concept to the mainstream modern architecture practice in a similar manner as Betsky. The subject is then organised by project that breaks the ground into nine categories: "Lifted off the ground, Embedded in the ground, Raised ..., Stacked ..., Inflated ..., Vectorial ..., Carved..., Exposed ... and Inscribed Ground" (op. cit. p.7).

This typology of what we will call "ground form" later in our study treats the possibilities of architectural expression with its relation to topography or landscape. Each type is introduced with an introduction that - in the best architectural avant-garde manner - makes us believe the societal

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and art historical reasoning for such phenomena. But the introductions are off the subject and each project is propagated for the sake of its own relevance.

This book follows a fast pace ranging from a garden (Dominique Perrault's TGB Paris 1989–1995) to a landscape architecture scale (West 8's Oosterschelde storm surge barrier in Zeeland 1990). However there is little critique, comparison or analysis to make this book a substantive study of the subject. That said, for such a concise and small book, it is notable that the selection of 50 projects is treated in one or two pages each with a wide variety of novel possibilities of architecture relating to landscape in an innovative manner.

For a period of five years since 2008 Leatherbarrow, Betsky and Ruby & Ruby where the only authors (to my knowledge) who had treated and attempted to theorise architecture that relates to landscapes in (partial) overviews, several journal titles and articles around the turn of the century.

Most of these journal titles and articles relate to day-to-day architectural journalism and as such may not offer much ground to this thesis. A notable example of such a publication, that would possibly foster a theoretical discourse is issue 135 of the Italian Architectural periodical Lotus, titled "Green Architecture Beyond the Metaphor" (Rephisti 2008, p. 34–41). It is dedicated to the topic at hand with a good introduction by Francesco Repishti.

When this thesis began, the subject was almost untreated. Only later – about halfway through this study – two new titles (Allen and McQuade 2011 and Balmori Sanders 2011) discuss the relation between architecture and landscape as an interdisciplinary task. While partially referring to tradition and recent developments in landscape architecture or landscape urbanism, the primary focus of these new books was built structures. I discussed them in a journal review 'Landscape is irresistible for Architects' (Jauslin 2013) from which I draw the following reviews.

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1.4.7 Landform Building



FIG. 1.4.7.1 Landform Buidling (Allen and McQuade 2011)



largest number of individual pieces that we had handled so far. There are other projects that are more challenging in terms of the complexity of a single piece, like Shigeru Ban's Centre Pompidou in Metz. There we helped the timber contractor generate the 3-D model of all components. There are only 1,800 pieces, but each element is much more complex.

MM: You have a degree in computer science, but it seems like you've known for a while now that you want to collaborate with architects and work within architecture and design.

FS: I studied computer science at the Technical University in Munich with a minor in architecture—a rather strange combination, but we were required to do a minor when majoring in computer science. There were some standard options, like electrical engineering, which I tried first, but it took me only three weeks to realize that that was not for me. I was always

PROCESS
FABIAN SCHEURER / MARC McQUADE
ORGANIZE/OPTIMIZE/SIMPLIFY/MATERIALIZE
415

FIG. 1.4.7.2 Process (Allen and McQuade 2011 p.415)

The most ambitious book project of all discussed here is "Landform Building: Architecture's New Terrain" (Allen and McQuade 2011). It is richer and wider in scope than any others. The book covers many blind spots of the previous ones. This is certainly a conscious move within the literature, although apart form Betsky's, it refers to none of the other books. Landform Building provides a wide theoretical field, introducing many authors and standpoints, including debates and interviews with textual as well as visual essays. However, the authors' attempt to introduce a landform genealogy remains rather rudimentary. The open text structure faithful to Allen's previous established term of the Field Condition (Allen 1999, see section 1.4.3.) serves as both a textual and designed approach to architecture beyond pure object design. Apart from implicit openness to the propagation of the discipline of architecture, the authors do not reveal their intentions very clearly. Even though important references are made to actual landscape experience, they remain anecdotal about the cherished essayists from within the architectural profession. Landform Building features for example two very relevant reprints of earlier writings (Banham 1982; Frampton 1999) and many other observations on the subject of landscape. But the term landscape remains vague and mostly is not discussed in detail.

Landform Building repositions 'conventional understandings of object and field – architecture and landscape – within the new domain of contemporary ecological theories' (Allen 2011 p. 31). This central claim lacks a conclusive argument - it does not assume one and therefore is more of a motivation for further research than a summary of an existing one. In fact the book refuses to take a position in a clear way other than propagating a "different" way of dealing with architecture and landscape.

The book starts loosely with a quote on the dissolution of two urban typologies - park and skyscraper - by Iñaki Ábalos. This is followed by picture essays of stepped building volumes and an introduction by Stan Allen - it ends in a landform genealogy of 78 projects that seems unfinished

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or at least left deliberately vague and literally blunt in print. Between the open beginning and open ending we find four sections that contain essays and projects grouped around four subjects: Form, Scale, Atmosphere and Process. Each section starts with an introduction by Allen, shows a series of architectural projects, and closes with a more historiographical essay by contributing authors who give substance to Landform Building's collection of projects. But again the applied categories are rather loose and seem incomplete.

Among a collection of essays in Landform Building, a highlight is the actualisation of Kenneth Frampton's essay Megaform as urban landscape based on his lecture at the University of Michigan in 1999. While citing Vittorio Gregotti and Fumihiko Maki (mentioned earlier in 1.4.3.) as sources is still valuable for the current discussion, one misses such links into architectural theory for the rest of book. Landform Building is an 'original' resulting in this autonomy from other architectural theory. In a brief statement in the centre, Stan Allen explains for example how he was motivated to recapture certain aspects of Landscape Urbanism as specifically architectural (p. 250). No doubt his earlier essays, such as Field Conditions (1999), have been very influential for the whole discussion of Landscape in Architecture. It is good to 'trust in the compact power of specific building proposals to absorb and transform the new potentials of landscapes' (Allen 2011 p.34). The narrower scope certainly allows more depth in Landform Building. The approach separates theoretical positions that tend to get blurred especially around the term 'landscape urbanism'. But sometimes a clear 'yes' or 'no' to others' hypotheses (with reference to their names) would help the reader in placing Landform Building in a wider academic context.

The book often repeats the importance of its own subject, and gives valuable ideas and techniques. With sometimes rather rhetorical defense of the concept of 'landform building' the authors seem to further mystify landscape or landform rather than explaining to its readers its workings in buildings.

Again we miss any kind of analytical drawing – precedents are collected and illustrated with a few architectural photographs and with drawings by the architects. The book proves the actuality of our subject – it takes a position in propagating landscape as a subject relevant for architecture – but does not provide a conclusive argument for it. Landform Building does appeal, but it does not yet fulfil the task of this thesis in order to more deeply understand the workings of designs of architecture with landscape methods.

1.4.8 Groundwork

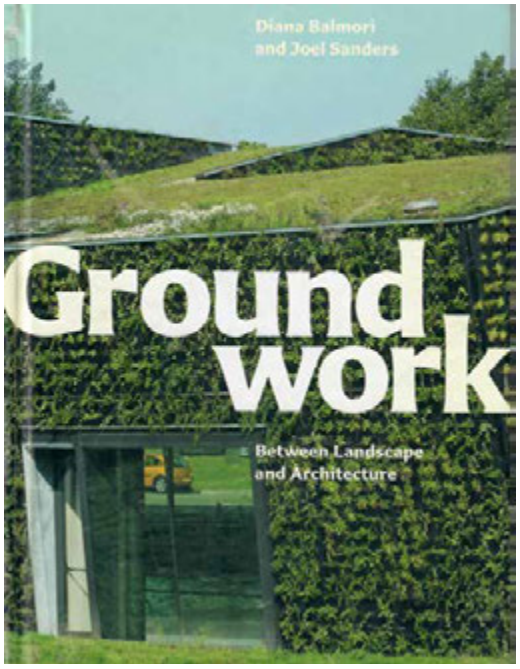


FIG. 1.4.8.1 Groundwork (Balmori and Sanders 2011)



FIG. 1.4.8.2 City of Culture (Balmori Sanders 2011 p.68)

"Groundwork" (Balmori and Sanders 2011) is another study of the interdisciplinary relationship of landscape architecture and architecture - again through a collection of projects. Moreover it is a pamphlet of practitioners from either side – landscape and architecture – against the divide of the disciplines. In making this interdisciplinary learning process clear and transparent in Groundwork, it is helpful that Balmori and Sanders write separate articles in replying to each other. Architect Sanders and landscape architect Balmori approach the field from two sides intellectually and literally interconnect architecture and landscape across the division between nature and culture. After the initial essays, Groundwork jumps into three sections - Topography, Ecology and Bio-computation. The three sections are about landscape form, landscape as a system and the making of landscape. The three chosen categories also imply a development in scale: from large and geological, through multi scalar and system-oriented to small and concerned with materiality. Moreover, the three chapters are grouped around three consecutive moments when certain subjects and technologies emerge - Topography the age old concern, Ecology rising as a movement and concern for some designers from the 1960s on, and (Bio-)Computation technologies becoming available for innovative designers from the 1990s on.

In the individual sections, the commentary by the authors on each design is not very clear. Rather, Groundwork reveals itself to be another catalogue of 25 projects. The choices of projects concentrate on more recent works from stars like Hadid and Eisenman to more experimental practitioners like R&Sie and Philippe Rahm and even to unbuilt projects like the Yeosu Oceanic Expo 2012 Pavillion by Emergent & Kokkugia. Brief historical introductions and explanatory texts accompany large and beautiful pictures. Critique of single projects is almost nonexistent, which leaves the connection between each subject open to the reader. Groundwork includes a wider spectrum of programs than Landform Building, like a playground by SLA in Nørresundy, the Seattle Olympic Sculpture Park, which is explicitly excluded by Allen as 'landscape urbanism' (Allen McQuade 2011 p. 28) or Atelier Girot's Sigirino Depot of tunnel excavations for Alp Transit

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Gotthard. Groundworks wants to cover the connection between two disciplines, but again not much explanation is given for the selection criteria.

In a thought process comparable to Leatherbarrow's, the emphasis here is on the tangible example and replicable strategy useful to the design practitioner, as opposed to critical reflection. Balmori and Sanders - both writers, educators and practitioners - clearly state their mission to 'overcome the false dichotomy between landscape and architecture' (p. 8). Their goal - identified in each project - is to create architecture that is both more friendly to humans and their environment: 'the awareness of the environment as a complex system puts architecture and landscape on equivalent terms and will encourage practitioners to create designs that approach the efficiency and performance standards of a living being.' (p. 11).

The authors unmask precedents and movements of the 19th and 20th centuries of both extreme modernist functionalists and extreme natural fundamentalists in well tempered critiques. For this they chose a dramaturgy of writing: First the (male) architect Sanders describes nature and landscape architecture (including a review of the rather obscure movement of 'ecofeminism') . Then the (female) Landscape Architect Balmori describes technology and architecture (luckily leaving out any more gender discourse).

Sanders' essay "Human/Nature: Wilderness and the Landscape/Architecture Divide" (p. 12-33) identifies the obsession with American wilderness in both popular American culture and landscape architecture's position as an emerging profession in the late 19th and the 20th century in the US. He identifies two fundamental issues that led to a division of both disciplines from the side of landscape architecture.

The first dividing force is the idealisation of "good", "natural" landscape against the evils of the "bad", "human" city. The latter is attributed to the influential figures of Frederic Law Olmsted (1822-1903) and Ian McHarg (1920-2001) representing each a historic wave of the "good" in the 1890s and 1960s.

The other dividing force is an attempt at establishing a technological and scientific basis for landscape architecture. The attempt to place landscape architecture in the modern movement, according to Sanders, is stemming from an "inferiority complex" (p.22) of modernist landscape architects vis-a-vis their modernist architect colleagues. Meanwhile "modern" landscape architects like Garret Eckbo (1910-2000), James Rose (1913-1991) Thomas Church (1902-1973) and Lawrence Halprin (1916-2009) of the "loosely defined" (p. 23) California School struggle between art and commerce, marginalised by their successful object-building designing colleagues. Sanders notes throughout - despite many successful individual designs - how examples of landscape architecture become pushed away into ornamental practice or an instrumentalised reparation of problems caused by urbanisation. This accounts for the divide that is mirrored in the development of two separated design disciplines of architecture and landscape with separate licensing procedures in the US - just as in Europe where the two professions are separated by legal regulation of practice as well as education.

In her essay "Across the Divide: Between Nature and Culture" (p. 34 – 45) Balmori switches into the mirrored disciplinary perspective of the Landscape Architect reviewing Architecture movements. From her perspective the introduction - and the whole book 'Groundscapes' - is a pamphlet against the sharp division of two disciplines. This division is again (like in Ruby 2006 p.9) attributed to modernist architects Le Corbusier (1887-1966) and Ludwig Mies van der Rohe (1886-1969) with modern architecture's 'colossal and brutal disconnection' from nature (p. 35). Balmori uses a long storyline of nature-oriented thinkers and architects starting from antiquity - with the ever

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changing interpretation and decodings of Nature: “a word considered the most complex in the English language. Our vision and ideas about nature changed and will change. So will the relation between architecture and landscape not be a stable separation but a living relationship.” (Balmori p. 34). Balmori uses the metaphor of ‘a thick line’ “to represent the interface between architecture and landscape: a tangible spatial unit between a building and its surroundings, a line that is wide and varied and that changes thickness and intensity, vanishing at times and densifying at others” (Balmori p. 34).

1.4.9 Conclusion to Literature Review

Even though a substantial number of titles explores the subject of landscape in architecture, there seems to be a gap that this thesis hopes to fill. This gap in part concerns the research methods of the authors and the depth in the approach to individual architectural projects' design methods.

In regard to methods of designing, architecture and landscape certainly need a theoretical discourse. This discourse was addressed by several publications in the past two decades. But other than theoretical discourse, designers should also use their own means of analysis and composition, for example by drawing. The importance of landscape for architecture appears compelling, but no clear analytical position has been taken by any literature so far.

All above mentioned books at the time of each publication were up to date with the interdisciplinary development in the evolving relationship between architecture and landscape. But mainly the questions about possibilities of landscape for other architectural designers as well as about the impact of such a changed relationship to landscape remain unanswered for architecture.

With different priorities regarding either documentation or theory, the body of literature we have reviewed so far, however valuable as individual parts, misses one specific point: it does not analyse the projects beyond documentation. It documents and theorises results but does not reconstruct or redesign the compositional strategies of any project. Without such an analytical approach it is hard to really understand how each of the designs works. Except for Leatherbarrow's detailed textual critique, the few critical positions remain a reproduction of the designers' own intentions. This may diminish the otherwise positive aspects of completeness and quality in the projects chosen, however arbitrary the selection criteria. The five monographs discussed before (sections 1.4.4. - 1.4.8.) give a wide overview ranging from a large number of examples (Ruby & Allen) to an elaborate tour d'horizon on the different aspects of the subject matter (Leatherbarrow).

Most of the international projects treated in this thesis have been already addressed in the literature. I will focus on the approach to 'architecture with landscape -design- methods'. These missing design analyses will be elaborated in drawings and composition principles in this thesis. I will discuss explicit or implicit design decisions and their interrelations - involving also the design architects into the discussion of their work.

Besides thorough analyses of the built cases of architecture, the studies mentioned above miss another essential feature: What landscape and its design approaches actually entail. The idea of landscape is in itself complex (section 2.1.), and has been understood in many different ways by landscape architects (section 2.2.). However the above mentioned literature loses sight of the development to the architectural discipline in regard to the understanding of landscape. I will attempt to work on such understanding in the following chapters and evaluate examples on these new grounds.

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Most aforementioned authors try to avoid the landscape aspect found in recent architecture simply as a matter of 'formal' questions. Mirko Zardini suggests "Landscape is irresistible" (Zardini in Allen 2011 p.61) to architects, as opposed to architecture that is just "hard, opinionated and typically fragmented" (Zardini 2011 p.61). Departing from Zardini I propose that Landscape or architecture should be irresistible for their form above all other aspects.

The core question we address in this thesis - **In what way do landscape design strategies change how we understand and create architecture?** - is avoided in existing literature even more than the discussion of form. Even if landscapes may evoke a utopian vision, architecture seems captivated by its own internal discussions, even within the recent theoretical discourse on landscape. A more concentrated analysis of landscape methods should extend further than the existing literature - that is rather using masses of evidence then depth of understanding. In order to fill such a lack of discussion on the potential of landscape with wider social or ethical ramifications, my critical reviews will elaborate on both the formal analysis and the contemporary relevance of the projects to society, and the crucial question of the meaning of landscape strategies in architecture to society in general.

1.5 Methodology

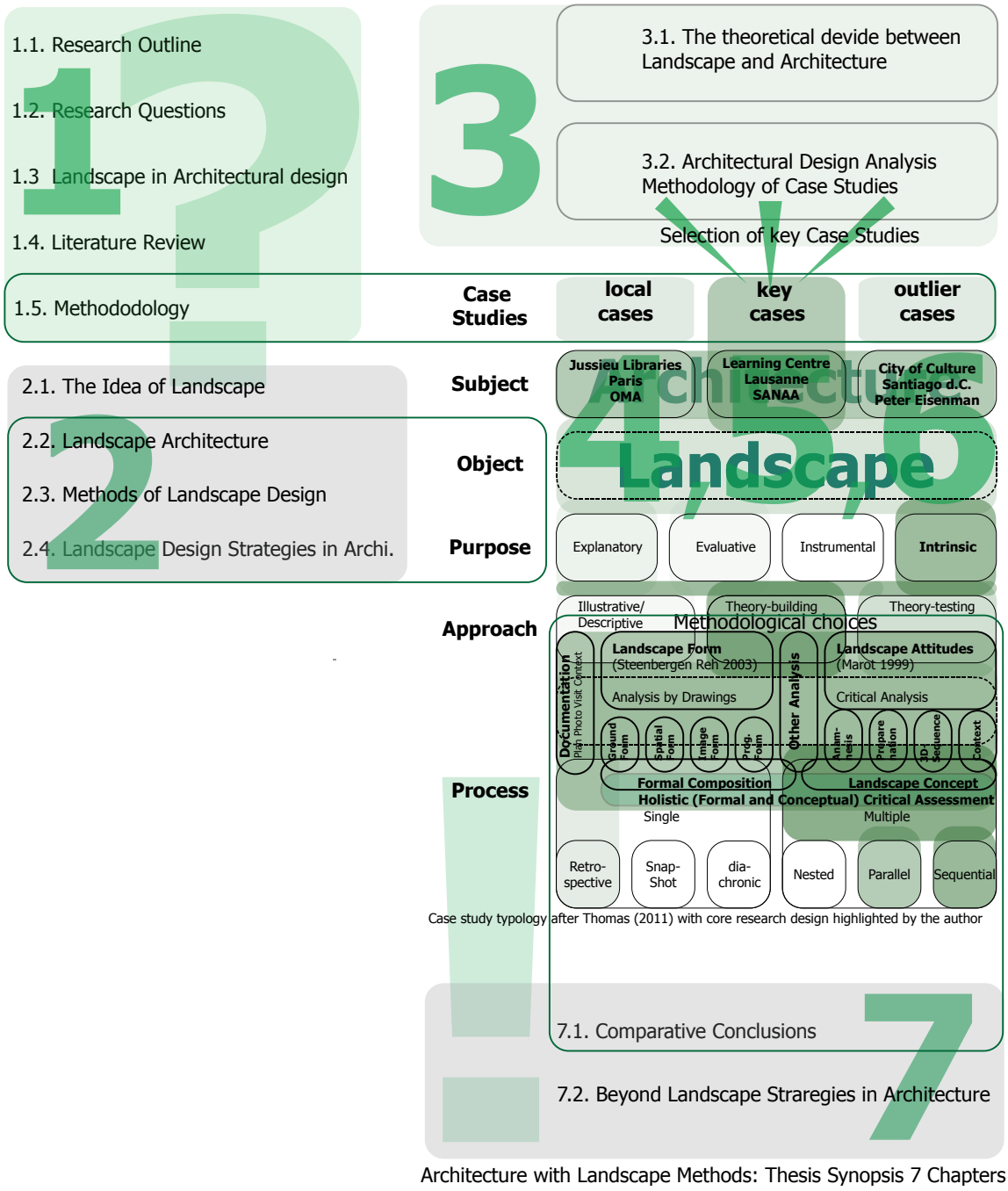
1.5.1 Theoretical and Historical Framework.

In Chapters two and three this thesis explores landscape and its meaning for architecture theory and history. The study should conclude in a practical theory about the role of landscape as a concept in architectural design. The target should be to clarify the amplitude, variety, and reach of landscape strategies in architectural design. The research should clarify if such strategies exist, and what they would change in the discipline of architecture now and in the future. That is one side of the theory: deriving landscape strategies from the reading of architectural design strategies.

Practical theory means that - unlike an inductive method in natural sciences - the theory will not be a set of infallible theorems but in itself a construct of possible interpretation, abduction from single cases and their interrelated comparison. Instead of the Greek word 'theory' - a system of ideas intended to explain all architecture - the bilingual 'practical theory' could better be explained as 'phronesis' - a type of wisdom relevant to practical things - proposed as a philosophical method in Aristotle's Nicomachean Ethics (as discussed in the context of space in Havik 2012 p.107 and Soja 2006 or in the context of case studies in social science in Flyberg 2001; Thomas 2011 p.214). Another 'expression for such tacit knowledge' is explained by Kuhn in The Structure of Scientific Revolutions as "knowledge that is acquired through practice and cannot be articulated explicitly" (Kuhn 1970 p. 44)

The usefulness of tacit knowledge is discussed in the context of Landscape Architecture by Johann Meeus (Meuss 1984 P.84) or more specifically in case studies of design in 'Harbourscapes' by Lisa Diedrich (Diedrich 2012). To make this explicit as 'landscape strategies' we articulate a 'practical theory' that is so far unmentioned or idealised. One of our theoretical tools is design critique.

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Architecture with Landscape Methods: Thesis Synopsis 7 Chapters

FIG. 1.5.1 Landscape Stretegies in Architecture: Thesis Synopsis, Numbers referring to 7 Capters

The usefulness of tacit knowledge is discussed in the context of Landscape Architecture by Johann Meeus (Meuss 1984 P.84) or more specifically in case studies of design in 'Harbourscapes' by Lisa Diedrich (Diedrich 2012). To make this explicit as 'landscape strategies' we articulate a 'practical theory' that is so far unmentioned or idealised. One of our theoretical tools is design critique (ontwerpkritiek, Meuss 1984) in the sense that Johann Meuss called "the articulation of the withheld design theory"[7] (Meuss 1984 proposition 3).

7 Ontwerpkritiek ... (dient te zijn) ... articulatie van de verzwegen ontwerptheorie. Meuss 1984 proposition 3)

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Essentially the discussion of landscape in architecture is one about space in its experiential dimension and in its design composition. These dimensions of space can only be explored with practical knowledge, and are not useful for a 'general theory of landscape in architecture' but rather a 'practical guide for landscape in architecture'.

The theoretical idea introduced in chapter two however, is a more general theory of landscape in architecture. The implications of landscape as spatial phenomenon are not an easy subject. Mostly (and particularly in the context of design teaching and critique) the physical appearance of landscape as an environment or form is confused with its significance as a category of thought as a concept or idea. The focus in this thesis must be the experiential qualities of the landscape space as a specific kind of designed architectural space. Human space interaction is the focus and common ground of two disciplines that have always learnt from each other and are promising to reach a fruitful phase in their intertwining history. To experience landscape is not a physiological given but an intellectual performance. That experience can be generated by design of landscapes and architecture.

The path to follow lies in the interaction of the two investigations. The 'practical theory' of landscape experience comes from studying the built example, which will enhance theoretical insights. Inversely the sharper theoretical argument will make designers better understand landscape thinking as a guideline to design.

In chapter two I will build a theoretical framework of landscape for this thesis. The "invention" of landscape at the beginning of the Renaissance can be identified with the beginning of humanism (Brock 1977 after Burckhardt 1860), and landscape is looked at as driving force of selected projects' architectural creation. If this study should contribute a new piece to architectural theory as much as it would to landscape architectural theory and to their approach to one another, chapter two needs to frame the questions in the realm of theoretical ideas. The aesthetics of landscape are explored here with an emphasis on the human perspective. The purpose of this framework is to define the concepts of landscape for their use in analysis and critique of architecture in the core case studies.

Chapter three investigates the positioning of landscape in architecture theory. In the first part I discuss historical theories of architecture in regard to landscapes. The collection of crucial episodes does not claim to give a full historiographic overview but rather to theoretically explore the relationship of architecture and landscape with a handful of important examples. The sources vary in original language and cultural context; as a consequence 'nature' and 'landscape' are often less distinguished than I would prefer. The discussion of historic theories of architecture reveals, among other problems, how the idea of emancipation of human from nature through architecture could dominate the development of our discipline for several centuries.

Architecture theory itself often uses precedent cases to illustrate ideas. Consequently I also introduce the methods of design analysis in chapter three which I will further refine for my own study of three key cases of Landscape Strategies in Architecture.

1.5.2 Study of Three Key Cases

The introductory chapters use varied methodologies to build a theoretical frame and develop the main methodology. Crucial for this thesis is this main methodology of specific case studies: Three selected cases in chapters four, five and six are for the first time conclusively studied here

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in their application of landscape design strategies. The two Libraries of Jussieu Paris by OMA 1992-93 (Ch. 4), The Rolex Learning Centre EPF Lausanne by SANAA 2004-2010 (Ch. 5) and the City of Culture of Galicia Santiago de Compostela by Peter Eisenman 1999 (Ch. 6). A following theoretical study that compliments these experiments should reveal that to experience landscape is not a physiological given but an intellectual performance, an interaction that demonstrates that experiences are generated through the design of landscapes and architecture.

Our three cases have not been defined a priori nor randomly selected. As such they are not representative samples. An accountable sampling approach that identified landscape examples from the entire library of architecture would not reveal much about the qualities of landscape design strategies. Instead, the arguments here are built around the specific case studies analysed. To better understand the subject-object relationship, we first look to several pieces of literature to define what is missing and then we look into our cases through those various lenses of analysis. The whole of the thesis is built around these cases, enveloping it in several layers.

The subject this entire study is Architecture, more precisely designed public buildings that are built (or should have been built with the exception of Jussieu). The object of our study is Landscape. We look at landscape in each of these cases in order to find out what it is worth for architecture. The methods are both the different study approaches of our analysis and the potential design approaches used in the projects or derived from them - there will be more to say about the reciprocal intertwining of analysis and design in a later chapter. Quite simply the case study subject - object - methodological choices are relation to the wording of the title Architecture, Landscape, Strategies.

Of the three methodological choices of a case study framework (purpose, approach and process) the purpose is most related to the object (Thomas 2011, p. 515) . Our relevant question is what is the use of landscape design strategies to architecture? This is an intrinsic research question, meaning that the subject and object relation of Architecture and Landscape is at the core of each case study analysis. The purpose of our methodology is not instrumental (we do not use the cases to prove a theory) but mostly intrinsic - the theory comes from within the cases. In some preliminary instances this study has been evaluative, but more in the choices that lead to the cases than in each case study itself, or it is in each case explanatory, asking "What is the role of landscape in each architecture?" That explanation is merely needed to organise the choices made and less a matter of the actual in-depth analysis.

Many objects of architecture that touched on the intrinsic nature of our landscape subject were tested and studied over the years of research. Ultimately, this led to the three core projects analysed in greater detail in this thesis. Testing these projects through the lens of two theories (Steenbergen/Reh 2003 and Marot 1999) should generate insight and provide the framework to construct my own theory.

The general time-frame is a sequence of projects that occurred within 25 years (1990-2015). Since 1990 architectural projects more and more began using landscape strategies. In between the case studies I assume (and sometimes prove) that the authors know and influence each other's work. In the wider selection (long list appendix 4) we even observe the exchange of personnel throughout different practises and a continuous development of ideas in projects at other places. I can thus mostly regard the historiographic time-frame as sequential (as in Thomas 2011), meaning that each case is reacting to the other. However it is important note that the sequence of the three cases is not chronological as the third is designed before the second, but proves a better case to close our argument.

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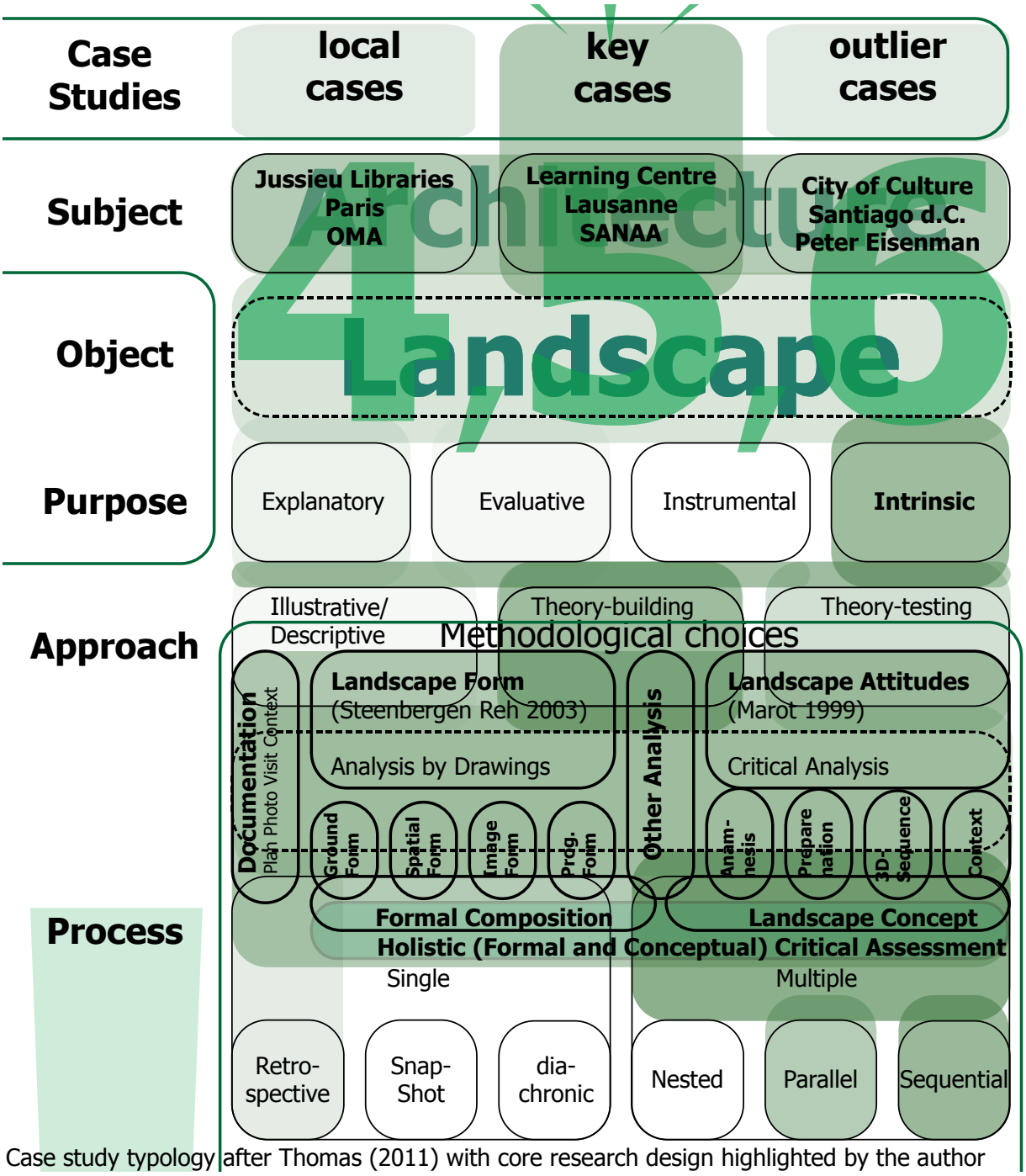


FIG. 1.5.2 The Subject are three key cases of Architecture numbers referring to core chapters 4,5 & 6. The Object is Landscape. The core methodological structure is theory building with hethods of landscape form (Steenbergen Reh 2003) and landscape attitudes (Marot 1999)

This structure explains choices made for the thesis - the purpose being the advancement of science (methodology) in the this specific field (subject-object relation of architecture-landscape). The choices made here allow us to best explore and build theories with an efficiency and depth that we assess is lacking in other studies so far.

Besides existing as three parallel studies, each key case was also regarded in its singularity: none of the cases have been studied so deeply in regard to the object of landscape before. The process of each single case is retrospective - meaning that the whole of its design and build process is

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reflected generally at a certain moment – what Thomas calls 'snapshot' (2011) – and the research for matters of practicality assumes one stage of the design project as the status quo and only speculates on different stages of each design when this leads to important findings.

Summarising the map of our research design we will explain my methodology as follows:

The Subject of this study is Architecture, or more closely defined the design and construction of buildings, in our cases public buildings of a high representative value to contemporary cultural and educational institutions in three different modern democracies.

The Object of this study is Landscape, that we seek to define beforehand but also distill from our cases in a recursive process (back and forth)

First, in order to cross-analyse these case studies, an overview study of the complete documentation of the projects must occur. So far a clear, detailed and standardised documentation of buildings has been missing in the reference literature previously touched upon. Hence, a reproduction and preparation of comparisons with scale drawings at a coherent design moment within the projects, each of which underwent long development processes, is undertaken.

Then I provide an account of my own visit to the building, a story of exploration and a first hand account about the buildings (one unbuilt) in order to see them as a landscape. This experiential part is accompanied with photographs of the building (in the case of the two built examples) or a mix of model photography and specifically computer generated imagery.

Most of the imagery is selected to illustrate the argument and specifically created for this thesis. All photographs of the three cases where previously discussed with either the photographer or the the CGI-draftsmen, developed and selected for this thesis. It is important to state that the year-long collaboration of the architect and photographer Ariel Huber with the author (architect and landscape architect) and also many discussions about the topic of landscape in architecture, influenced the way architecture is depicted in this thesis. All imagery is co-authored by myself. I visited the sites in Lausanne, Paris and Galicia and either assisted the photographer or took the pictures myself.

Even more original is the CGI imagery of Jussieu that we dedicate a separate section (4.6.) to. Like analytical drawing, representation by images of buildings is an important initial act of interpretation in the case of computer generated imagery as much as in the case of architectural photography.

I had interviews with the lead architects of each case in an initial phase of the research. The interviews are not tightly structured along a questionnaire but rather semi-structured. Certain issues where proposed by the author and others where more freely left to the interviewed architects. The form chosen is more of a dialogue. To each architect the author explained, at some point, the purpose of this study - as all are practitioners as well as teachers and in some way themselves contribute to the realm of 'practical theory'; the interviews even in themselves can be seen as a instance of research and a testing of our hypothesis. As those interviewed are all strong-willed personalities with an experimental interest in architecture - and sometimes in landscape - they tend to critique the questions asked. I found this dialogue was very fruitful but also confrontational - the reflection of this thesis with the architects should be left open for different possible interpretations. Therefore in the annex each interview is reproduced in shortened form.

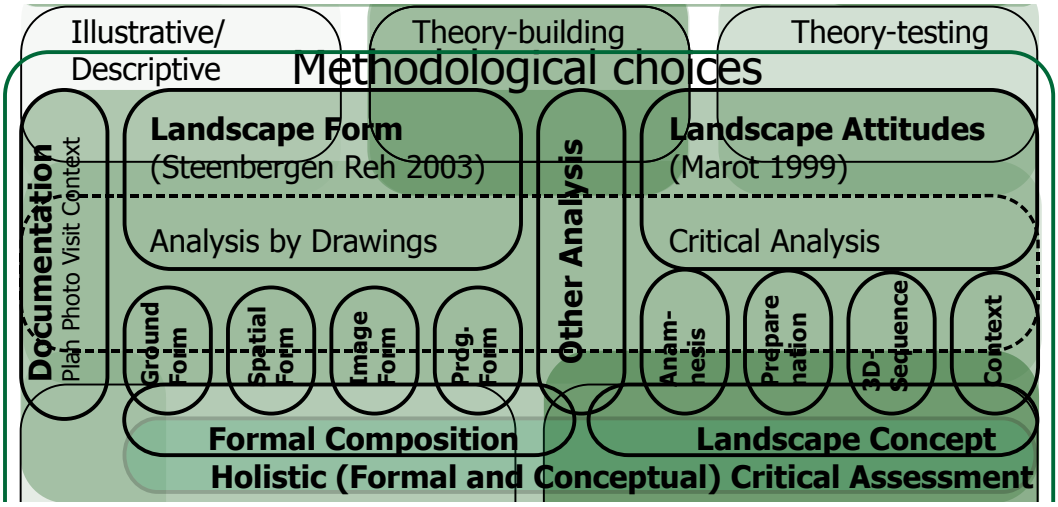


FIG. 1.5.3 Analytical Framemwork

The core methodological structure is a combination of formal analysis (following Steenbergen&Reh 2003) and interpretative critique (following Marot 1999). It evolved dynamically from the interrelationship between subject and object. In our case, relation between subject and object is about the 'form' of landscape which is a question arising in design and the 'idea' of landscape which is a question of interpretation or, as a method of hermeneutics. The goal of combining methods in a rather complex approach is not to determine a lot of small elements but to obtain a holistic picture of all the interrelations of these elements. Moreover, comparison and more fundamental critique (in chapter 7) will also filter out individual bias, clarify positions and allow us to separate specifics form general insights. My choices are not representative but specific, and I do not develop a general theory but one that is built on key cases - the validity of my qualitative argument is in the depth that looks more carefully at each case.

My specific method of design analysis (as further explained in chapter 3.2) is motivated from three sides: first from the exploration of the literature - what I observe others have missed regarding my subject - object relation. Second, from the exploration of the theoretical premises and our possibilities for study - what I see as the highest potential of my object - subject relation. Third from studying the cases. This third part is the main one, and as such, most of my theory is thus founded on the cases themselves.

My own analytical drawings are the core element of this study. Design analysis is the essential tool to understand the workings of our cases' design. Design analysis is a way of creating knowledge in reciprocal relation to design synthesis. The design process that leads to buildings previously described as 'alchemy' is a complex multi-layered, interactive, multi-authored and multiply influenced process, usually developing in dynamically changing conditions over several years. From the initiation to the opening of a building its architecture accumulates many ideas.

Practical theory must carefully balance between the truthfulness to its delicate subject-object relation and the mathematical 'beauty' of the formula or model that the method will be in itself. Other than pure theory, this balance must remain truthful to the origins of our case studies and in the messy reality and constraints of architectural practice.

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2 Landscape Design Strategies

In the second chapter we will set the thematic context more specifically and explore the terms of landscape and its design strategies as I will use them throughout this study. The whole chapter focuses on the exploration of the idea of landscape around the question:

What landscape strategies are applicable in architectural design? (Q. 1.1.2)

I refer to landscape from a number of selected standpoints and discuss the concepts of landscape space. There I encounter crucial ideas about the human experience of landscape that are generally applicable to understanding space (2.1.). This will lead to a specific and concise definition of the discipline of landscape architecture through its approach to landscape itself (2.2.). Of many strategies of landscape design, this thesis relies on a comprehensive definition of landscape architecture "attitudes" by Sebastien Marot (1999). I illustrate each of Marot's four attitudes of landscape design with specific examples and distribute key concepts to landscape (2.3.1. to .4.). To explain the application of landscape strategies, I also place the four attitudes of landscape in the theoretical context of architecture in each section and briefly summarise them in the last subchapter 2.3.4. The introduction of landscape attitudes in this chapter is different and more accurate than the idea of nature in architecture that I will discuss in the chapter three.

"Nature every where speaks to man in a voice ... familiar to his soul ."[8]

Alexander von Humboldt (1769–1859)

8 Quoted after Andrea Wulf The Invention of Nature 2015/2016 form Humbold Personal Narrative of Travels to the Equinocital Regions of the New Continent during the years of 1799-1804, London 1814-29 p.160

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2.1 The Idea of Landscape

The dominant meaning of the word landscape is an extended area of land regarded as being visually distinct (Collins 2007). The limits of such an extent of a specific landscape comprise various scales ranging from climate zones of a continent, across countries and regions to areas of only local significance. The typological distinction includes a whole series of qualities such as topography, soil, vegetation and hydrological system, or the type of cultivations, built infrastructures, industries and settlements.

As landscape typology is often reduced to qualities of specific elements, among these the focus of phenomenological landscape research tends to be descriptive, concentrating on the 'what' of landscape perception rather than on 'how' and 'why' (Zube, Sell et al. 1982). In a popular sense landscapes are often reduced to national or regional stereotypes. Switzerland is referred to as the Alpine mountains, Norway as a fjord, and Tuscany as hills with olives and black poplars.

Beyond landscape as a cliché, there is a broader meaning in the etymology of the word landscape. The English word landscape originates from the Dutch landschap, described in 16th century painting (Dictionary 1989). In the 18th century, the more abstract notion of landscape as a view that could be seen from a certain point came into use, and only as recently as the 19th century did the word become understood as a certain area of land as space or environment. Since the 20th century, the term has expanded to even broader territory, such as intellectual landscape or financial landscape.

Land-scape is a compound word. The structure and development of this etymological composition is revealing and is therefore often quoted in literature (Meeus 1984; Hunt 2000; Vroom 2006; Jonge 2009). The combined words land and scape describe the defined area of land and its –ship in the sense of state or condition of being, as in other words like authorship, dictatorship, hardship etc. A similar composition is found in the original Dutch, land-schap. Its first component land- with the meaning of country remains a constant among the Germanic languages until today as in the German word Land-schaft, Frisian lân-skip, Nordic land-skapr or Danish land-skap etc. In German a similar meaning of –schaft as the English state or condition would be found in other words like Bruderschaft, Freundschaft, or Herrschaft (Engl. Brotherhood, Friendship, Governance). The suffix –schaft always describes a condition related to the first word, sometimes putting an emphasis on its duration or strength.

Also notable is the relation of –schap and -schaft to the Germanic root of the Dutch scheppen or schepping and German schöpfen or Schöpfung which is used in mythological and religious translations as in Prometheus creating man in Greek mythology (Schwab 1838/1982, book 1), God creating the earth, and the Garden of Eden guarded by Adam and Eve (Genesis 2:4,:15). The Question if landscape is indeed a divine creation is subject to long disputes. These disputes were intensified by discoveries in natural sciences from the Renaissance on. The invention of the word landscape and its aesthetics coincides historically with the new scientific approach to nature. This epochal concurrence of a new awareness with new discoveries in the Renaissance can be interpreted as the nucleus of the epochal change towards modernity (Ritter 1974).

Similarly consistent is the formation in the Romance languages such as the French Pays-age, Spanish paisaje, Italian paesaggio, and Portuguese paisagem. While the prefix pays- means land (in French), or country (in the Germanic languages), the suffix -age indicates the making-of, as in vernissage (varnishing), pèlerinage (pilgrimage), or marriage (wedding). In French, -age describes

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becoming or action that is in many other cases an inflexion in the normalisation of a verb. The verb se marier becomes marriage, abattre - abattage, saboter - sabotage and so forth. The suffix -age, rather than turning its prefix into a condition, turns into becoming or a transformative action as opposed to the other French suffix -ment, which describes a state or condition (as in sentiment, batiment, failissement, etc.). Some words take both forms: assembler becoming assemblage describes the action of bringing things together (assembler) whereas assemblement is the state of collection as a result of the action expressed in the verb.

The different suffixes of land-scape and pays-age illustrate two alternatives to the meaning of landscape. Both include a constant transformative interaction with man with two alternative approaches. The suffix –scape turns land into a passive formation of mysterious complexity (Meeus 1984). The suffix –age extends pays (or land) into the active result of our intervention.

Both paysage and landscape in their complexity and transformation are influenced by imagination. Both imaginary and real landscapes are transformed by physical and cultural interaction with humans. From a philosophical perspective, the untouched landscape does not exist, at least on the surface of the European continent. There is a strong and lasting influence of collective use and collective imagination on a landscape's perception and physical appearance. Zube and Sell point out how understanding such interactions "will contribute to answering questions of why landscapes are perceived as they are (perceived), what they mean to individuals and groups and how they contribute to one's sense of well being or quality of life" (Zube, Sell et al. 1982).

In conclusion, we find that to fully understand landscape in its amplitude requires analysis of both the complexity and instability of landscape's appearance and existence beyond the mere sum of elements and the abstraction of their structure.

Landscape is first of all an environment of humans. We do not speak of landscape for an animal species but rather as a natural habitat or territory. Landscape is an aesthetic category, connected to human intellect rather than animal instinct.

Landscape is in fact a category beyond the geological and biotic natural state of an area of land. Landscape is an anthropological category – especially in the prospect of designing landscape we must understand it more as a condition of social history, art, and the humanities, than of purely natural sciences.

The anthropologist Tim Ingold has given a panorama of anthropological view on landscapes in an article on the temporality of landscape in an archaeological conference (Ingold 2000). He relates landscape to archaeology: archaeologists try to reconstruct past cultures from the remains found in the strata of the land, while landscape architects act in reverse in order to construct for future cultures by transforming existing strata and creating new ones. Both agencies of archaeology and landscape design require similar capacity for imagination and creativity in various cultural matters to gain either a diagnostic or prognostic understanding of the meaning of a given site.

According to Ingold, Landscape is not land, it is neither nature nor space (Ingold 2000). Rather, landscape is a world as it appears to those who live (or dwell) in it. Through this landscape is not a fixed object of observation outside the human sphere, but our self-inflicted environment. Landscape itself is the result of a complex process of relating that environment to humans that lived and live in it (Bazelmans 2010).

To experience landscape is not a physiological given but an intellectual performance. Often quoted to illustrate this is Francesco Petrarca's ascent of Mont Ventoux (Hunt 2000). Petrarca himself

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carefully documented his ascent on 26 April 1336 in a letter to his friend Francesco Dionigi, from whom he had received as a gift a travelling edition of the writings of Augustinus. Mont Ventoux climbed 1912 meters above sea level in the Provence in southern France. In his letter (Petrarca 1336 / 1995) he describes his inner, emotional experience mirrored by the physical experience of climbing the Mont. In the physical arousal of the climb, the writer recapitulates his life. Reaching the peak, he is overwhelmed by the views, describing his own feelings with rare intensity for his time. Beyond his description of the view, he illustrates the intensity of his ecstasy comparing the outer world of the landscape with the inner world of the soul in reference to Augustine's Confessions, which he carries in his pocket. With a central quote, Petrarca describes how the admiration of the landscape makes him feel beyond himself as if he had left his body behind.

Many authors interpreted Petrarca's ascent of Mont Ventoux in 1336 as a turning point in the history of ideas and as the beginning of Humanism. This interpretation has been canonised by the influential art historian of the Renaissance Jacob Burckhardt (1860). The German art critic and activist Bazon Brock refers to Petrarca (and Burckhardt) as "the discovery of landscape as a piece of nature that is transformed by the subjects' perceptions, experiences and actions ... Thus [Petrarca] discovered something that is taken for granted nowadays, landscape as a relationship between the subject and nature." (Brock 1977). While contributing to our understanding of the world and the arts, Bazon Brock explains a challenge: "In the normal practice of culture, discoveries (deeds) of this kind are not valued as much as books, pictures, pieces of architecture or tools of civilisation." (Brock 1977). Hence dynamic, subject-related views – as I quote them here to characterise a landscape approach – only catch on gradually, as their intellectual perspective needs time to reveal itself in the built environment.

Summarising these thoughts I came to call program a major shift in aesthetics during the Renaissance triggered massive changes in the arts, humanities and natural sciences, that is described as age of humanism. The significance of landscape for the Renaissance humanism can hardly be overstated.

2.2 Landscape Architecture's approach to Landscape

Although Landscape Architecture is a linguistically awkward expression (Hunt 2000) we may use the body of professional knowledge as a frame of reference (O'Connell 1983, Thompson 2014). Landscape is not nature. It is rather a concept that goes beyond nature. program

It is inherent to the three natures that each refers to the others. Bacon also describes nature as god almighty's garden and gardens mostly refer to nature. Although always defined in extension, gardens refer to what lies beyond their boundaries (Hunt 2000).

In this definition, the first nature would always be an ideal, untouched by man. So it poses an ontological problem: As soon as humans perceive nature we start to leave traces. Untouched nature or wilderness is hostile to humans; to be able to perceive its beauty we must tame it and thus irrevocably change it. One symptom of this dilemma of landscape perception is that as Lucius Burckhardt put it, "everything always gets uglier" (Burckhardt 2008) or we think that the Landscape was more beautiful in former times. We keep idealising landscapes, with no exception to those who are involved in the professional production of the collective landscape imagination. Landscape painters of the late 19th century Hague school would for example blend out any train or bridge that crossed the commercially successful Dutch landscape during the industrial revolution (Reynaerts, Boom et al. 2008). As trains, cars and planes have become more prevalent means of mass transportation, many explore the most remote regions of the world to praise its landscapes, leaving traces in the form of built infrastructure among many other disturbances.

For simplicity, and to avoid a moralistic view, I will concentrate on the anthropological realm and thus define landscape as cultivated nature, (the 2nd nature in Hunt 2000). This idea includes the actual physical man-made landscape in cultures and gardens, as well as the more idealised version of the human aesthetic appropriation of nature in visual and scenic arts.

I can derive methodological differences between landscape architecture and architectural design from the subject matter itself. Landscape design strategies (structured along the attitudes of Sebastien Marot in the next subchapter 2.3) stress the role of program; the integration and strategic manipulation of context within a design; the role of time; the limits and mechanisms of control in gardening landscapes as opposed to constructing buildings (Vroom 1995); and the distinction between building and site-making (Hunt 2000). As there are many theoretical approaches to landscape design, I choose one in the next section, to serve as a system of organisation for a number of others, integrated through one guideline.

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2.3 Strategies of Landscape Design



FIG. 2.3.1 Jackson Pollock painting in his studio on Long Island, New York, 1950. (Photo Hans Namuth)

The strategies of landscape design to a large extend depend on how designers perceive the landscape or how they may enact it for others to be perceived. Considering the age, impact, scale and often limitlessness of landscapes, a design intervention in landscape architecture is often also about designing the range and possibilities of alteration. (Fig. 2.3.1). The landscape architect in the midst of his artwork could compared to an ant walking across a large Jackson Pollock painting (Jellicoe and Jellicoe 1975 p.399).

To understand the core of landscape design it is necessary to understand its workings as a set of attitudes towards a given site. Following the categorisation of the french urbanist and architecture-theorist Sebastien Marot, we can distinguish program in landscape architectural design, all of which relate to the site. These four attitudes are 1. Anamnesis, 2. Process, 3. Spatial Sequencing and 4. Context. All of them are at the time design strategies and derived from the experience of existing landscapes. This double meaning as action and reaction is particular to this classification of activities in respect to phenomena.

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2.3.1 Landscape Anamnesis and the related concepts of Strata and Layer

Anamnesis integrates the history that led to the present state of landscape. Traces of history are visible and readable in most landscapes. The discussion of the first, second, and third natures (Hunt 2000) focuses on the transformation process from untouched wilderness, agrarian cultivation, and gardening to many cultural implications of higher spiritual sense and symbols. The idea of nature with constantly changing means of representation and interpretation occupies a central theme throughout the history of garden design and landscape architecture.

In landscape, anamnesis is usually readable in a set of strata. Each stratum is a distinct sediment of a certain geological period, sometimes occurring in place, but more often moved in the geological formation of landscape. The term strata is used in both in geology for soil horizons and in archaeology for layers of earth and rubble. We could see the landscape of strata as a palimpsest – a metaphor introduced by André Corboz (1928 - 2012) (Corboz 1983). The palimpsest is a piece of ancient Egyptian papyrus or a Roman wax-coated writing tablet. These precious carriers were often reused for new writings, but traces of the older writings remain. The writing is often composed of different layers. Human use leaves traces on the territory; these traces overlap and form a complex multi-layered text or palimpsest.

It is the unique contribution of landscape architect and professor Ian McHarg (1920 - 2001) of the University of Pennsylvania to use map overlays and layer models (that later came back with the computer as geographical and design tool and geographical information systems GIS) to understand the Landscape. McHarg insisted on highways (among other interventions in the landscape) to be "designed by persons more knowing of man and the land" (McHarg 1969). As a teacher of environment, he realised that, working with an increasing number of specialists, he would need to use specialised map overlays and chronology. Layers often differentiated in time would unify geology, meteorology, hydrology, biology, and anthropology. The layer model or the "layer cake" put the role of the designer in the midst of a multidisciplinary process, intervening in the complexity of interaction between humans and the environment with a systematic approach to "what the place came to be, what it is and where it is going" (McHarg 1997). McHarg was not interested in the separation into layers as a goal on its own but as a vehicle for a more holistic understanding of the landscape relationship between man and nature, which also makes him one of the most influential environmentalists.

"Our eyes do not divide us from the world but unite us with it. Let this be known to be true. Let us then abandon the simplicity of separation and give unity its due. Let us abandon the self-mutilation, which has been our way, and give expression to the potential harmony of man-nature. The world is abundant, we require only a defence born of understanding to fulfil man's promise. Man is that uniquely conscious creature who can perceive and express. He must become the steward of the biosphere. To do this he must design with nature." (McHarg 1969)

Many layer models have been used to assemble large amounts of information in environmental planning and landscape design. To illustrate this, a few of these Layer models, subsequent to McHarg, will be represented here as they are applied to the academic programs in the Netherlands. In the Netherlands McHarg's ideas are of great influence not least of which through one of his students, Meto Vroom, a Professor of Landscape Architecture at Wageningen since 1966 (Roncken 2003). Vroom adopted the rather complex "layer cake" of 3 + 8 + 17 layers of McHarg into a comparably simple textbook version of a-biotic, biotic and anthropogenic layers at Wageningen. It is also known as the "triplex-model" (Kerkstra, Vrijlandt et al. 1976). There is meanwhile a large variety of layer models. In our Delft textbooks we use for example 3 layers as "natural, cultural,

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urban" for the Dutch lowlands (Bobbink 2009) or 5 layers "use, buildings, public space, urban plan, and territory[9]" for urban plan design (Heeling, Meyer, Westrik 2002).

One recent proposition of layer models extends to 3 scales, 3 times, and 3 layers. The triple 3-layer approach is an elaborate design-oriented research model that has been developed in a collaboration between two urbanism and landscape academics of TU Delft for the analysis of urbanised deltas (Meyer and Nijhuis 2010).

Similar models exist in various countries. For example, in the 6 layers in "Architecture of the territory" of the "Netzstadt" (Oswald and Baccini 2003) each of these models focuses on the specific situation of a slightly different use in practice. The holistic idea of McHargh occasionally gets lost in some of these recent applications in favour of a tendency to classify everything. This fragmentation happens especially when spatial planning is involved, and a need arises to distribute competences of certain layers to different state authorities. It should therefore not be forgotten that all these layers form the identity of one site, the genius loci, which not by chance carries the name of a spiritual human dimension.

While one tends to separate things into simple lists for educational purposes, a typical landscape design strategy emphasises the connection between superimposed layers and the preservation of a certain complexity. This leads us back to Marot's term anamnesis of a site and explains why he chose the term from medicine. Anamnesis is history from the perspective of the current (usually ill) state of the patient.

Until the crisis with modernist architecture in the 1970s, like all four crucial landscape attitudes, anamnesis has been excluded from or neglected by architecture. Modern architecture stressed timelessness and the overcoming of history in its many manifestos (e.g. Doesburg, Hoff, Wils, Mondrian e.a. 1918, Corbusier 1923, Hitchcock and Johnson 1932, etc.) Although the criticism of modern architecture in that crisis period consequently reorients history, it is seldom formulated in relation to the term anamnesis, except for the notion of the city as a collective memory by Aldo Rossi in his 'analogue city' (Rossi 1970), as well as in his self-reflective approach to architecture, 'Scientific Autobiography' (Rossi 1984).

In order to be able to act on the landscape, we not only need designers to know the history of a place but also need to focus on its current appearance and project into the future. The palimpsest needs to be wiped clean in order to provide space for new writing. Landscape design should think of a space holding several contents simultaneously, and, in particular, consider their evolution over time.

2.3.2 Landscape Process and the concepts of Transformation and Strategy

Landscape Process, according to Marot, focuses on natural and induced dynamics of landscape transformation. The effects of natural forces and time, but also of design strategies, steer processes of preparing a site to grow in a certain direction. Similar to the Anamnesis, Process is a term that applies to landscape as an object of observation or a subject of design. Processes can be observed (as the occurrence of natural processes by landscape ecologists) or influenced (as the

9 In Dutch "gebruik, bebouwing, openbare ruimte, stadsplattegrond, grondgebied" translated by the author

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transformation of topographies by landscape architects) (Antrop 2001). Processes can also be observed as spatio-temporal phenomena within a landscape or used for the actual process of evolving design. Designers often make analogies between the (physical) form of the landscapes and their conceptual approach to their work as the (intellectual) process of designing.

The connection, the full embedding, of the landscape into natural cycles and processes proves crucial:

"Being itself in a process of becoming, a landscape is fully bound into the effects of nature and time: the cycle of seasons and the passage of time; processes of hydrology, weathering, and succession; and the alternation of day and night, sun ,and moon." (Marot 1999 p. 51)

Buildings try to generate homogeneous interior conditions independent of the conditions outside - day or night; winter or summer; rain or sunshine. But landscapes fully depend on these contrasting conditions. These differences are always experienced when visiting or designing a landscape.

The process of a designed (physical) landscape transformation can be very different in its form, ranging from a clear cut to an invisible manipulation. A classical example for a clear cut would be the design of André le Nôtre for Vaux-le-Vicomte, with its structuring of the two brook valleys into a clear set of crossing axes. An example for an almost-invisible manipulation of pastoral landscapes by Lancelot "Capability" Brown would be the Alnwick Castle for the Duke of Northumberland, a relatively small 18th century park on both sides of the River Aln (Alnwick Castle in NHLE 2000). In this 265ha design with scattered clumps of trees and an artificial serpentine lake, the imitation of nature reached a form of perfection to the extent that the public may not even realise that the effects they attribute to nature are actually the work of a landscape architect.

Landscape design is a manipulation or preservation of social or ecological systems, which includes observation. It is always the consequence of a change over long periods of time, that goes on long after the intervention of the designer. A landscape designer structures potentials and is perfectly aware of the incompleteness of his design rather than building a final solution. Landscape architecture is a design of changing environments rather than of perfect objects. The self-awareness of being an actor in the process and the ability to imagine and steer processes have made the position of landscape architecture increasingly relevant with the rise of ecological concerns. An example of such an ecological approach is "systemic design" (Berger 2009), or the design of open and reactive systems rather than closed structures. The process of landscape architecture is also typically involved with the dominance of strategic concepts rather than formal ones. Some Landscape architects even take quite a fundamental position by prioritising the design of processes over space:

"What we are designing in this ecological view, I believe, are not 'form', 'space' or 'function' as modernists had led us to believe, but 'system', 'process', and our 'embodied experiences' thereof." (Koh 2004)

Bernard Lassus called the intervention by landscape architecture the "inflection of the landscape process" and an "inventive analysis in order to make an account of the physical and historical places and to identify the process of physical evolution and practices in those places." Furthermore: "The term process itself designates the ensemble of interactive movements of the place. It indicates how it is necessary not to stop the place, not to fix it. One could almost say that it is required to catch the place "on the move".(Lassus 1998)



FIG. 2.3.2.1 Vaux le Vicomte



FIG. 2.3.2.2 Alnwick Castle (Photos: .1:autor 2009 and .2:alnwickcastle.com 2011)

From its traditionally process-oriented approach, landscape architecture took on a leading position among the arts at the end of modernism in the late 1960s. While for example the art of sculpture freed itself from designing mere objects, the artist Robert Morris writes in Notes on Sculpture 4, Beyond Objects:

"Fields of stuff which have no central contained focus and extend into or beyond the peripheral vision offer a kind of 'landscape' mode as opposed to a self-contained type of organization offered by one specific object." (Morris 1969).

Such a position beyond the scope of the object into a wider complexity of both temporal and physical scale makes landscape architecture apt for an altered design process beyond the limitation of action upon a physical object or objects. John Dewey said: "No great piece of art could have been concieved at one momant out of one single idea. Great art always arises form a process, an evolving relationship between the work and the artist. The processes of creation and the processes of experience are connected." (Dewey 1958). The fact that landscape changes and that human activity does not merely overlay it but intertwines with it (Ingold 2000) makes unique the position of the landscape designer inside the design process. Process driven design strategies can range from simple models such as strategies for cultivating and harvesting the land, to complex ones such as writing musical scores or steering complex social participatory models. Controlling and designing processes is in any case a crucial part of any landscape architecture.

2.3.3 Spatial Sequencing and the concept of perception

Spatial Sequencing is an important design approach to landscape. According to Marot, as the dynamic of motorised transportation, speed, and communication technologies have changed, our perception of and relationship with landscape has as well (Virilo 1995). It has also increased the awareness of an even older "design issue ... the problem of designing visual sequences for the observer in motion" (Appleyard, Lynch et al. 1964).

A textbook example of such 'walk through' spatial sequencing is the garden of Stourhead (1741-1780). Those enacted scenes of buildings, plants, water, and rocks are laid out in a designed sequence, following Virgil's Aeneid (Leupen, Grafe et al. 1993; Reh 1996; Nijhuis 2011, 2015). Pictorial views are framed through buildings, grottoes, plantings and specific way-points. Still today, visitors to the National Trust site are advised to walk around the artificial lake counterclockwise, to experience the garden in the sequencing intended by the designer Henry Hoare II (1705–1785).

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It is also easy to interpret Stourhead as a garden. The pictorial routing can be easily understood as Hoare designed it. At Stourhead the sophisticated manipulation includes fake perspective, manipulations of the horizon, and enacting or activating topography for a theatrical effect.

A contemporary example of such manipulation is Parc de la Villette in Paris (1982–1998). It uses the "cinematic promenade as a series of frames organised in sequences". According to the architect Bernhard Tschumi, "in the early days, the cinematic was a popular trend that represented - and in a sense still does for me - the dynamics of movement through space. At the time, there was the theoretical aspect, which was fundamental. Just as architects were looking at the history of architecture for a starting point for their work, I was inclined to look at the theory of film as a starting point. I was quite fascinated by montage theory - that is how you assemble to create certain effects, like Eisenstein's 'montage of attractions'. In other words, looking at cinema as other people were looking at paintings, and trying to derive architectural concepts." (Tschumi and Ran 2000). Here the cinematographic interest that Tschumi applies in his work before becoming involved with landscape design through the La Villette competition provides in his eyes an architectural work with the theoretical project Manhattan Transcripts (1976–1981) (Tschumi 1994). Tschumi is an architect but also a strong advocate for spatial sequencing. Tschumi's drawings of events in his Manhattan Transcripts (1981) introduce movement notations of events into the practice of urban and architectural design. For Tschumi, architecture is not simply about space and form, but also about event, action, and what happens in space. In Manhattan Transcripts Tschumi derives an architectural structure from events through analytical drawings. From photographs he draws the movements of different protagonists as architectural construction.

Criticising the post-war WWII modern cities, Swiss sociologist Lucius Burkhard (1923–2003) introduced the beauty of landscape as a measure to human spatial quality. From landscape he develops his Spaziergangswissenschaft (Burckhardt 2006) that he translates into English as 'Strollogy' (Burckhardt 2012). He propagated it as a novel approach to planning as opposed to functional urban engineering. The cultural critic and educator Burckhardt managed to have the scientific committee of the Kassel Art Academy approve Strollogy when it became a University in 1990 and advance Spaziergangswissenschaft as an academic discipline (Burckhardt/Obrist in Schmitz Ed. 2006). Even if a touch of humour lies in his approach, recent overviews (Weisshaar 2013, Obrist 2014) show that the science and practice of exploring and designing urban developments in particular, not by drawing and meeting but by walking and talking have become a widespread and successful practice in planning especially in Germany and England. Today many practice strollogy as participatory urban design processes, originally inspired by the flaneur Burckhardt who enjoyed walking through his alpine landscapes (Weisshaar 2013).

A sequential approach to space has especially in modern times influenced all the arts, certainly with the invention of cinema but also new scientific models of nature in modern physics. It for example influenced one key painting "Nu descendant un escalier" by Marcel Duchamp (1912). Other paintings from the early modern period that involve such dynamics include those by the Soviet Constructivists and the Italian Futurists. In architecture this translates to the promenade architecturale (Corbusier 1923; Blum 1988; Corbusier 2007) propagated by Le Corbusier. In the Situationist movement around Guy Debord (1931 - 1994), the flaneur reappears in the 'theorie de la derive' (Debord 1958) for a revolutionary understanding of the city. Both of these cases refer to the experience of wandering through a landscape translated either to buildings or to the city as a whole. They provide an essential link to the landscape attitude of spatial sequencing in architecture theory.

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2.3.4 Context and the posterior generation of program

Marot's fourth attitude of landscape architecture towards a site works in context. A landscape does not just react to an existing context but landscape design generates a context in and of itself. It consists of dense functional, visual, and spatial relations and constellations. Relational structure means the rearrangement of spatial constellations or the interweaving and joining of separate elements.

Designed landscapes often need to define their own limits and field of intervention. They create and determine the context and also develop programs from their interrelations. Landscape Architecture has a particular way of developing program out of the form and context of the landscape rather than the form following a predefined function (as defined for architecture by Sullivan 1896).



FIG. 2.3.4 Università della Calabria (1974-1977) (Drawing: Gregotti Associati)

The idea of context has been stressed in architectural theory since the 1960s (e.g. Rowe and Slutsky 1963, Rossi 1970 / 1975 / 1982) as a reaction to the International Style (Hitchcock and Johnson 1932) of timeless and often context-relation-less modern architecture. Rowe criticises the disregard for context of the modernists even more explicitly in Collage City (Rowe and Koetter 1984), where he proposes the figure-ground analysis that later will be relevant for Peter Eisenman in his design for the City of Culture (Chapter 6).

Since landscape architecture pertains to creating a place rather than placing objects, one may state that while architecture merely reacts to context, landscape architecture creates it. Designing gardens represents creating a place of harmony for communication between man and nature, or in a broader sense, the art of joining things to create harmony (Finlay 2008).

This approach to place-making, rather than object-making, also expresses a different relation in regard to the function of a space or its program. While often in architecture the program defines the shape of an object, in landscape architecture programs are derived from a site through formal transformation. It is such differences that trigger the interest of many architects looking for alternative formal concepts to "form follows function" (Sullivan 1896). For instance Stan Allen suggests: "The goal (...) is to rethink conventional institutional form through the concept of the field. (...), by forming the institution within a directed field condition, connected to the city or the landscape, a space is left for the tactical improvisations of future users. A "loose fit" is proposed between activity and enclosing envelope." (Allen 1999)

Such thinking beyond 'the institution' (Allen 1999) in both formal and theoretical fields illustrates how the expansion of the notion of space into landscape is always loaded with a certain

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expectation, in particular in the case of architecture. Landscape implies deliberation from the deterministic to the more open relation of meaning and content in architecture. Landscapes imply reconnection to context in a wider anthropological meaning: a fundamental understanding of being human in spaces of both architecture and nature.

Much of the preoccupation of architecture with landscape is rooted in a crisis of modern architecture that arose in the 1960s and 70s across theoretical literature (e.g. Mitscherlich 1965, Tafuri 1976 and 1979 or Rossi 1975 / 1982). Such fundamental questions have been very often treated or touched upon by architecture mentioning landscape. Vittorio Gregotti (*1927) called this a multidimensional approach to the environment by the architect and insisted on the necessity for architects to understand geographic space and the concept of landscape (Gregotti 1966; Engl. by Havik 2010). He deliberately introduces a calculated ambiguity. It is in fact increasing scale of the spatial influence of architecture onto the landscape that makes it urgent for architects to understand landscape, thus shifting "the problematic of architectural space by elevating it to the level of geographic space" methodologically or "to find the means of intervention that correspond with different scales" (Gregotti 2010).

But although Gregotti has been influential especially in the Italian academia of architecture, his crucial text is relatively difficult to read or translate. Also Gregotti's own giant building projects may not have provided an example that made his understanding of landscape a plausible alternative to the dominant engineering approach to mass housing. Gregotti's role for my studies of landscape strategies in architecture is his clear deference to geography, as the anthropological method to understanding landscape and his postulate for any architect to learn such methods. Only very recently Gregotti's text and involvement with geographical context, and his notion of the territory of architecture have been reconnected to the question of the relevance of landscape to architecture in an international discussion by Kenneth Frampton (Frampton 1999) when his article was also reedited for Landform Building (Allen and McQuade 2011) as discussed previously in the literature review (1.4).

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2.4 Landscape Design Strategies in Architecture

To conclude chapter two, I return to my subsidiary question:

What landscape design strategies are applicable in architectural design? (Q. 1.1.2)

On the one hand while summarising the previous four attitudes, I can briefly recapitulate the few appearances of the attitudes in architecture: anamnesis used by Aldo Rossi (1981) in his preoccupation with history; process as a key element for Peter Eisenman (2004, 2007); Bernard Tschumi's spatial sequencing (1981); and Colin Rowe's Transparency (1963) and Collage City (1984). The distinction among the four positions in architecture to those of landscape makes visible how architecture has been divided into various critiques on the modernist movement, but not engaged in a theory that could be summarised in the four attitudes. Since the heroic architects' pamphlets on modernism, there is no closed theory or discourse in the reaction to modernism after the 1960s; rather, architecture has been dismantled into a variety of fields: Quickly they have been labelled by publication machinery and art history as 'postmodernism' (Klotz 1988) or 'deconstructivism' (Johnson Wigley 1988), but have rarely been seen as a consistent movement (as coherent as modernism was) except for their common critique of modernism.

Landscape attitudes unify many facets of architectural theory. Led by various experiments often along one track of the four attitudes, very different architects developed their individual and often intuitive interpretation of landscape. Many have adopted the term landscape, or a whole range of other terminologies, but no unified theory connected the fragments. I think that landscape design strategies consolidate a whole range of seemingly different approaches towards architecture in our time.

The question in the set up of the case studies adopted in this thesis should indeed be explored in the individual cases, but beforehand we also need a more general view on architectural design. Why landscape attitudes – in their potential to connect humans with nature – have not appeared as one concise theory of architecture so far becomes clear when we look into the difficult intellectual relationship of nature and architecture in the next chapte#

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FIG. 3.0 San Marcos in the Desert Frank Lloyd Wright (Chapter 3.1.7, Rendering: Lloyd Wright 1927, FLW Foundation Archives, Columbia Univ., MoMa)

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3 Architecture's involvement with Landscape

While nature is an important component of architectural theory, we must reevaluate how architecture deals with nature in theory in order to place landscape in this thesis in the disciplinary context of architecture.

While revisiting 17 of architecture's crucial exponents throughout twenty centuries, I explore their dealings with landscape or nature and the concepts thereof. The beginning of this chapter (3.1) will touch on some crucial problems that lead to the polarity of 'wild' nature and human architecture, or more precisely, the divide between nature and humanity through architecture. Part of the theoretical problem elaborated in the beginning of the chapter is, that landscape and nature are oftentimes conflated if not confused, in particular by architects.

Out of my critique of a thematic selection of common architectural theories and within the methodological differentiation (3.2), I will argue for the necessity of research through analyses of landscape spatial composition in architecture. This argument should lead to introduce my application of the a twofold analytical model. One side of the analysis is about the form of the landscape architectural composition (Steenbergen & Reh 2003) with a method of drawing analysis of the formal composition of architectural projects in this thesis. The other side is evaluation of their strategies with the previously explained four attitudes. The introduction the twofold analytical methods will conclude with the research framework for our further investigation into Landscape Design Strategies drawing from the different theories of the conceptual landscape attitudes and the formal landscape composition, our research framework will merge these two theories into a complete picture of the phenomenon.

In section 3.3, I will propose what has led to the selection and varied analytical techniques throughout this study and motivated the selection of key cases. I will treat the three cited cases in each individual chapters 4, 5 and 6.

3.1 The Theoretical Divide between Landscape and Architecture

Architecture and landscape in the Western tradition are defined by the difference between the two. Design of architecture works as a differentiation from the natural or cultivated landscape; and design of landscapes is used as a differentiation from the built architecture.

The object of either discipline's design has been always translated into the dichotomy between architecture and landscape. In a classical definition, no designed thing could be both landscape and architecture at the same time. Landscape design has been attributed to the domain outside the building. The formal garden inside a sacred temple might obey architectural rules, but then there always exists an outside of wilderness, however intense the relation or embedding of humans might be. This opposition of architecture and landscape is similar to the one between human and nature or the city and the countryside. In a simplistic picture, "architecture", "human", and "city" stand on one side, while "landscape", "nature", and "countryside" represent the other side of the divide.

As illustrated in the previous chapter, the relations of two design disciplines for landscapes and buildings are complex and intertwined. Commonly we understand designed landscapes as landscape architecture and therefore architecture by definition. Still, both disciplines contribute to an opposition in their theoretical framework.

The fact that we have regarded architecture and landscape architecture in opposition does not mean that architectural theory despises nature. On the contrary, in several, sometimes opposing, approaches to formulating a theory that would define aesthetics of architecture throughout history, nature served as an ideal. This chapter elaborates on some key positions regarding nature in architectural theory and aims to explain the tradition of architecture dealing with nature more often than with landscapes. This chapter will also underline the growing gap between architecture and landscape in the Greco-European tradition that can be seen as a missed thread in the canonical foundation of architecture as a modern discipline.

3.1.1 Vitruvius: the only yet problematic source

One of the historical problems of architecture theory as a discipline – unresolved through its history – is the sharp contrast between the idealisation of classical ancient Greek architecture, referred to as the pure style of architecture (Elmes 1826), and the absence of theoretical text or treatise on architecture from ancient Greece. Hellenistic architecture was indisputably canonical in its orders, but we do not know of a canonical text until Vitruvius (80–70 BC – after 15 BC), a contemporary of the first Roman Emperors Caesar and Augustus. Virtuvius' "De architectura" is the "only preserved work of antiquity about architecture" (Fensterbusch 1987 p.3, also program and as such can be regarded until today as "the world's inaugural compendium of design theory" (Gage 2011 p. 65). Many authors (as in the following sections Alberti, Palladio and Laugier) have discussed Vitruvius since the rediscovery and wider dissemination of his treatise during the Renaissance (printed since ca. 1487 according to Fenstebusch 1987 p.13) as the appropriate interpretation – and reinterpretation – of the classical styles and orders. Some even corrected the systems of measurement with all the confusion of translation until the establishment of the metric system in the 19th century.

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In Vitruvius' relatively simple view, ideal architecture defined itself in opposition to nature. Architecture has been conceived ex negativo from Wilderness ever since Vitruvius wrote, "The men of old were born like the wild beasts, in woods, caves, and groves, and lived on savage fare." (Fensterbusch 1964 p. 78: 2 1)[10] Later “they began ... to construct shelters” “and so passed from a rude and barbarous mode of life to civilisation and refinement.” (Fensterbusch 1964 p. 78)[11]. Human has been seen as God’s equal, placed on earth to dominate, as the custodian of Genesis (1:27-:28). While landscape is at best a mediator between human and nature, architecture was defined - in the Western tradition of Vitruvius and the Renaissance - exactly as the emancipation from nature.

The Vitruvian idea of architecture's origin as one of intellectual emancipation from nature, is similar to the paradigm of the founding mythology in Genesis. Men as descendants of God were expelled from nature, the Garden of Eden - thus separated eternally from the natural ideal. I interpret this as the deeper cultural root for the distinction of men and nature in Western culture.

The Vitruvian paradigm for architectural theory - in that his Latin text is the single most important source of architecture theory for two millennia to come - are venustas, uitilitas, firmitas (beauty, usefulness and strength)[12]. This triad does not contain any relation to nature or its aesthetics. Venustas denies nature; even Venus is not a natural beauty as she is divine. Besides the factual (built) history of architecture, architecture history will not recover easily from this dogmatic preconditioning in its sole source from antiquity.

3.1.2 Alberti and Palladio: ‘concinnitas’ in the renaissance architectures natural beauty

The rediscovery of Vitruvius in the Renaissance, which spread from the monastic libraries into the workshops of architects via book printing in 1487 (Verlioli, aldus Fensterbusch 1964 p.13), prompted a significant reenactment of the ancient Greek orders and coincided with growing interest in architecture among the ruling aristocracy and rich merchant class of Europe.

Leon Battista Alberti (1404-1472) can be seen as a founding father defining architecture and more explicitly the role of the professional architect today. His 'Ten Books of Architecture' (written in Latin in 1452, published 1485) draws on Vitruvius but also expands and updates the classic text with a compilation of important information on almost all aspects of architecture and design. "Alberti elevated architecture to a regular theoretical discipline" (Ching e.a. 2011. P.465)

The contemporary English translator and commentator Mark Foster Gage explains: "Alberti is among the first (in architectural theory) to call for a conceptual holism, reflecting the Aristotelian concept for the soul, where the whole is greater than the sum of its parts." (Gage 2011 p.73) This effect of architecture on our souls reads as follows in the original text. "The forms and figures of buildings contain something excellent and perfect by nature, which excites the soul and is sensed at once." (Alberti Book 9, transl. Gage 2011 p. 76)

10 “Homines vet ere more ut ferae in solvis et speluncis et nemoribus nascebantur ciboque agresti vescendo vital exigent.” (Vitruv, Ed. Fensterbusch 1964 p. 78: 2 1, bilingual edition translated from German by the author)

11 Translated from German by the author.

12 translated from Latin by the author, using common English terms as discussed widely, i.e. in Gage 2011 p.65 - 72. They would be translated by Ware 1738 into “Utility or convenience, duration and beauty”.

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In Alberti's view, beauty in buildings comes from a "definite proportional relationship" ("Certa cum ratione concinnitas" Alberti Book 6, transl. Gage 2011. p. 76) "Beauty is a certain harmony and agreement of parts to which they belong, according to a definite number, determination of borders ('finitio'), and placement, that is required by 'concinnitas' as the absolute and primary order of nature. Architecture should strive to achieve this with greatest efforts, thus appropriating dignity, charm, authority, and repute." (Alberti Book 9 transl. Gage 2011 p.78)

Alberti assumes and defends nature as the ideal order of things to pursue in the "agreement of parts" that we could call composition in contemporary terms. I interpret Alberti's "agreement of parts" (Alberti Book 9 transl. Gage 2011 p.78) as an imitation of nature, not by ornament but by the perfect disposition of the parts in relation to the whole, as the ultimate goal of architectural design and measure of its aesthetic quality.

Alberti (in his stringent Latin) was rather critical of Vitruvius. One century later Palladio, another influential Renaissance architecture theorist, was much more moderate and humble in regard to Vitruvius as the source of architecture from antiquity. This also relates to a wider spread of the antique text and (re-)establishment of Vitruvius' divine status as the Bible of Architecture.

Andrea Palladio (1508-1580), with his Italian 'Four Books of Architecture' (1570) introduces Vitruvius' Latin text as his most important source from antiquity. As opposed to Alberti, Palladio directly underlines Vitruvius' famous categories "utilitias, firmitas, venustas"[13]. Palladio writes:

“Beauty will result from the form and correspondence of the whole, with respect to the several parts, of the parts with regard to each other, and of these again to the whole; that the structure may appear an an entire and complete body, wherein each member agrees with the other, and all necessary to compose what you intend to form”. (1570, translated by Ware 1738 1. Book Ch.1)

He uses this appeal to harmony as an introduction to the design process: “Great care ought to be taken, before a building is begun, of the several parts of the plan and elevation of the whole edifice intended to be raised.” (1570, translated by Ware 1738 p.1)

For Palladio, the harmonious hegemony of nature, undisputed in the divine order of a renaissance man, is inherent in five classical orders ("tuscan", "doric", "ionic", "corinthian" and "composite" 1738 p. 14 – 25). "Barbarians" have made "abuses" of these orders (1738 p.25) and thus the divine, natural order. For Palladio nature is the mirror of divine perfection: "... architecture, as well as all other arts, being an imitatrix (imitator, note author) of nature, can suffer nothing that either alienates or deviates from that which is agreeable to nature". (1570, translated by Ware 1738 1. Book Ch.20 p.25)

Although Palladio as an architect is a master of placement of buildings in particular in the Venetian Landscape - little of his landscape mastery is discussed as part of his theoretical works. A brief advisement as to the convenience of arranging rooms according to sunlight and heating (1738 p. 38) is an exception in his otherwise material and practical introduction. In his second book, Palladio explains the advantages of the country estate for control and health of the noble owner and includes rounding walls and terraces of his own designs, as well as the roman ones he studied in Villa Trissino at Meledo (1738 p.51 and engraving XLIII) or Pomilius' Vesta Temple in Rome (1738 p.94 and engraving XXV).

13 translated from Latin into “usefulness, strength and beauty” by the author, using common English terms i.e. in Gage 2011 p.65 - 72. The same Latin terms would would be translated in an classical English translation by Ware 1738 into “Utility or convenience, duration and beauty”.

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The simple concept of beauty derived form nature into the classical order became regarded as the canonical explanation for centuries to come for the status of nature in architecture. An architect's pragmatic and hands on approach to landscape should come as no surprise, as the Renaissance philosophy (Petrarca 1336 / 1995) already sharply contrasted the two with the humanist idea of "landscape as a relationship between the subject and nature." (Brock 1977, see Chapter 2.1.).

One cannot but wonder how the art of architecture seems to disconnect from the history of thought while adhering for ages to the study of antique Greco-Roman buildings. It seems that an intellectual gap between nature and architecture, despite contrary beliefs and affirmations, runs through the history of architectural theory and practice. That gap starts like a crack at the Greek temple and opens into a wide intellectual gap far into the Renaissance. It is revised only after the establishment of the Renaissance style as the leading approach to Architecture.

3.1.3 Laugier and Rousseau: a natural architecture of the ‘noble savage’

Nature has been, throughout the history of architecture, a measure of aesthetics. Theorists like Vitruvius, Alberti and Palladio repeatedly called upon nature in order to fight the confusion of their contemporary practitioners. In spite of this, nature was still often treated as an abstract ideal until the Jesuit Marc-Antoine Laugier (1713-1769). Laugier was alarmed by aberrant eclecticism, not unlike Palladio by the Barbarians' ignorance of Vitruvius and Alberti. He warned his contemporary architects from leaving behind classical purity. Laugier was a priest at the court of Louis XV. Such a position at the French royal court was influential in the architectural debate of the great works in Paris, Versailles and other places around the capital, while they flourished in the representation of the absolutist regime.

Most influential in Laugier's 'Essai sur l'architecture' (1753) was one simple idea: a new founding myth for Architecture, or rather the purification and humanisation of the Vitruvian myth (in the 1st chapter of the 2nd book). Laugier argues that through coping and assembling details without understanding the simplicity of the 'cabane rustique', architecture became Barbarian. The classics where misunderstood and therefore needed careful explanation by the theorist.

Laugier precisely describes in only four sentences (1753 p. 12) how a hut was formed by man from the four strongest branches of trees he could find. The trees, standing in a square, hold up a rectangle of four horizontal branches. The branches are fixed to a roof of more inclined branches that slope to shelter from the rain when covered with leaves, and form two triangular pediments on either side.

Laugier praises the simplicity and beauty of this hut with its columns, ceiling beams, and sloping roof with two fronts and contrasts it to the aberrations of contemporary and historic "bad" buildings. He then compares his "cabane rustique" to the Maison Carré in Nimes (1753 p. 15), a Roman Temple from 16 BC (according to Anderson 2001 pp. 68-79) of Vitruvius' period, which Laugier alludes to as the most simple and perfect ideal architecture, directly inspired by ancient Greece.

The frontispiece of Laugier's Essai was published only in the 2nd Edition (1755, Fig. 3.1.3.1.). In it the naked genius, whose divine origin as an angel is indicated by his wings, is showing the simple "cabane rustique" to the somewhat tired looking allegory of architecture, that sits on a pile of stylish ornamental ruins of classical origin. Not surprisingly in the visual culture of architecture, this illustration is more famous than the text. The illustration may have led to the misleading translation as "primitive hut".

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For Laugier, Greek architecture is the only valid one – only sufficiently esteemed by the Romans and the Renaissance: "The only Architecture was abandoned up until today to the caprices of the artists, that gave their rules without (revealing their) discernment." (Laugier 1753 p.V)[14]

He recalls first an account of man, from Arcadian origins, that first sought shelter in caves, looking for more comfort. He evokes a mythical origin by using a language that recalls the Greek and Roman myths and classical literature.

Novel in architecture theory is Laugier's appeal to natural human instinct as a measure of natural order. (Laugier 1953 p.10)[15]. He places human invention out of basic needs as the origin of art. With one original inventive myth he unites the Vitruvian triade utlitas, firmitas, and venustas, and puts architecture within the humanist tradition as an invention of man, organising and mastering nature. Laugier calls for a moral aesthetic in simplicity and reduction to the most archaic forms. This call echoes through architecture until long after his time.

Not only does Laugier calls back to nature, the establishment of a natural order is an important movement in arts and philosophy. His Essai was first published shortly after his contemporary Jean-Jacques Rousseau's (1712–78) 'Discours sur les arts et les sciences' (1750) that introduced the idea of the noble savage. Both Laugier and Rousseau can be seen in philosophy and architecture as the advocates of the reestablishment of wilderness as a source of wisdom. Particularly in France, the absolutist power in a decadent court called for critical voices. The intellectual turn to wilderness was also a source of individual liberation, later so ardent as a political movement.

Jacques Delille (1738-1813), Laugier's contemporary author of poems about ideal gardens, presents two allegories similar to Laugier's frontispiece (fig. 3.1.3.2). One of the allegories stood up from her pile of antique rubble and ordered things neatly and measuredly in classical order, also evidenced by her drawing tools and the round temple in the background. This female figure of Architectura bears close resemblance with Laugier's figure in her face, haircut and dress including similar sandals and feet. Even her posture is just a step forward from the sitting Architectura in Laugier. The other allegory of the natural garden style, whic has the features of a painter, agitatedly (like Laugiers' genius) points toward the forest and a mountain with two waterfalls, still holding a brush in her left hand on the paper of a garden plan.

The similarities may well have been intended by the (unknown) engraver. Certainly a success like Laugier's for this book would have motivated enough of its printing with a stylistically similar engraving. The dispute in gardening, as allegorised by Delille, arose between two equivalent and vivid styles, while architecture has one truth, one true style, to be defended with one ideal that persists through centuries. Other than Dellillle, Laugier tries to harmonise nature and humankind through architecture, not by changing anything but by reducing to its essence and establishing the art of the classical Greek orders in their original splendour.

14 “La seule Architecture a été abandoné jusqu’à présent au caprice des Artistes, qui en not donnée les préceptes sans discernment.” (Laugier 1753 p.V, transl. by the author)

15 “L’ homme dans sa première origine sans autre secours, sans autre guide que l’instinct naturel de ses besoins.” (Laugier 1953 p.10)

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FIG. 3.1.3.1 Genius and Architectura with 'cabane rustique' (Laugier 1755) (courtesy of Bibliothek Werner Oechslin)



FIG. 3.1.3.2. Natural and Architectural garden style debating (Delille 1782) (courtesy of Bibliothek Werner Oechslin)



FIG. 3.1.3.3. Jean Jacques Rousseau (Engaving signed Touvenain)

So much has been written about the "cabane rustique" that it became a stereotype, even if many authors (i.e. Semper 1779 p. 200 see next section) are opposed to simple interpretations. Later even Laugier himself writes again about his "cabane rustique" with a more nuanced tone. In the Hague edition of the 'Observations sur L'Architecture' (Laugier 1765 p.V), he places an advertisement (Engl. 'announcement') instead of his famous introduction:

"A lot of time was necessary for the creative spirit, in combining convenience and need, to overcome the great gap that is encountered between the rustic hut and a palace of corinthian order". (Laugier 1765 p.V)[16]

Obviously Laugier differentiates the interpretation of the creation myth and explains it as a long evolution of creativity. In fact this new 'advertisement' relativises Laugier's own much discussed polemical introduction, the same that had made him a much regarded theorist, so he must have known what was at stake. If he doubted his own myth or simply wanted to add nuance is hard to say.

Laugier was so influential for architecture that even details of his style guidance found many followers among architects. We see them in the works of Jaques Germain Soufflot (1709-1780) at the Panthéon in Paris (1757) or John Soane (1753-1837) at the Bank of England in London (1791-1793) (Ching 2011 p.611 and 618). Most influential was Laugier's recall to the classical order and pure proportions: Architectural order must be established at a higher level of composition than just the mere copying and combining of stylistic elements. Younger French architects Étienne-Louis Boullée (1728-1799) and Claude-Nicolas Ledoux (1736-1806) would apply style with high political ambitions, when two decades after Laugier's death the French revolution of 1789 began.

16 "Il a fallut beaucoup de temps pour que l'esprit créateur, en combinant l'agrément avec le besoin, franchît le prodigieux intevalle que se rencontre entre la cabane rustique & un palais d'ordre corinthien" (Laugier 1765 p.V, transl. by the author)

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Laugier establishes architecture at the origins of mankind. He creates mythical worship of both human and nature as two divine creations. He has the artistic genius dissolve the opposition of wild and civilised, propagating a common root for low and high culture, and denouncing simple fragmentary copies as insufficiently inspired.

Laugier's call to the natural ideal uniting architecture and landscape is not yet sufficiently heard. Paradoxically, his non-material, intellectual approach to the craft of building raises architecture into spheres of a divinely inspired art. By the force and legitimacy of divine inspiration, classicist architecture rises straight, perfect and far above the simple rural grounds that the hut stood on since antiquity.

3.1.4 Semper and Goethe: the architectural-natural anthropological 'Stoffwechsel'

Gottfired Semper (1803-1879) took a particular position in regard to the nature analogy of architecture. Semper was an acclaimed architect in Germany and Switzerland, commissioned for crucial works in Vienna, and an established Professor at Zürich Polytechnic since 1851. Semper wrote his 'Der Stil' in two volumes and with a 3rd volume he could not finish before his death in 1879 (Semper 1860/1878 and 1868/1879)[17] .

While appraising classical Greek and Renaissance architecture, Semper took a counter position to the canons of his time in regard to architecture's development as an art form ('Kunstform' Semper 1860/1878 p.2) in analogy to the development of languages. He compared his studies into the development of architecture to linguistics. In a broader sense his studies are as novel and scientific as the following empirical models ('empirische Kunstlehre', 'Stillehre' 1860/1878 p.VIII).

Semper rejects the 'hundred times repeated' myth of the origin of architecture from Vitruvius (1863/1879 p.200). He argues that the art forms of architecture developed from textile, ceramics, carpentry, and masonry (‚Tektonik' and 'Stereotomie' 1860/1878 p. 9). In his argumentation he takes into account the aspect of time related to the development of human craft: how human culture, dealing with nature and cultivating it, developed cultural refinement across various ethnicities. His crucial 'Bekleidungstheorie' explains how architecture develops from the craft of joining and preparing textiles, colouring them, and building furniture.

With his Bekleidungstheorie Semper relates to Karl Bötticher (1806 - 1889), who, like Semper, was a follower of influential Prussian Architect Karl Friedrich Schinkel (1781-1841). Böttcher differentiated between the architectural core form 'Kernform' and its dressing 'Bekleidung' with plaster, stucco, mosaics, bronze etc. (Bötticher 1852 p.2). Both Bötticher and Semper base their architectural theory on archaeology. In architectural history they are referred to as German Tectonics (Schwarzer 1996 and 2016).

Semper takes into account a series of different cultures from the Middle and Far East, including Chinese or Native American cultures. Although still focused on arguing for the development of the Hellenistic styles as the highest expression of art, this reference to cultural influences of Greece is

17 Semper is quoted in this thesis after after the 2014 facsimile edition of the original German the 2nd editions Vol.1 1878 (1st ed. 1860), Vol.2 1879 (1st ed. 1863)) with translations by the author. The source for my referral here to the unfinished 3rd volume stems form the editors biographical note on Sempter in the 2nd edition.

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notably an early ancestor of similar architectural attempts by Ching, Jarzombek and Pakrash (2nd edition 2011) in our time. As the latter rightfully explains (p. 649) Semper's development of the art of architecture from craft is an anthropological one, placing architecture into human activity. The human 'instinct of making things' (Ching e.a. p. 649) provides Semper with the key natural component in architecture.

Semper argues that cultural techniques jumped from the more direct environment of clothing and dressing floors, walls, and ceilings. He introduces the textile art as the primary art, 'Urkunst', as opposed to the 'Urhütte' as a misleading and unfortunate German translation as the English 'primitive hut' for Laugier's 'cabane rurale'. Semper, also a critic of languages, uses his German idiom to develop a new original theory. Several of Semper's analogies have double meanings in the German language. The etymological transformation from ceiling ('Decke' literally cover, blanket) across dress ('Ge-Wand') to wall ('Wand') is in itself a metamorphosis ('Stoffwechsel' literally textile-change but also metabolism).

Semper's key argument is that culture arises as a form of expression for humankind before architecture . He sees the Assyrian and Egyptian influence on Greek architecture as the high point of culture. Later everything is in decline. Here Semper uses the idea that languages had reached a more complex stage in terms of vocabulary and inflexion in ancient times than in the modern day.

Dressing ('Bekleidung') and layering ('Inkrustation') are concept that Semper developed to defend his proof of a rich polychromy of Greek and Roman architecture (Zink 2019). Semper had taken a position in this academic dispute ('Federkrieg') since 1834 with acclamation from Schinkel (Semper 1860/1878 p. 489). In the later publication of his theory Semper includes as scientific proof the chemical investigation of samples of coloured marble he collected himself from the Theseus temple in Athens and Trajan's column (1860/1878 p.488 and 489) in Rome. He argues that as nature in its perfection forms an environment of many colours and shades, varying through days, seasons and aging, so does the artistic environment in its highest perfection.

Contrary to some critics it seems inadequate in the context of this thesis to divide Gottfried Semper's dominant theory from his practice. He fundamentally attacks deviations from the Greco-Roman tradition while becoming one of the most influential architects and educators. To illustrate the dominant 18th century architectural practice we may use one of his buildings. Semper built one of his favourite Buildings during his exile in Zürich: the Stadthaus Winterthur (1864-1870). (Lieblingsbauwerk Frei Wegmann 2015 p.2).

The actual architectural vocabulary used by Semper at Winterthur is in contrast to his progressive theories. Semper, the first professor of architecture at newly established ETH, can certainly be called progressive. He was actually a fugitive revolutionary in exile in then radically modern Switzerland. One of his political friends and later client of the Winterthur city hall was Johan Jakob Sulzer (1858-1873), a successful liberal politician and co-author of the Zürich democratic constitution of 1869. In Winterthur, Semper expresses the city's democracy, crowned by 'Pallas Athene' and relies on Greco-Roman tradition with some renaissance and rare baroque involvement. More important than the expression in his own 'favourite' building is how Semper brought German classicist thinking into architecture: His anthropocentric and humanistic view of architecture from within the individual dweller-craftsman and from mankind in cultural development as a whole was holistic in the best sense.



FIG. 3.1.4.1 Stadthaus Winterthur Design Drawing by Gottfried Semper 1864 (Image: semper-stadthaus.ch)

This humanism, as in human-centred argumentation for architecture, is a next step in the relation to nature from previous theoretical grounds. Similar to Semper's view of nature as an environment of many colours and to his argument for polychrome architecture in his 'Bekleidungstheorie' is also the methodological approach to natural science in the 'Farbenlehre' (1810) of Johann Wolfgang von Goethe (1749-1832). Goethe advocated a holistic description of nature through its human perception and in his fierce argumentation rigorously attacked and proved wrong Isaac Newton's Opticks (1704). "The phenomena have to be brought out of the dark empiric mechanic dogmatic torture-chambers in front of the jury of common human sense once and for all." (Goethe 1810)[18]

Goethe rigorously objects to science that would not trust the common sense of human experience. Landscape approaches to architecture have always existed besides the rationale based on experiential qualities. If I follow Goethe, the walking writer, architect of a Roman house, and landscape architect of the Park at the Ilm (started 1776) in Weimar, I think we should we understand architecture as a whole of experience rather then trying to decompose it.

The aim of this thesis, a scientific approach to landscape in architecture, does not mean I should like to see nature purely a a matter of object but with the term landscape I introduce nature as experience. What the poet Goethe reveals is that science is not a goal in itself but a means to an end. The same goes for architecture that shifts more and more from an internal logic to a holistic approach: to create a human environment in relation to nature based on experience. A holistic experience based approach as postulated by Goethe would reach architecture theory only much later, as I will show at the example of Wölflin and Frankl (in section 3.1.6).

18 “Die Phänomene müssen ein- für allemal aus der düstern empirisch- mechanisch- dogmatischen Marterkammer vor die Jury des gemeinen Menschenverstandes gebracht werden.” (Goethe 1810 /1960 p. 538-545 translated by the author).

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3.1.5 Semper against Paxton

The history of London's Crystal Palace in 1851 (Fig. 3.1.5.1.&.2.) by Joseph Paxton (1803 – 1865) is a good example to illustrate the divide between the emerging industrial practice of advanced building and the preoccupation of academic theory with antique architecture. Crystal Palace was built for the London World's Fair at a tremendous pace in 1851. It demanded the most advanced building technology of its age. It is considered today as of one of the first cases of modern architecture (Frampton 1983 p.11). The Crystal Palace used industrial standardisation and mass production with the relatively new materials of cast steel and glass. In particular these materials disconnect from the tectonic tradition of wood, stone and brick joinery – all of which would be too slow. The blend of interior and exterior design was programmatic. The building displayed the most advanced practice of industrial production, while being inside a hall filled with machinery and art of the different parts of the world. It also was filled with light and air to be able to become an interior landscape, including the warmer climates of the British colonies.

Paxton introduced elements of architecture more decoratively than in a structurally-tectonic manner (Fig. 3.1.5.3.). He added details of bows, capitals, rosettes, panels and a frieze crowned with a floral lily-pattern.

Crystal Palace was closer to the integration of landscape design and advanced architecture than any building before its time. With a great engineering effort one wing was built over a fully grown tree, lifting the whole roof structure in one piece. Air-conditioning and the installation of a tropical climate were tested with a mechanical HVAC system. The building acted as a climate machine. The fascination of the machine age celebrated in its festive gathering place. Crystal Palace contained a glass (hence 'crystal') fountain as a main attraction: water spilled as the symbol of life. The building became a global landscape habitat. These elements, however innovative, as well as the total and epochal work of art of Crystal Palace, did not influence the architecture of its time in a profound way.

Cast iron was despised in architecture theory. Both leading architecture theorists of the time, besides Semper in German and John Ruskin (1819-1990) in English despised cast iron. Only Eugène-Emanuel Vilolet-le-Duc (1814-79) advocated for iron. But not even Violet-le-Duc, who himself designed a concert hall (1886) with buttress like cast iron spatial framework would accept the Crystal Palace as architecture, objecting to its technological rationalism. (Ching 2011 p.646).

Semper himself wrote a fierce critique about the use of glass and iron in his time in a revealing article about a predecessor to Crystal Palace: the Paris Glasshouse of 1846 (German: Der Wintergarten zu Paris Semper 1848, abbreviated in Über Wintergärten Semper 1884 p.484-490). In his critique Semper first attacks the use of a bare cast iron structure and the glass roof spanning across the lecture hall of the Bibliotheque St.-Geneviève (1843-51 Fig. 2.4.5.5) designed by Henri Labrouste (1801-75) in Paris. Labrouste quite literally adopted a natural architecture analogy, and translated it into the most advanced techniques of his time. He used symbols and picturesque elements that suggest the inner world of the library lecture hall would be Arcadia: arches that evoke the tree branches of a sacred grove (Ching 2011 p.648). Semper calls these Paris experiments to use cast iron for serious architecture a “failure” (Semper 1884 p.485)[19].

19 “Misslingen dieser Versuche, der Eisenkonstruktion für die ernste Architektur einen Ausdruck zu geben” (Semper 1884 p.485, translated by the author).

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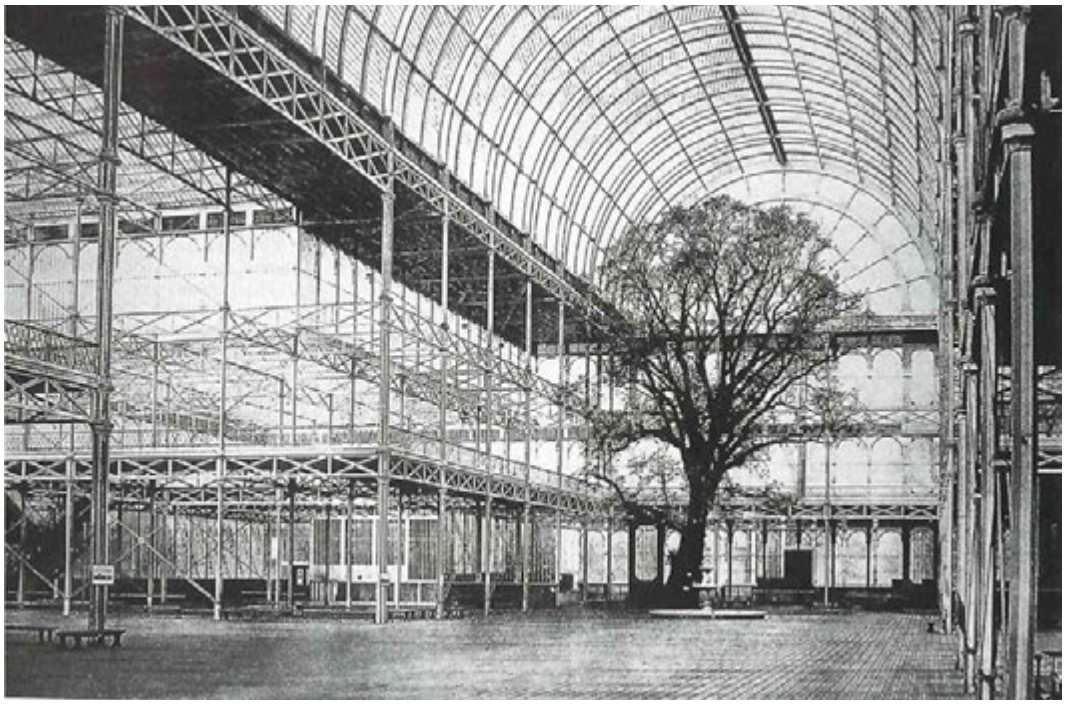


FIG. 3.1.5.1 Crystal Palace London 1851, Great Exhibition Hall with Tree (Schittich e.a. 2007 p.20)



FIG. 3.1.5.2 Plan of Crystal Palace and Park (wikimedia.org)

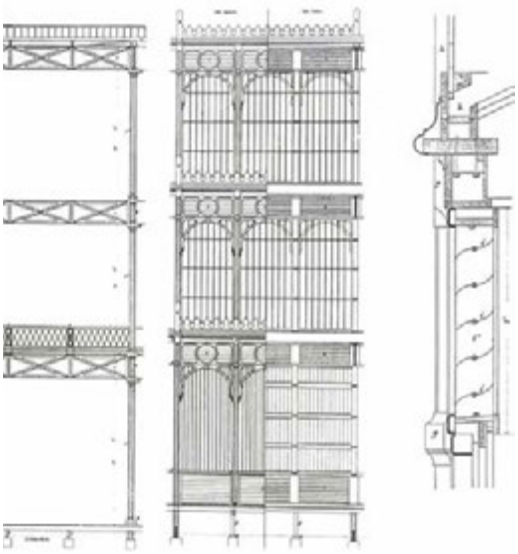


FIG. 3.1.5.3 Facade Details (Schittich e.a. 2007 p.20)

He does not value such eclectic transformation of natural elements: " ... That thus architecture (literally: building-art), which is fabricating it's effects on the temper through the organ of sight may not deal with this seemingly invisible material, while it should be about (...) effects of massing." (Semper 1884 p.485)[20]

20 '... dass daher die Baukunst, welche ihre Wirkungen auf das Gemüt durch das Organ des Gesichtes bewerkstelligt, mit diesem gleichsam unsichtbaren Stoffe sich nicht einlassen darf, wenn es sich um Massenwirkungen (...) handelt." (Semper 1884 p.485 translated by the author)

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In his critique Semper repeatedly refers to the Roman classics. He describes the sparse use of metal only for cladding and fencing in Roman antiquity. If the classics did not use metal structurally it can not have tectonic qualities and Semper qualifies his contemporaries are non-architectonic builders. This critique reveals an ideological argumentation of Stoffwechsel, which is to Semper a cultural process and not the one of physical material qualities.

The actual reason for Semper's opposition to the use of iron and other metals in construction stems from his own dissatisfaction with the Paris Winter-Garden (Jardin d'hivèr, Champs Elysées, Paris (1846) Fig. 3.1.5.5.). The tectonics there vex him as they seem structurally irrelevant as a kind of scaffolding ('Gerüst') that invades façades and other architectonic parts (Semper 1848 p.488). Semper harshly criticises the Jardin d'hivèr as an enormous "glass box" and denies the relation of art and nature in this work as "crippled" (Semper 1848 p. 488).[21]

Semper believes in the superiority of architects to gardeners, whose work he hardly recognises as a design discipline, with his critique. Paxton, the designer and engineer of Crystal Palace, was a gardener of Chatsworth garden (redesign 1826–58). Paxton himself was certainly inspired by the Paris Winter-Garden, and its popularity.



FIG. 3.1.5.4 Bibliotheque St.-Geneviève Paris 1851 (Thoma)



FIG. 3.1.5.5 Jardin d'hiver Paris 1846 (A.Provoost)

In as late as 1880 cast iron and steel would still be regarded lesser materials. A fierce discussion arose about the use steel for the choir roof structure of the Cologne Cathedral, the highest building in Europe at the time. Opposition against the new material centred around the fact that it was considered unnatural, and thus unsuitable for sacred space. (http://www.koelner-dom.de/ visited February 2016). It was a close friend of Goethe, Johann Sulpiz Melchior Dominikus Boisserée (1783-1854) who had found a medieval facade plan in 1816 and founded the Dombau-Verein in 1840. The Gothic as the only Western architectural style with almost no Greco-Roman influence was long considered unarchitectural, just like industrial materials.

21 "Kein Zusammenwirken der Kunst mit der künstlichen Natur. [sic] ... Der enorme Glaskasten ... lässt es (alles andere) als verkrüppelte Andeutung erscheinen. " (Semper 1848 p. 488 translated by the author)



FIG. 3.1.5.6 Steel structure Kölner Dom (Photo: Kaspar H.)



FIG. 3.1.5.7 Cristal Palace on Fire (London News 5.12.1963)

According to Winston Churchill (1874-1965) the fire of Crystal Palace in the last years of the interbellum in 1936 marked the "end of an age" (Shears 2017 p.198). He was referring to the age of popular fascination in industrial progress leading up to the Great Depression of 1929. On the brink of WWII, the 'modern age' of industrialisation had come to an end, while the 'modern age' of architecture had only just begun. The emergence of new buildings with industrial techniques and the annexation of natural or landscaped space into air-conditioned interiors reflect societal change and the democratisation of Europe in the 19th century. Also gardens are made public to the exploding urban populations. But this societal change did not yet reach the theory of architecture. Semper's example shows how an established architect was opposed to accepting this new form of buildings as valid architecture.

That Crystal Palace was denied the status of architecture illustrates well how the debate and discussion on whether or not something is architecture is reduced to a discussion of materials or (at best) motives of antiquity with an impressive 1800 years of dogmatic continuity. Architecture remained in a stiff scheme. In underpinning his objections against the Paris Winter-Garden, Semper leaves no doubt that this fierce critique of the architecture establishment against these innovations is not a coincidence, but centred on the divide of landscape and architecture. A blend of garden and building is a fundamental mistake in the relation of nature and art according to Semper (1884):

"A garden necessarily needs a house to which it belongs, only this house makes it a real garden. Without the latter (a house) and without the continuation of its architectural order into the innermost area of the garden-nature, the garden is not a garden, but a tamed wildness, in one word nonsense. From the house as focusing point of art, that (art) should expand radiantly across nature, and nature should on its side have effect on art in a seemingly powerful exchange. This necessary relation, these first conditions of such a architectonic disposition lack at the Paris Winter-Garden" (Semper 1884 p.488-489)[22]

For Semper the divide between nature and architecture must persist. Exchange is desirable and even necessary, but the dichotomy is an absolute prerequisite for architectural design. For two millennia, all canonical theorists of architecture agree on the necessary divide of nature and architecture. Despite the popularity of these public venues in London and Paris, Semper's example clearly defends architecture from any integration with landscape elements.

22 Ein Garten bedingt notwendig ein Haus, zu dem er gehört: dieses Haus macht ihn erst zum Garten. Ohne letzteres und ohne die Fortsetzung seiner architektonischen Ordnung bis in das innerste Gebiet der Gartennatur hinein, ist der Garten kein Garten, sondern eine zahme Wildnis, mit einem Worte ein Unding. Von dem Hause als Brennpunkt der Kunst soll die letztere sich strahlenförmig über die Natur ausbreiten, und die Natur soll ihrerseits in gleich mächtiger Wechselwirkung auf die Kunst hinüberwirken. Dieser notwendige Zusammenhang, diese ersten Bedingnisse einer derartigen architektonischen Anlage fehlen beim Pariser Wintergarten. (Semper 1848 p.488-489 translated by the author)

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3.1.6 Wölfflin and Frankl: a natural phenomenology of living architecture

In 1932–34 the Stadthaus Winterthur was extended with a concert hall. The extension fundamentally changed the proportions of the executive wing, which had represented the equal powers of the democratic branches of power in Semper's original idea. One of the defenders of Semper's original design was the influential art historian Heinrich Wölfflin (1864–1945), a Winterthur native.

Wölfflin as an art historian - began to question the rules established by architects like Alberti and Palladio by analysing and historically contextualising the great works of art and architecture in his own interpretation. Wölfflin is in turn a disciple of Jakob Burckhardt (1818-1897) who interpreted the art of the Italian Renaissance as the expression of cultural changes in Italy. (Die Kultur der Renaissance in Italien Burckhardt 1860, Engl. The Civilization of the Renaissance in Italy Burckhardt 1878 and 1990).

Wölfflin introduced the phenomenology of spatial perception into the critique of architecture, connecting it to the relatively young science of psychology. In his Introduction to a Psychology of Architecture "Prologema zu einer Psychologie der Architektur" (Wölfflin 1886), he relates the physical appearance of architectural bodies to the human aesthetic appropriation. Exploring the relation between the physical experience of architecture and its form, Wölfflin (1886 p.14) also relates the emergence of good architecture to nature in a fundamental way, proclaiming that beautiful form is conditioned by organic life[23] He establishes a novel natural force that he calls 'Formkraft'. Establishing the architectural form as the main question of design, Wölfflin's argument[24] (1886 p.15) destabilises canonical mechanisms of textbooks for architects to copy from.

According to Wölfflin each object of art just as each being in nature seeks perfection in the development of form. Formative force emerges from the human lust and is expressed with human will. The perfect form is regular, symmetrical, proportional and harmonious and can be expressed in materials as relations of length and width, horizontal and vertical development and ornament.

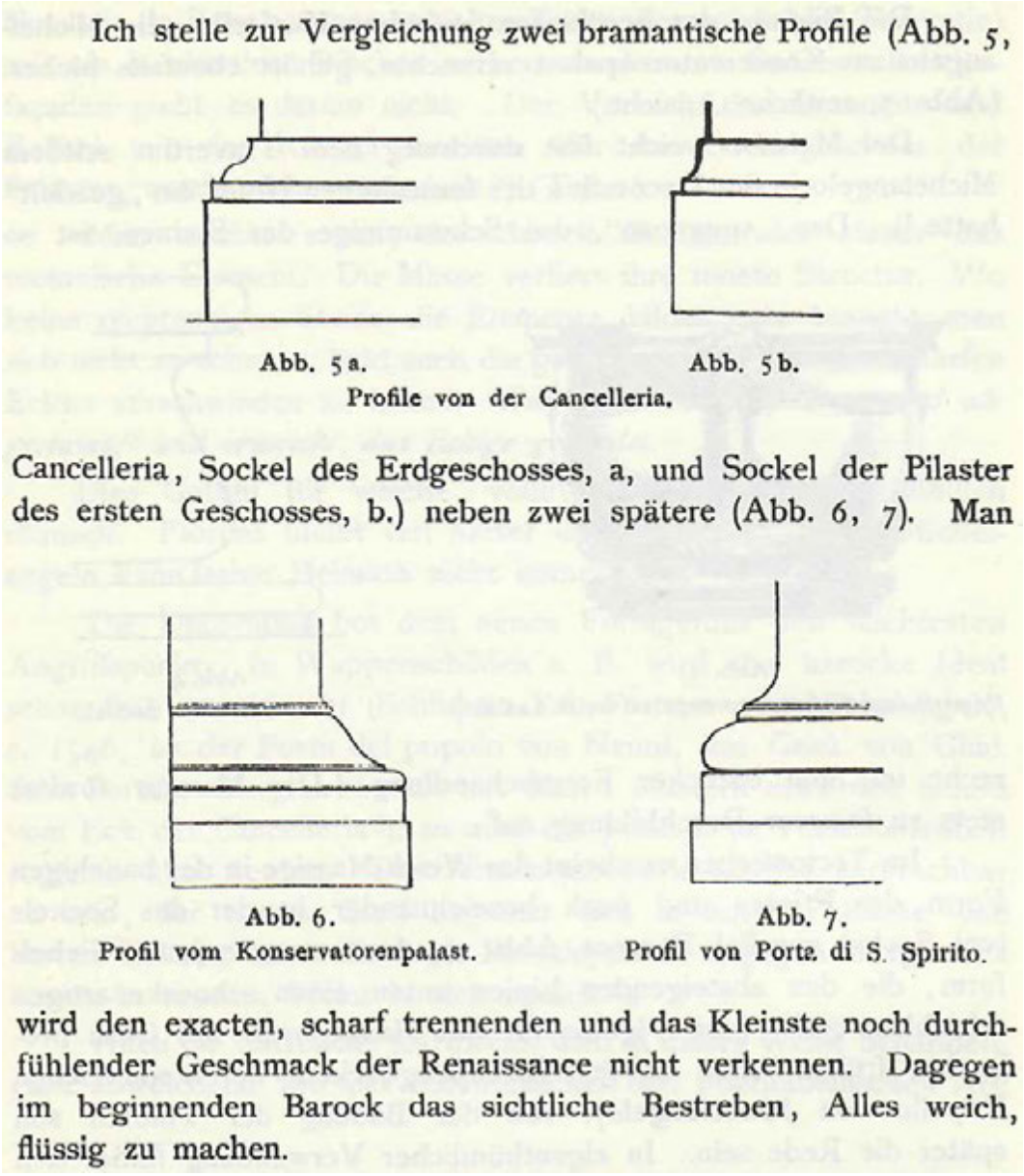
Already in the Prolegomena Wölfflin established the idea he later developed, that each epochal human condition expressed itself in a new architectural style: "an architectural style expresses the attitude and movement of the men of its time" (Wölfflin 1886 p.39)[25]. With his knowledge from Psychology Wölfflin opposed the kind of casuistic historiography of art and advocated the importance of human perception. This undermined not only his field of art history and the subject of past epochs but also the continuation of formal canon in a changed society.

23 “Und so behaupte ich, dass alle Bestimmungen, die die formal Aesthetik über die schöne Form gibt, nichts anderes sind, als die Bedingingen des organischen Lebens.” (Wölfflin 1886 p.14, transl. by the author)

24 “Nach all dem gesagten mann kein Zweifel seine, dass Form nicht als etwas äusserliches dem Stoff übergeworfen word, sondern aus dem Stoff herauswirkt.” (Wölfflin 1886 p.15, transl. by the author)

25 “... ein architektonischer Stil gibt die Haltung und Bewegung der Menschen seiner Zeit wieder.” (Wölfflin 1886 p.39, transl. by the author)

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Ich stelle zur Vergleichung zwei bramantische Profile (Abb. 5,

Abb. 5 a. Abb. 5 b.

Profile von der Cancelleria.

Cancelleria, Sockel des Erdgeschosses, a, und Sockel der Pilaster des ersten Geschosses, b.) neben zwei spätere (Abb. 6, 7). Man

Abb. 6.
Profil vom Konservatorenpalast.

Abb. 7.
Profil von Porta di S. Spirito.

wird den exacten, scharf trennenden und das Kleinste noch durchfühlender Geschmack der Renaissance nicht verkennen. Dagegen im beginnenden Barock das sichtliche Bestreben, Alles weich, flüssig zu machen.

FIG. 3.1.6.1 Profiles of early Bramante in Rainassance above and later in Baroque below (Wölflin 1961 p.36)

Soon after Wölfflin's theoretical rehabilitation of 'the will to form' as a human element in architecture, Wölfflin studied examples of Baroque Architecture in Rome and differentiated them from the Renaissance. Here he exemplifies the epochal change between the two styles. He also establishes the change in question as a self-inflicted and conscious evolution of its architects such as Antonio da Sangallo, Michelangelo, Vignola, Giacomo della Porta, Maderna, and late work of Bramante, Raffael and Peruzi (Wölfflin 1961 p.4). Wölfflin does not explain "style determining geniuses" (Wölfflin 1961 p.4) in a biographical sense, but by crucial works and each and every design decision. He establishes a new kind of formal architectural critique involving analysis of formal elements of a style (e.g. The Illustrations 5 earlier Bramante in Renaissance or 6, 7 late Bramante in Baroque, 1961 p.45). For Wölfflin Baroque architecture is an art of massing and the expression of movement through principles of form.

In conclusion to his seminal study of churches and city-palaces Wölfflin finally examines the relation to the villas and gardens of Rome (Wölfflin 1961). His opinion about the villas and gardens

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is completely opposed to Semper (1848). From a style determining perspective Wölfflin finds no architectural interest in the Roman Villas of Lante, Caprarola, D'Este or Aldobandini (Wölfflin 1961 p.118)[26] but acknowledges the (style determining) dominance of their gardens.

Wölfflin closes his architectural style history by describing crucial elements of the Italian Baroque gardens to determine architecture. In his last chapter of "Villas and Gardens" he establishes gardens as the epochal pacesetter, the style-determinant of architectural development in the Italian Renaissance and Baroque, illustrated by examples and their elements.

"one has to continuously keep in sight, that architecture can not play an independent role. ... Not only the direct environment of the house, but the whole garden is under the rule of an architectonic spirit" (Wölfflin 1961 p. 131)[27].

Note the change: For ages architects, even up to the last generation before Wölfflin, subordinated landscape, gardens as nature to the architecture emancipated from a perspective of formal analysis as opposed to ideologically driven theory (i.e. last section, Semper 1884 p.488). Also, this shift in looking at the divide of landscape and architecture emerges from a reading of architectural form. Even from the 16th century when the theory of architecture was certainly not liberated from Virtruvius, even not with its own theory, architectural style itself in retrospect developed faster than its theory (Wölfflin 1961 p.9).

Paul Frankl provides an important text for a new view of architectural history: "Die Entwicklungs-phasen der neueren Baukunst" (Frankl 1914)[28]. Frankl explicitly refers to his Munich University teacher Wölfflin in the introduction (Frankl 1914 p. V) and dedicates the book to him. Beyond Wölfflin's analysis of the change of styles on merely formal phenomena, Frankl establishes a complete categorisation for the analysis of buildings. Frankl's theory of architecture holistically involves phenomenological, spatial, temporal, metaphorical, and programmatic aspects. Frankl skillfully combines phenomenological and structural critiques of architecture into a complete system from a human perspective. He also combines the logic of making with that of perceiving architecture. In his opinion, "people are part of architecture". Without them a building would be a "mummy" (Frankl 1914 p.159). Here we look "for the intellectual substance, content, sense of the whole" (Frankl 1914 p.15[29]). Frankl, following Wölfflin, chooses his own inventory of categories: he identifies the historical epochs of art and architecture (Renaissance, Baroque, Rococo, Classicism) from existing monuments and decodes their meaning from what is there in spite of missing historiographic data. His contribution provides what to look for as essential qualities of a building design as a valuable model to filter the essence of any design.

Frankl divides the appearance of architectural works into four elements: Space, Mass, Light and Purpose ('Die vier Elemente: Raum, Körper, Licht und Zweck' Frankl 1914 p. V). As Frankl postulated, all these elements may be approached differently in each style. He determines polarities of style development for each element ('Poolpaare' Frankl 1914 p.174). In formal analysis of

26 “Es ist kein einziger bedeutender Bau daunter.” (Wölfflin 1961 p.118)

27 “... man muss hier stets im Auge behalten, dass Architektur gar keine selbstgnädige Rolle spielen kann. ... Nicht nur die nächste Umgebung des Hauses, sondern der gesamte Garten steht under der Herrschaft eines architektonischen Geistes.” (Wölfflin 1961 p. 131, trans. by the author)

28 English translation: The Principles of Architectural History: The Four Phases of Architectural Style, 1420–1900 1968 and 1973. For this thesis i refer to the German original (Frankl 1914).

29 “... [man] gelangt so zu dem geistigen Gehalt, dem Inhalt, dem Sinn des Ganzen” transl. by the author form (Frankl 1914 p.15, transl. by the author).

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buildings, he explains how development of style is determined by a movement from one pole to another. According to Frankl, each polarity is in stylistic development. Additive spatial composition develops into dividing space (Raumaddition und Raumdivision). The architectural body develops from centripetal and centrifugal forces (Kraftzentrum und Kraftdurchlass), and individual images are replaced by many (Einvildigkeit und Vielbildigkeit). The freedom from use-definitions is replaced by use-bound building in typologies (Freiheit und Gebundenheit).

Frankl extrapolates the differentiation of Wölfflin (Renaissance and Baroque) across two further epochs (Rokoko and Classicism). But more important is how the model of Raumform, Körperform, Bildform und Zeckform provides an instrumental set for investigating the form of architecture as a total work of art. Compared to the theoretical body of previous centuries, Frankl provides a big leap in the theoretical toolbox to understanding architecture. Rather than devising and defining elements, materials, and reaching the history of style to a development of art as craft, Frankl addresses the intellectual and human dimensions of architecture. By combining these elements in a parallel history of style, Frankl finally establishes a holistic view[30].

Besides being still valid today as a well-structured approach to the history of architectural style for the juxtaposition of architecture and nature, Frankl's connection between style and a holistic humanistic vision of architecture is most important. Frankl's phenomenological and morphological approach to art history is a key to understanding the design of architecture more effectively than any deterministic approach. His four-element model was adopted as a scheme for design analysis plananlyse at TU Delft and later transposed into a 4 layer approach to landscape architecture by Clemens Steenbergen and Wouter Reh (see 3.2.2. and 3.2.3.). Frankl's theory not only simplifies architecture to form and appearance but emphasises the complex interactive forces of different elements. Frankl's scientific approach to architecture opens a way to understand spatial design in a more complete way, not far from the holistic visions of Goethe on light. Such a holistic understanding of analysis helps understand the principles of landscape phenomena in architecture.

3.1.7 Wright: natural architecture

From the six previous examples of architectural theory since antiquity I demonstrate that, even if the position of nature as an ideal for architecture was always present, still architecture as object art - would keep its distance from nature. In Western architecture nature was kept at a safe dialectical distance. The following three sections show how the nature - architecture divide in the 20th century was almost overcome and why it persisted. With three prominent figures and two of their key works I exemplify the modern architect's diverging attitudes toward nature. Kaufmann House, named Fallingwater[31](1934 - 1937) outside Pittsburgh, Pennsylvania by Frank Lloyd Wright in this section will be compared to Farnsworth House (1945 - 1951) outside Chicago, Illinois by Mies van der Rohe in the next (3.1.8.). Le Corbusier's "Plan Voisin" for Paris (1926-1966, 3.1.9.) exemplifies an

30 The influence of Frankl in architectural theory was seriously affected by his forced retirement from Halle University by the Nazi regime and its censorship against disseminating his main work in 1934. His systematic approach to art history, System der Kunstwissenschaft (1938), was among the books burned by the Nazis in public. In his Exile in the US, Frankl held a position at Princeton with a fellow emigrant, Erwin Pankofsky (1892-1968), but apparently Frankl's English was too poor to lecture (Sorensen 2016).

31 I use this given name “Fallingwater” instead of the also common “Kaufmann house” because of the significance of the naming of a house design after a landscape feature in the context of this thesis. The name was given by Wright. Edgar Tafel reports the design and naming on one single day in Fall 1935 at Taliesin. “Then the gold title across the bottom: “Fallingwater”. A house had to have a name” (Tafel 1979 p.3) see for design history also Levine 1996 p.225.

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ideology followed by a whole generation of modern architects. Each architect's attitude towards nature illustrates major differences resulting from a search for different kinds of landscape perfection. At an important moment in architecture, when modernity freed it from classical rules, landscape integration and an idea of natural architecture came up strongly, but finally modern architecture established an even stronger divide.

Frank Lloyd Wright (1867 - 1959) was a descendant of the Chicago School where he had worked for Louis Henry Sullivan (1856 - 1924). Leaving Chicago to a voluntary exile in Florence in 1909-10, Wright had developed an understanding of Italian Renaissance Architecture as "an intimate bond with culture through the land" (Levine 1996 p. 72). Wright became the most prominent exponent of the Prairie School at the turn of the 20th century in the Midwest of the United States, and represented a national architectural style which alluded to the American prairie landscape with its expression, space and materials (Pond 1918 p.174[32], Brooks 1972).

Throughout his life and career, Wright had been engaged in Nature and Landscape preservation. Traces go back to his Chicago years where he was involved with the landscape architect Jens Jensen and joined his “Charter of friends of our native landscapes” (Jensen 1913 and 1933)[33].

At the time of his work on Fallingwater in the 1930s, Wright had not had a major architectural commission for several years. Landscape architect and architectural educator Alfred Caldwell (1903-1998) had worked with the same Jens Jensen in Chicago and lost his job there in the aftermath of the 1929 stock market crisis. Caldwell remembers one of his encounters with Wright “in bad shape” at his residence and fellowship Taliesin in 1930:

“Mr. Wright said: ‘Alfred, I haven’t had a building for eight years. It’s impossible for a genuine architect to operate in America. So what am I going to do, I’m going to be a farmer. You see this land over there? That’s real good soil. ... I’m going to farm it. You stay and we’ll farm it together. How’s that? Stay with me.’ “ (Caldwell 1997 p.13)[34].

Wright had personal financial problems with his divorce following the denouncement[35] of an extramarital relationship and a second fire at Taliesin in 1925 (Levine 1996 p.195) which he described as a descent to “the bottom of the vulgar pit” (Wright 1932/1977 p.273). As a last major project, Wright had engaged in a large hotel project in the South Mountains of Phoenix, Arizona. The San Marcos-in-the-desert hotel project blended into the Mesa landscape, which Wright studied intensely, including its indigenous architecture ruins. He even moved with his staff and family into the Ocatilla campsite a few miles from the intended hotel site, but that project ended soon after the 1929 economic crisis. Levine (1996 p.215) calls the hotel design in the desert a predecessor to Fallingwater.

In Levine’s contemporary interpretation of Wright’s work, both examples engage with the reading of the building site in a “radical identification of architecture with nature” (Levine 1996 p. 215).

32 “In imitation of a certain broad and horizontal disposition of lines individually employed, a school of design has sprung up, for which its authors claim the title ‘American’. The horizontal lines of the new expression appeal to the disciples of this school as echoing the spirit of the prairies of the great Middle West, which to them embodies the essence of democracy.” (Pond 1918 p.174)

33 see on Wrights contribution to Jensen (1933) in Matthew Skjonsberg (2018 p.407)

34 In this source Caldwell is paraphrsing Wright from his vistit in 1930 in a transcript of an interview with Dennis Domer in 1991

35 At that time extramarital relationship was a criminal offence.



FIG. 3.1.7.1 Night View San Marcos in The Desert Hotel Project (Rendering: Lloyd Wright 1927, FLW Foundation Archives, Columbia Univ., MoMa)

Out of the crisis years however came what is considered Wright's most important and influential work – Fallingwater. The Kaufmann weekend residence in Mill Run, Pennsylvania is in many ways the utmost expression in a individual building design of what Wright considers a modern – and as he also said organic – architecture, adequate for modern America. It clearly demonstrates Wright's use of his own landscape strategies in design. For Edgar and Liliane Kaufmann and their son Edgar Jr., Wright interprets a natural site of Bear Run Waterfall.

The clients owned a weekend cabin close by, and initially planned to replace it. Wright insisted on building the house on the very place that the Kaufmanns loved most, the nearby waterfall. A boulder at the waterfall that the Kaufmanns sat on was used as the datum level of the House and Wright was forbidden by Kaufmann to shave it off (Mosher in Tafel 1993 p.152[36]). "That spot, Mr. Kaufmann's stone seat, was to become the heart and hearthstone of the most famous house of the twentieth century" (Tafel 1979 p.3).

The house was to enable its owners to live with the waterfall, the space involves its sounds, and plays a game of both disguising and enhancing the natural feature. A triangular foundation is laid on rocks and the house spans and cantilevers across the Bear Run. [37]The house has a strong differentiation of vertical and horizontal elements in different materials. The vertical walls are built into rock beds and executed in stone masonry, with the same coloured rocks quarried in the vicinity of the site. Different horizontal slabs of two meter high concrete balustrades in light o[38]chre allow large cantilevering of the slabs, up to five meters. Fallingwater was meant to recede into and emerge from the landscape like the formation of rocks that triggered the waterfall. The materials allude to the natural formation, the layout dances with the rocks in the water. The sound of the waterfall fills its space – the spectacle of nature is enhanced and put into an artistic expression by the architect. The inhabitants are to live with the waterfall, and the house provides a direct stair access from the living room to the water. The house is a built landscape.

36 Mosher recalls the importance of that boulder form Wrights answer to his question of measuring a datum level when sent to supervise the construction sit in 1936

37 According to his collaborators Wright hat long prepared this designs exterior expression "in his head" before he drew it with the help of his assistants in only a day, finishing two elevations while Mr. Kaufmann had lunch with Wright (Tafel 1979 p.3). The main floor-plans however where meticulously drawn onto a topographical map and the construction was turned into position to river shore.

38 The light ocker shelves where intitally imagined by Wright to be gold or aluminium plated, of then with glittery paint: They should "'glisten' down among the masses of green leaves" (Wright in Levine 1996 p.237 quoting Wright – Kaufmann correspondence from 1937).

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FIG. 3.1.7.2 Fallingwater Frank Lloyd Wright 1935
(Photo: Daderot, wikimedia.org)



FIG. 3.1.7.3 Topographical Site Survey, Bear Run Camp
(Levine 1996 p.230)

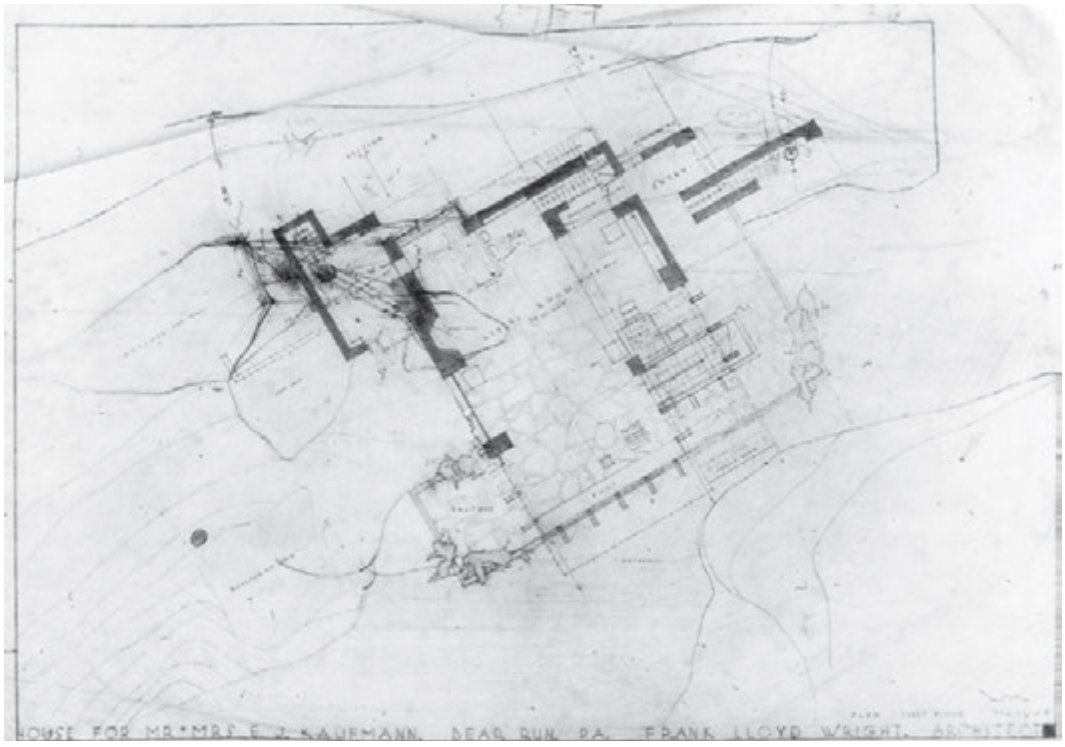


FIG. 3.1.7.4 Preliminary Plan House for Mr. + Mrs. E.J. Kaufmann Bear Run PA. Frnak Lloyd Wright Architect (Levine 1996 p.231)

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FIG. 3.1.7.5 Hiroshige Night Snow at Kambara, 1834 (Fallingwater.org 1985.298)



FIG. 3.1.7.6 Fallingwater, Perspective from southwest (Frank Lloyd Wright 1935, Levine 1996 p.243)

Wright gave a Hiroshige woodblock print to the Kaufmanns in December 1935. I use it here in order to illustrate his attitude toward the house. (Fig. 3.1.7.5). In this graphical representation of a Japanese winter landscape, not only do the shapes of humans and their harsh natural environment blur. The figures' sticks and legs are treated in dark like the trees and the facades of the village houses. Their snow covered backs and hats look like the village rooftops and the mountains. The movement of snow falling and the footsteps of the slowed travellers in the snow in the foreground, merges with rocks on the mountain-slopes in the background to associatively jump through scales of time and space. This print provides the pictorial strategy of the Fallingwater design.

Replace black 'woods' by brown 'rocks' and falling-'snow' by -'water' and the same amalgam of architecture and nature is expressed in the famous perspective rendering of Fallingwater, which summarises the idea in an image but does not represent the experience of the house.

As Levine puts it, the Fallingwater experience should "end with" the rendering (1996 p.243). The carefully selected Hiroshige print also explains the dimension of time and movement of Wright's architecture: Understanding Fallingwater needs the dimension of time, the time of walking through the house that is filled with sounds of the waterfall, orientation in space organised not only visually but through hearing and a full involvement with an environment that never stops.

"Fallingwater ... remains almost unique even in Wright's work. It relies on the purely architectural forms of it's natural imagery to enforce a temporal reading ... . (It is not) ... merely a representation of natural activity. Rather, it is an elaboration and a compounding of preexisting conditions into the realm of phenomena. One is therefore reminded of a long tradition of architecture using nature in movement. As in the gardens of Renaissance and Baroque Italy and France, to give buildings a more direct connection with the changing natural world they in fact replace. ... What is so extraordinary about Fallingwater is that it never stops." (Levine 1996 p.252)

In Fallingwater Wright realised his vision of what 'natural architecture' could become. Instead of 'timelessness' often used by other modern architects, he talks about the 'naturalness' of architecture at a London speech in 1939. According to Wright, modern architecture was to reestablish a new connection of architecture and nature against the 'classic':

"Architecture is a necessary interpretation of such human life as we know it ourselves are to live with individuality and beauty. The 'classic' of course made no such statement; the 'classic' ideal can allow nothing of the kind to transpire. The 'classic' was more a mask for life to wear than an expression of life itself. Then how much more so was pseudo-classic? So modern architecture rejects the major-axis and the minor-axis of classic architecture. It rejects all grandomania, every building that would stand in military fashion heels together, eyes front, something on the right hand

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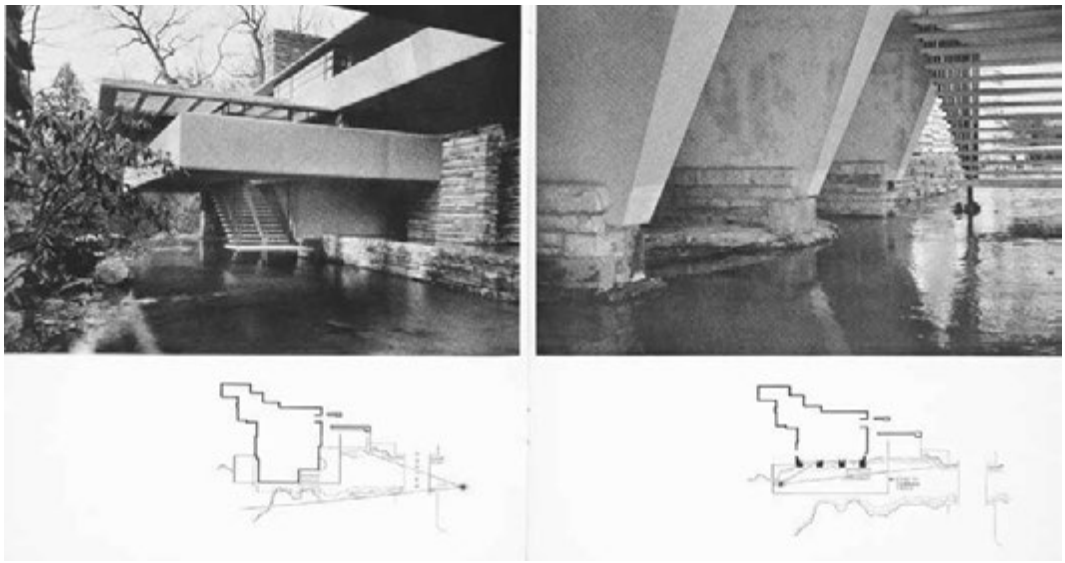


FIG. 3.1.7.7 View From under The Bridge (left) Under the Living Room Balcony (right) (Wright MoMA Catalogue 1938 P.11-12)

and something on the left hand. Architecture already favours the reflex, the natural easy attitude, the occult symmetry of grace and rhythm affirming the ease, grace, and naturalness of natural life. Modern architecture - let us now say organic architecture - is a natural architecture. The architecture of nature, for nature." (Speech at RIBA Wright 1939)

Fallingwater and this speech give us a picture of what Wright had in mind as the modern architecture: "a natural architecture, ... of nature and for nature." (Wright 1939). The house that was one of the clearest demonstrations of this "natural easy attitude" (Wright 1939) was realised in the time that German modern architects of the Bauhaus Walter Gropius, Mies van der Rohe and Ludwig Hilbersheimer came to the USA fleeing Nazi Germany. Their influence in the USA would steer modern architecture in a very different direction than Wright had imagined at the time of their arrival.

3.1.8 Mies: nature through glass walls

The architecture of Mies van der Rohe in its extreme form at Farnsworth House (1945 - 1951, Fig. 3.1.8.1-.3) represents a completely different approach of architecture towards nature.

Mies (1886 - 1989) was the last director of the Bauhaus, founded in 1919 in Weimar under Walter Gropius. In 1937, under pressure of the Nazi Regime, Mies was forced to close down the last Bauhaus in Berlin. He emigrated to the United States and became director of the architecture school at Armour Institute in Chicago in 1938 and developed the campus master-plan and buildings that became the Illinois Institute of Technology IIT. Among several refugee Bauhaus architects, Mies has in retrospect gained the biggest influence in the USA (Cohen 2018, Wolfe 1981).

Mies was warmly received by Wright in 1937, as opposed to other leading European modernists. Before Mies, Walter Gropius on a lecture tour in the USA visited a Wright construction site and was bluntly "left standing there" (Jacobs House in Middleton Wisconsin, as witnessed by Tafel 1979 p. 66/67) and Le Corbusier lecturing in the mid 1930s in Madison was refused a visit at Taliesin by Wright (Tafel 1979 p. 66). Tafel recalls outspoken opinion about the European modernists at the Wright fellowship in Taliesin:

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"... He (Wright) thought these Internationalists were damaging our country with their functionalism, their infatuation with the machine, and their architectural style that was supposed to fit anywhere but in truth was at home nowhere. ... . By 1929 he could demonstrate that American architecture, like everything else, had gone bankrupt, sterile. And after the depression, when the Eastern seaboard decided it could use something architecturally new, did it look to the West of the United States, to its own sons? Certainly not! It went to the Bauhaus." (Tafel 1979 p. 66)

Wright was not included in the important 1932 'International Style' exhibition at Museum of Modern Art (Hitchcock and Johnson 1932) and clearly took a distance from this style definition too. But the work of Gropius, Le Corbusier and Mies had been shown with great influence at this exhibition.

At this time Wright had a strong influence[39] on the European immigrant architect Mies. In text for a Frank Lloyd Wright exhibition at Museum of Modern Art in 1940 Mies (1946 quoted after Neumeyer 2016 p.385) clearly admitted Wright's influence, in particular on his house designs. Specifically he mentioned the exhibition and large format publication of Wright's early works by Ernst Wasmuth in Berlin (Wright 1910). Wright on the other hand respected Mies works in particular the Tugendhat House in Brno and the German Pavilion in the Barcelona World's Fair in 1929 (Tafel 1979 p.69 , see 3.1.9.). Mies visited Wright at Taliesin in 1938; not speaking English, the two relied on an interpreter and travelled four days around construction sites of the Johnson Wax Building with Assistant Tafel (1979 p.70). Tafel himself recalls the discussion of the meeting of Mies and Wright among Fellows at Taliesin in "Apprentice to Genius":

"The greatest difference between Mies and Mr. Wright, we felt, talking it over later, was that while Mies dedicated his entire life to search for one style, refining and purifying, Mr. Wright kept evolving, growing, and developing new styles. He was never locked into one design establishment, which bore out his favourite phrase: 'What we did yesterday, we won't do today. And what we don't do tomorrow will not be what we'll be doing the day after.' By the time architectural copyists had caught on to an idea of Mr. Wright's, he was already onto something new. Mies' credo was just the opposite: "You don't start a new style each Monday". (Tafel 1979 p.70).

Shortly after this personal encounter Wright gave an introductory address for Mies at Armour Institute in Chicago in 1938. Apparently annoyed that all other speakers disregarded any reference to Wright's own influence on Mies, he said "'I give you Mies van der Rohe" and abruptly left (Wright 1943 p.460, David Wright in Tafel 1993 p. 27,)[40]. With his Bauhaus fellows Hilbersheimer and Peterhans, Mies totally changed the curriculum at Armour, later IIT. In 1945, while student numbers increased, Mies hired Landscape Architect Alfred Caldwell who developed a role as influential educator there for over 15 years.

39 In the Press Release to the 1938 Monographic exhibition of Fallingwater MoMA writes: "Early in the 20th century his (FLWs) theories became more famous abroad than in this country and influenced young architects in Europe, who developed a style based on Wright's principles. This architecture has since become known as the International Style and in the guise of a European influence has returned to this country where it actually originated." (MoMA 1938)

40 Wright agreed to introduce Mies at a dinner celebration of his nomination to director of the Armour Institute in Chicago in 1938. Wrights son David recalls his speech after Mies was hailed by many speakers.: "Finally after all the kudos - none of the speakers had even alluded to the fact that he had been influenced by Frank Lloyd Wright - and telling about ... how great Mies van der Rohe was, they asked Dad to present him. So Dad walked up the aisle, got on the platform, ... and said "I give you Mies van der Rohe," turned around and walked off the stage" (David Wright in Tafel 1993 p. 27). In Frank Lloyd Wrights Autobiography he notes it slightly more flattering, but still with a bitter undertone. "I give you Mies van der Rohe. But for me there would have been no Mies - certainly none here tonight. I admire him as an architect and respect and love him as a man. Armour Institute, I give you my Mies van der Rohe. You treat him well as I do. He will reward you." (Wright, F.L. 1943 p.460)

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FIG. 3.1.8.1 Farnsworth House: entance across platform (Photos: Lodewijk Balion)



FIG. 3.1.8.2 Farnsworth House in Fox River floodplain

Shortly after Caldwell started teaching with Mies in October 1945 both visited the site Dr. Edith Farnsworth had in mind for Mies' first house in the United States. Dr. Farnsworth had initiated to commission Mies for designing a weekend house on a plot in the floodplain of Fox River in Plano, Illinois after being deeply impressed by him at a dinner encounter. Mies took up the work immediately. Caldwell remembers a site visit with Mies:

"There was conversation as to where the house should be put. Mr. Van der Rohe said that it was the feature of the property and he would prefer to put in in the floodplain". (Deposition of Caldwell 1951 in Caldwell 1997 p.272)

Curiously, landscape architect Caldwell - who had been invited to farm with Wright at Taliesin 15 years before- was not only consulted as to potential flood levels on the site and land measuring but even involved in the design. In the first Summer break of his teaching at IIT in June 1947, Caldwell volunteered for five weeks to work at Mies' office, while the architect was too involved in bigger projects. Mies had said "Everything has been worked out, you know there's just a few lines to draw"(Mies paraphrased by Caldwell 1997 p.272). According to Caldwell the work did not advance however "because Mies didn't give it any time at all" (1997 p.272). Myron Goldsmith, who was responsible for technical detailing at Mies' office from 1946 to 1953, also recalls Caldwell's involvement (Cohen 2018 p.117, Dunlap 1996, Caldwell 1997 p.290). Finally the house got built only after 1949 when Dr. Farnsworth received a heritage.

For Farnsworth, Mies designed a reduction of a house in the same industrial materials he preferred in any context. The facades only show white painted steel and large glass panels. A single rectangular box of glass walls carried by steel columns. It's single open room is separated from outside by continuous glass walls from floor to ceiling. The floor is a platform elevated above ground at six feet above the expected flood level. Eight outward H-profile columns carry the platform and the flat roof. The house has no outer bearing walls nor separating wall except for a long wood clad core with bathrooms and service rooms that carries the kitchen on the smaller side and the fireplace on the living room side. On one side the outer glass wall is recessed, allowing a veranda and entrance to occupy almost a third of the platform. Towards the river, a lower, smaller platform halfway elevated is attached sideways to two of the main columns and four shorter ones.

Mies emphasised the modesty of his architecture vis-a-vis the site of the green lavishly forested floodplain that surrounded it, referring to it's white colour.

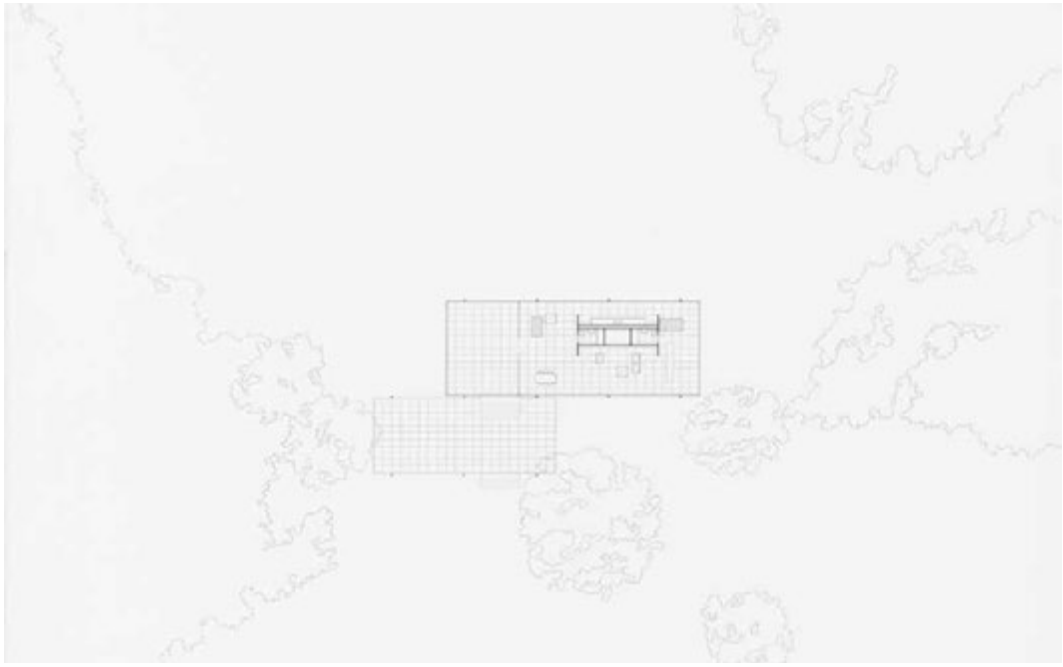


FIG. 3.1.8.3 Farnsworth House floorplan with trees and edge of the forest (Drawing: MoMA Mies van der Rohe Archive)

“Nature should also live it’s own life; we should not destroy it with the colours of our houses and interiors. But we should try to bring nature, houses and human beings to a higher unity. When you see nature through the glass walls of Farnsworth House, it gets a deeper meaning than outside. More is asked from nature, because it becomes part of a large whole.” (Mies quoted by Norberg-Schulz 1958 p.41[41])

Numerous interpretations related Farnsworth to the tradition of Greek temples or Shinto shrines, but Mies himself emphasised that this nature experience was the primary understanding of his house design.

“The Farnsworth House has never been truly understood. I think. I myself have been in this house from morning until evening. Until then I had not known how colourful nature can be. One must be careful to use neutral tones in interior spaces, for outside one has all sorts of colours. These colours are continually changing completely, and I would like to say that it’s simply glorious.” (Mies 1959)

At Farnsworth house Mies had perfected the reduction of architectural elements of the house and freed the plan. Mies claims that this reduction works in favour of a natural experience. However in its reduction, the house-object itself became an icon to modern architecture - mostly disconnected from it’s surroundings. It also lent itself to being copied[42]. A typical Mies drawing from this period would be an interior perspective, where behind a glass wall a photograph of the surrounding environment would be collaged. Be it a project for a living room in Illinois (1939) or a for an open plan office space in Cuba (1957): the images are similar and the background seems even interchangeable.

41 Translated in Cohen 2018 p.114

42 Farnsworth House was mass reproduced in literature, not unlike Fallingwater, but with different effect. It was famous before completion as the same Philip Johnson (1906-2005) that had initiated the International Style Exhibition 1932 had exhibited Mies’ project for Farnsworth at MoMA in 1947 (Johnson 1947) featuring a nearly context less model of de design of Farnsworth House. Johnson also built his own Glass House (1948-49) in New Canaan Connecticut in that is seen as a copy of Mies initial idea.

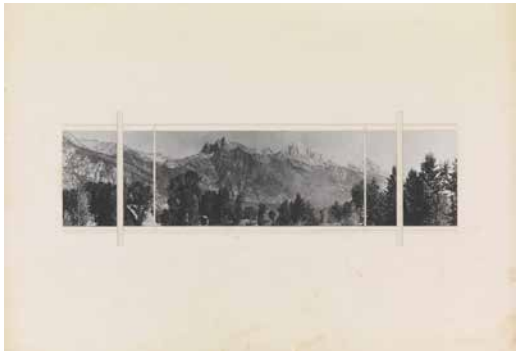


FIG. 3.1.8.4 & .5 Resor House project in Wyoming 1937-38



collages of living's north and south glass walls

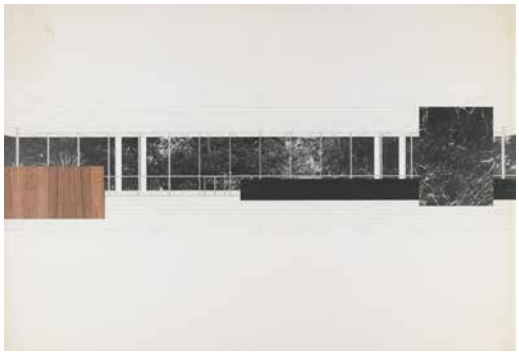
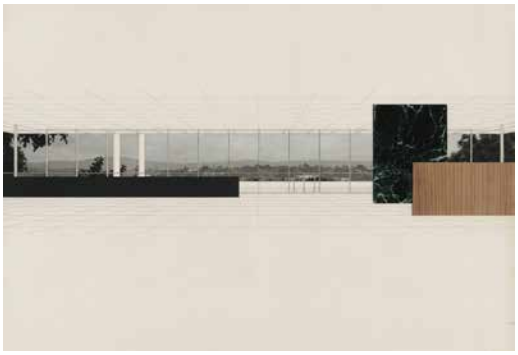


FIG. 3.1.8.6 & .7 Bacardi & Co. project on Cuba 1957



collages of two different office spaces

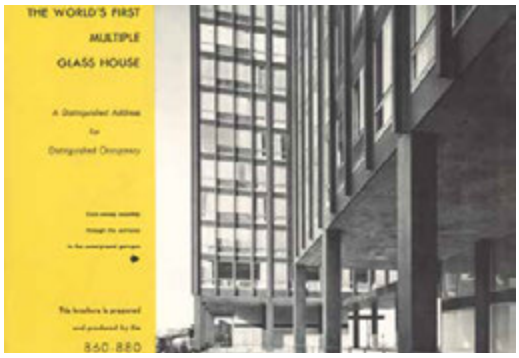


FIG. 3.1.8.8 Brochure of 860-880 Lake Shore Drive (1957)



FIG. 3.1.8.9 Film still from "Playtime" (Jacques Tati 1967)

(Collages above FIG. 3.1.8.4 to .7: MoMA Mies van der Rohe Archive)

Mies developed a universal architectural language completely separate form the nature behind it. The same principles and materials of Farnsworth were used for high-rise buildings. In parallel with Farnsworth, Mies designed the 860-880 Lake Shore Drive Buildings in Chicago (1948 - 1951). The twin tower project was advertised as “the worlds first multiple Glass House” (Fig. 3.1.8.8).

The prototype was reproduced across the USA “row after Mies van der row (sic!) of glass boxes” (Wolfe 1981 p.5.) and the rectangular steel and glass tower became a worldwide model within only a decade (Milnarik 2012). In 1967 French cinematographer Jaques Tati would poignantly caricature the global spread of the international style after Mies’ prototype. Posters indicating all different cities with photographs of the same steel and glass high-rise were placed in his depiction of modern Paris (Tati 1967[43]). These types of travelling posters would show landscapes, but thanks to architecture’s universal response to nature, the places can only be distinguished by the name of the city.

43 I studied the representation of architecture in this science fiction film and two others produced in Paris in the late 1960ies. University graduation thesis in humanities /cinema at ETHZ (Jauslin 1997)

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The differences in impact of the compared two modern buildings are a consequence of different modes of design. Beyond differences in materials between Fallingwater and Farnsworth House, there are completely opposite landscape attitudes in architecture. Fallingwater is designed to be unique and site related, while Farnsworth House is aimed to be universal and placeless. Both were built as weekend houses, both had clearly the nature of a commission where the client and architect intended the house to have a particular dealing with the landscape: as weekend houses, they were meant to give an experience of landscape and nature as a relief to their inhabitants' city dwellings. Both individual houses incorporated significant personal involvement and enthusiasm from the architects that included a conscious answer to nature (Levine 1996 p.225, Caldwell 1997 p.274). But the way the two most prominent modern architects in the United States treat the subject could not have been more different.

Despite modern architecture's declared will to break with classic architecture principles, we see at Farnsworth the same object-centric architecture treating nature as a distant ideal, repeating a remnant of classical architecture, like I found in the architecture theory of previous centuries.

Modern architecture has evolved in a different direction in regard to landscape than Frank Lloyd Wright would have suggested with "architecture of nature, for nature." (1939 see 3.1.7.) because the international style in general, and Farnsworth in particular, was "eminently copyable" (Johnson in Tafel 1993 p.47)[44].

At Farnsworth, Mies van der Rohe along with perfection of his architectural style established a new hut-object and contrasted it to an undifferentiated wild landscape. With the steel beam skeleton of uncladded H-profile beams he "redraws Laugier's primitive hut" (Neumeyer 2016 p.174)[45]. Farnsworth House thus connects to the logic of architectural theory of a future-minded modernity to seemingly eternal rules of the past. For Mies the emancipation of human space through technique is one of utter control of the image of nature in a fixed framing behind glass.

From my thesis' perspective of landscape design strategies in architecture, no two examples of 20th century architecture are as opposed in the attitude towards nature than Fallingwater and Farnsworth House - despite that they are in the same region and era, of similar use and designed by two architects that respected and influenced each other.

With the modern Farnsworth, Mies promoted antique architecture's ideal of distant nature. Through its elevation to a universal icon, what western architecture had established throughout the centuries has persisted throughout modern times.

At Fallingwater, Frank Lloyd Wright meant the modern to overcome that distance by establishing a "natural architecture" (1939). But it remained a unique work (Levine 1996 p.252). The diverging attitudes between Wright's involvement with nature against Mies' distancing from nature is apparent in these key works. With Farnsworth, I exemplify how Mies' architecture understands nature at best as a backdrop to a non-interfering design. His architecture became mass produced and so

44 In historical retrospective his prominent Mies' Fransworth copyist Philip Johnson talks about the differences of Mies and Wright with former Wright-fellow Edgar Tafel: "Frank Lloyd Wright is in every one of our mentalities, but you notice that the influence of the actual forms and shapes is minimal. ... The International Style was eminently copyable, adaptable, and quite broad ... but where is the direct line to Wright?" (Johnson in Tafel 1993 p.47)

45 Fritz Neumeyer sees Mies rationalistic approach to architecture as "reasonably contained and sensually experiental building-art, in which the idea transforms the necessary and truth and logic claim the form-building primate" (Neumeyer 2016 p.15⊠1). «vernunftmässig gefasste und sinnlich erfassbare Baukunst, in der die Idee das Notwendige umbildete und Wahrheit und Logik das frombildende Primat beanspruchten» transl. by the author

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did the ancient divide of architecture versus nature persist: In the 20th century the separation of architecture from nature grew to larger than it had ever known.

How the aesthetics of 'international' modernism enhance the divide between nature and architecture will become even more apparent if I return to an example of it's roots in Europe in the next section.

3.1.9 Le Corbusier's 'Paysage Urbain': Destroying Paris for 'Verdure'

What arrived as "international style" in the United States (section 3.1.8.) and was established commercially during and after WWII had more radical roots in Europe. In the early 20th century modernism found its way through Europe with several parallel movements like Futurism, De Stijl, Bauhaus, Russian Constructivism and the Esprit Nouveau of Le Corbusier. Part of these modernist movements' common denominator was a self understanding as (more or less) revolutionary counter movement to the late historicist establishment of academic architecture. Its protagonists express that in written manifestos using the martial terminology of an "avant grade". They read as if architects were involved in one of the revolutionary street-fights at the end or WWI (for example Saint'Elia 1915, van Doesburg e.a. 1919. Le Corbusier 1923, Van der Rohe 1924, collected and translated in Conrads 1970).

Furious in fighting academic traditions in Europe is for example Swiss born architect Charles-Edouard Jeanneret with his nom de plume Le Corbusier (1884 - 1965) who established himself as a painter and architect in Paris since 1917 (Joly 1987 p.261). In his early manifesto "vers une architecture" (1923 1966, Engl. "Towards a New Architecture" 1926) he elaborates on rules for modern architecture derived form machine-aesthetics of boats, aircrafts and cars. Le Corbusier despised the earth-bound nature of classical architecture as an old-fashioned anti-modern concept to be overcome with the liberation of the modern industrial materials concrete, steel and glass. The rules for modern architecture according to Le Corbusier are later summarised in his "five points" published with his two model houses at the Werkbund exhibition at Weissenhof Stuttgart in 1927 (Roth 1927). The 5 points also touch upon the subject of landscape. In his first point he insists of separating the building volume form the ground.

With his famous pilotis - emblematic of the Villa Savoye in Poissy near Paris (1928-31) (Fig. 3.1.9.1) - Le Corbusier completely separates the building from the landscape. Likewise will he proceed in the larger Unité d'Habitation (5 similar projects 'cite radieuse' in Marseille 1947-1953, Nantes 1955, Berlin 1957, Briey 1963 and Firminy 1965) as a model for mass housing (Fig. 3.1.9.2). In consequence of his dogmatically founded modern architecture, designs of Le Corbusier on any scale lead to disconnection of architecture and landscape.

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FIG. 3.1.9.1 Villa Savoye in Poissy near Paris
(Hitchcock and Johnson, MoMA 1932 p.127)



FIG. 3.1.9.2 Unité d'Habitation "Cité Radieuse" Marseille
(Gschwind 2019 p.105 Photo: Paul Kozlowski)

An influential book of Le Corbusier is “Urbanisme”[46] (1925 1966) where he extends his principles of modern architecture onto the scale of the city. He begins the first part of his book with a ‘Débat Général” and the capitalised phrase:

“THE WAY OF THE DONKEY - THE WAY OF MAN - Man walks straight because he has a goal: he knows where he goes, he decided to go somewhere and walks straight. The donkey zig-zags, drifts a little (etc.) .... . The donkey has drawn all the towns of the continent, Paris too, unfortunately” (Le Corbusier 1925 1966 p.5-6[47]).

The author sets the tone straight: all towns are wrong, their organic growth is savage - civilisation asks for ... him. The saviour architect to establish order, the right angle, make the right choices and organise the “Contemporary Town”[48] (first exhibited in 1922, in Le Corbusier 1925 1966 p.157). In this design he later called “Radiant City” (Franz. “La Ville Radieuse”) Le Corbusier proposes an ideal city based on declared rational principles[49] as a “surgical cure” of geometry to organise “nature” or “naturally “ grown settlements (Le Corbusier 1925 1966 p.260)[50] .

Modelled after his ideal city design, Le Corbusier makes 6 versions of modern “surgical” plans to completely change Paris between 1922 and 1946 (Joly 1987 p.113-161, Bergdoll p.246-249 and Cohen p.250-265 both in Cohen e.a. 2013). In essence they all resemble each other in placing an East-West-axis parallel to the Avenue des Champs-Élysees and a north south axis on Boulevard de Sébastopol. His plans propose to tear down the narrow streets in the centre of Paris (most of the 1st to 4th and 8th to 10th Arrondissements) and completely replace all buildings with “Cartesian Skyscrapers”.

46 The English translation used here is “urbanism”. The word “urbanisme” was relatively new in French used in lexicon since 1910, according to Cohen (2013 p.34) to replace “la construction des villes”. In German it is analogous to “Städtebau” (i.e. Sitte 1886, Schultze-Naumburg 1906) oder “Stadtbaukunst” or Dutch ‘stede(n)bouw’ . ‘Stedenbouw’ is ‘town making’ and the current spelling. “Stedebouw” also means “place making” and the ancient spelling as for example in Kuiper (1991) Visueel & dynamisch. De stedebouw van Granpré Molière en Verhagen 1915-1950.

47 “LE CHEMIN DES ANES - LE CHEMIN DES HOMMES - L’homme marche droit parce qu’il a un but ; il sait ou il va. Il a décidé d’aller quelque part et il y marche droit. L’âne zigzague, muse un peu (etc.) ... . L’âne a trace toutes les villes du continent, Paris aussi, malheureusement. “ (Le Corbusier 1925 1966 p.5-6. transl. by the author).

48 “Une Ville Contemporaine” (transl. author form Le Corbusier 1925 1966 p.157) referring to his project “Ville Contemporaine de trois million d’habitants” 1922, exhibited at the Salon d’automne in Paris and published in “Urbanisme” in a dedicated chapter.

49 “par le moyen de l’analyse technique et la synthèse architecturale” (Le Corbusier 1925 1966 p.157)

50 “Organiser, c’est faire de la géométrie; faire de la géométrie dans la nature ou panel le magma “naturellement” issu du groupement des hommes en agglomérations urbaines, c’est faire de la chirurgie” (Le Corbusier 1925 1966 p.260)

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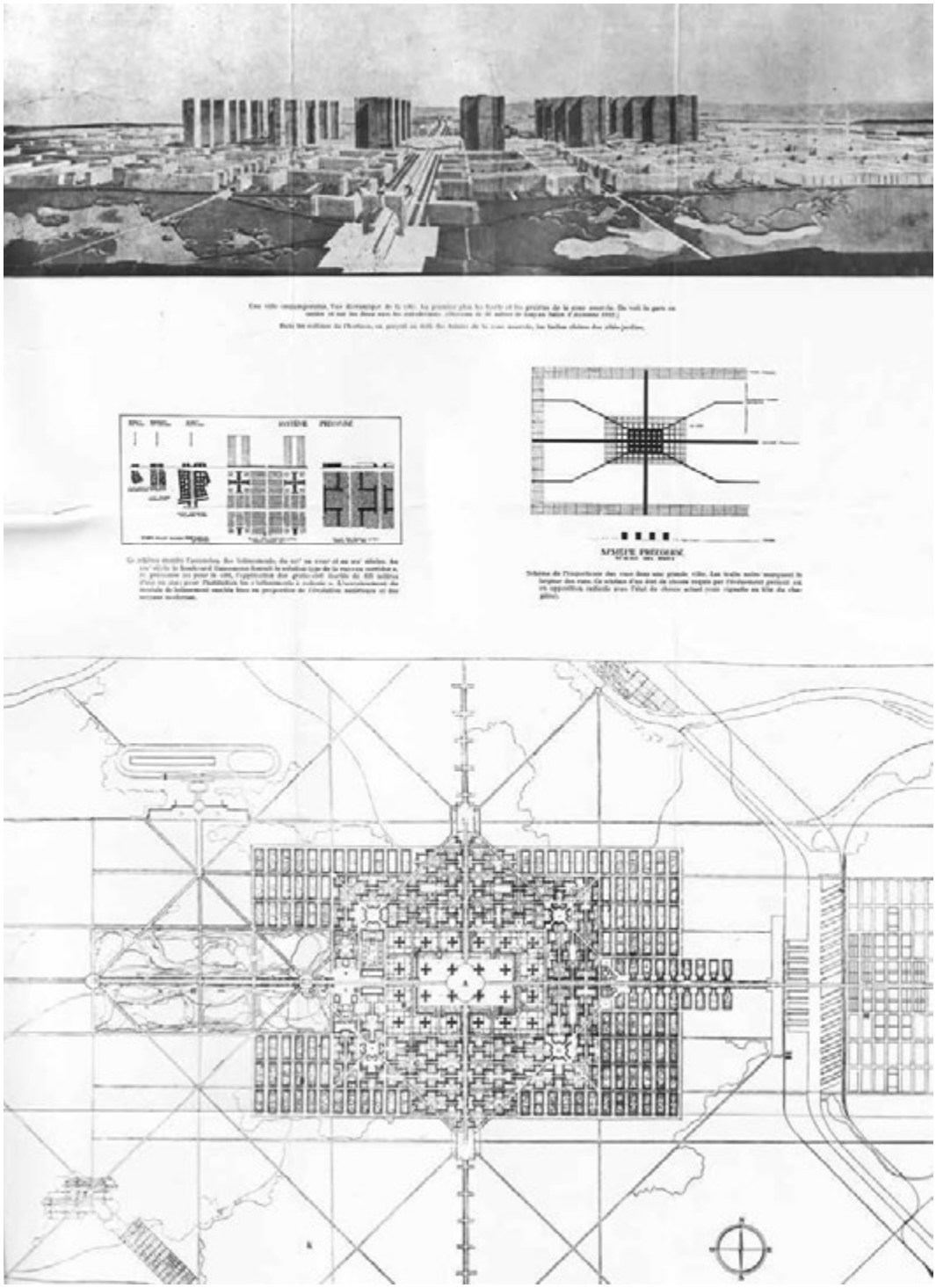


FIG. 3.1.9.3 Ville Contemporaine from "Urbanisme" (Le Corbusier 1966 1925 Insert After p.168)

These towers that appear in his work since 1923 (p.56) recall French philosopher and mathematician Descartes and his widespread mathematical publications of the mathematical coordinate system (1637). With this naming architect Le Corbusier underlines the universal order principle of geometry. He uses the seemingly scientific foundation of his approach for a forced logical argumentation for his plans. He calls his plan from Paris “Le plan Voisin” after aircraft and

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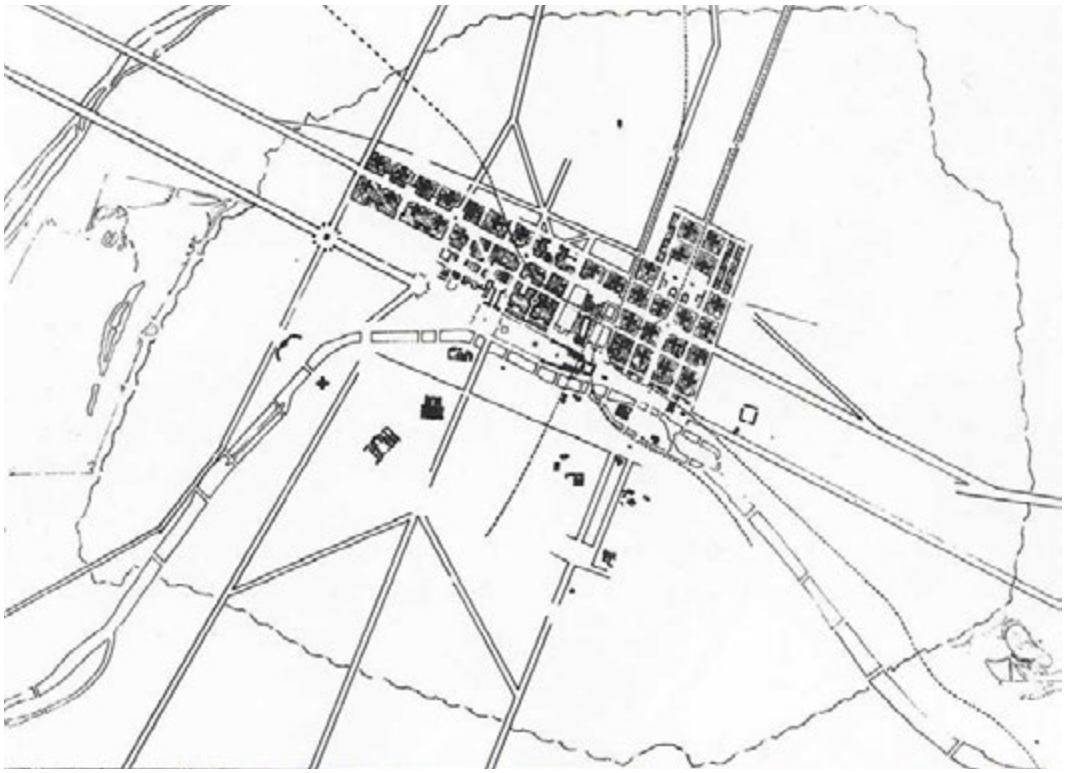


FIG. 3.1.9.4 Plan Voisin for Paris (Joly 1987 p.119)i

automobile builder Gabriel Voisin (1880-1973) referring to him in both the accessibility for cars[51] and the views from the air. Le Corbusier leaves no doubt that his intention with "Plan Voisin" is to completely replace the structure of the city of Paris, which he sees in crisis.

"The 'Marais' and 'Archives' and 'Temple' neighbourhoods, etc., would be destroyed. But the old churches will be saved. They will present themselves in the middle of greenery, nothing is more seductive!" (Le Corbusier 1925 1966 p.272) [52]

Le Corbusier's "greenery" (French: "verdures") remain strangely undefined. He envisions his cartesian skyscrapers and the preserved monuments surrounded by trees, lawns, birds, air and sun.

"From now on the Tuileries could extend across whole neighbourhoods, French gardens, English gardens, geometry of architectures" (Le Corbusier 1925 1966 p.224)[53].

Despite critique ever since its first publication Le Corbusier would insist and repeat publications of his "Plan Voisin" for Paris and the model of "Ville Contemporaine" or later "Ville Radieuse" until his death in 1965. In lectures and sketched projects similar to "Plan Voisin" he proposes to destroy other cities like Buenos Aires (1929-49, see Cohen 2013 p.322) or New York City. He uses Images of Manhattan in "Urbanisme" (1925 1966) as a bad example in "striking contrast" to his ideal

51 Le Corbusier drove a Avions Voisin C12 automobile himself (Cohen 2013 p.36)

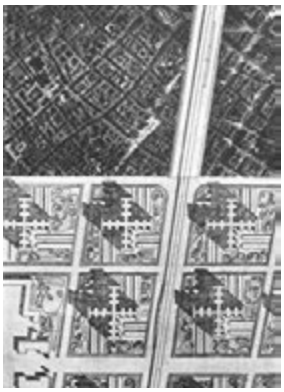
52 Les quartier du «Marais», des «Archives»», du «Temple», etc., seraient détruits. Mais les églises anciennes sont sauvegardées. Elles se présenteraient au milieu des verdures; rien de plus séduisant!» (**Le Corbusier 1925 1966 p.272.** transl. by the author**)**

53 **"Les Tuileries pourront s'étendre dorénavant sur des quartiers entiers, jardins français, jardins anglais, géométrie des architectures."** (**Le Corbusier 1925 1966 p.272.** transl. by the author**)**

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FIG. 3.1.9.5 & .6 Plan Voisin for Paris (Joly 1987 p.119)...



... vs. existing urban pattern (Koolhaass 1978 p.214)

"Ville Contemporaine". He will attack it also directly: Having arrived in New York City Le Corbusier sketches his vision on the eyes of his audience at Columbia University to replace Manhattan Skyscrapers (21 Lecture tour in 1935, Bacon in Cohen 2013 p.347). Later he publishes these sketches in recollections from this voyage (Le Corbusier 1937). The same sketches are used for his design proposal for the UN Headquarters in New York in 1947, which is until today a rare exception to the Manhattan grid. Even as a Christmas card painting in 1951 Le Corbusier joyfully overrules the Manhattan grid with his ideal city (Koolhaas 1978 p.223).

None of these plans for Paris, Buenos Aires or New York City significantly improved the landscape of these cities; a vague landscape remains a filling between "radiant" architecture. Le Corbusier is interested in gardens and trees as backdrop to clear geometries of repetitive architecture, only as a contrast. He integrates greenery in a narrative of improving the hygienic conditions of cities but does not propose their integration with his urban architecture. Rather he uses the extension of greenery to generate a pure "line that profiles the city on the sky ... the presence of ordering power" (Le Corbusier 1925 1966 p.220) [54] As a suprematist abstract painter Le Corbusier favours an evenly abstract idea of landscape.

The propagation of urbanism with principles of modern architecture was also the goal of the CIAM, the Congres Internationeaux d'Architecture Moderne, that took place ten times between 1929 and 1956. They where founded with the intention to establish "the right to live for contemporary architecture, that had to fight the strong antagonistic forces of academism" (Gideon 1976)[55]

The promotion of rational urbanism in various countries was an explicit political goal of the CIAM. Le Corbusier had great influence on the setting of urban themes. Modern urbanism according to CIAM was to separate functions, just like like Le Corbusier had proposed to in his plans for Paris. The first declaration was signed by him and 24 other architects from across Europe[56] on 26th of

54 "Nous serious autrement emus si cette ligne qui profile la ville sur le ciel était pure et si nous ressentions par elle la présence d'une puissance ordinatrice." (Le Corbusier 1925 1966 p.220. transl. by author)

55 «... das Lebensrecht der Zeitgenössischen Architektur einzustehen, die gegen die starken antagonistischen Kräfte eines Akademismus anzukämpfen hatte.» (Gideon 1976 transl. by the author). Gideon was author of the widespread book about modern architecture "Space, Time, Architecture" (1941) but also the Secretary-General of the CIAM since 1928.

56 "H.-P. Berlage (La Haye); Victor Bourgeois (Bruxelles); Pierre Chareau (Paris); Josef Frank (Vienne); Gabriel Guevrékian (Paris); Max Ernst Haefeli (Zurich); Hugo Haering (Berlin); A. H□chel (Genève); H. Hoste (Bruges); Pierre Jeanneret (Paris); Le Corbusier (Paris); André Lurçat (Paris); Ernst May (Francfort); Garcia Mercadal (Madrid); Hannes Meyer (Dessau); W.-M. Moser (Zurich); Carlo Enrico Rava (Milan); Rieveld (Utrecht); Alberto Sartoris (Turin); Hans Schmidt (Bâle); Mart Stam (Rotterdam); R. Steiger (Zurich); Robert Von der Muhll (Lausanne); Juan de Zavala (Madrid)" (CIAM 1928)

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FIG. 3.1.9.7 "the academism says no" (to Plan Voisin transl. author from Joly)i

June 1928 in La Sarraz, Switzerland. It uses even Le Corbusier's repetitive words from "Urbanisme" (1925 1966) in fighting academism and promoting modern urbanism and functional ordering.

"Urbanism is the organisation of the functions of collective life; it extends both the urban agglomerations and the countryside. Urbanism is the organisation of life in all regions. ... Urbanisation cannot be conditioned by the claims of pre-existent aestheticism: its essence is of a functional order." (CIAM 1928) [57]

The word landscape or "paysage" does not appear once in the declaration of La Sarraz (CIAM 1928). The CIAM discuss the basis for mass production of housing. They try to introduce scientific objectivity and draw comparable plans of different urban patterns to optimise orientation, separation of functions, traffic and density.

In France Le Corbusier will not be able to realise his "Plan Voisin", although he never abandons its defence against fierce opposition (Cassou in foreword to Le Corbusier 1966). The ideas of the "radiant city" however are realised partially in projects like the textile factory in Saint-Die (1946-1959) or the house of culture at the Firminy extension to Lyon (1955 - 1967) as with the model government district and new town of Chandigarh in Punjab, India (1952-1962).

The post war reconstruction of European cities and the economic boom of the 1960s will evolve with a much less ideological emphasis than the early modernist movement could believe. Contrary to Le Corbusier's suggestive writing from the 1920s onward, architecture of mass production and the introduction of repetitive and large scale plans will never introduce a particularly valuable landscape space into the European city. On the contrary, propagation of the modern city is realised in the neglect of landscape. In Paris for example Schein's historical architecture guide from 1971 shows results of "new era of social city planning" that intends to "provide man with surroundings attuned to our times" (Schein 1971 and 1961). Shortly after, the realisation of giant urban

57 Urbanism was translated in Programs and Manifestoes on 20th-Century Architecture by Michael Bullock (1971) as town planning but the French declarations states "L'urbanisme est l'organisation des fonctions de la vie collective; il s'étend aussi bien aux agglomérations urbaines qu'aux campagnes. L'urbanisme est l'organisation de la vie dans tous les pays. ... L'urbanisation ne saurait être conditionnée par les prétentions d'un esthétisme préalable: son essence est d'ordre fonctionnel." (CIAM 1928, transl. Bullock 1971 with above precision by the author)

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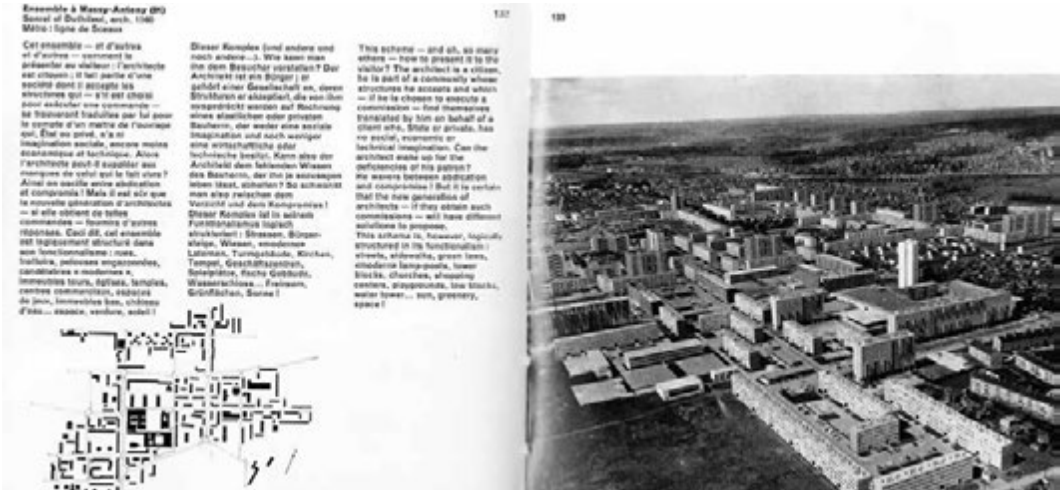


FIG. 3.1.9.8 Massy Antony by Sonrel and Duthileul architects 1960 near Paris showing "Carthesian" gemoetry



FIG. 3.1.9.9 Campus Jussieu in Paris 5th arrondissement by Eduard Albert with "pilotis" and "Carthesian" crossed volumes ... ... modern Paris as in a contemporay architecture guide (Schein 1971 p.132-133 and p.40-41)

extension projects like Massy-Antony (Sonrel and Duthileul 1960, Schien 1971 p.132-133) or the Cite des Sablons in Sarcelles (Boileau and Labourdette 1959, Schien 1971 p.228-229) “[serve] as a lesson to the young architects ... who want to be sure never to commit such errors again” (Schein 1971 p.228). Most of the major modern post-war projects are realised in the periphery of Paris. In fact the development of La Defense (since 1958) east of the Seine river not far from Porte Maillot promotes a satellite business district contrary to Le Corbusier’s vision to replace the centre. Inside the urban area of Paris only few large projects get realised. One of which is the Jussieu Campus, a project by Eduard Albert who was largely influenced by Le Corbusier’s architectural and urbanist ideas (see 4.2.).

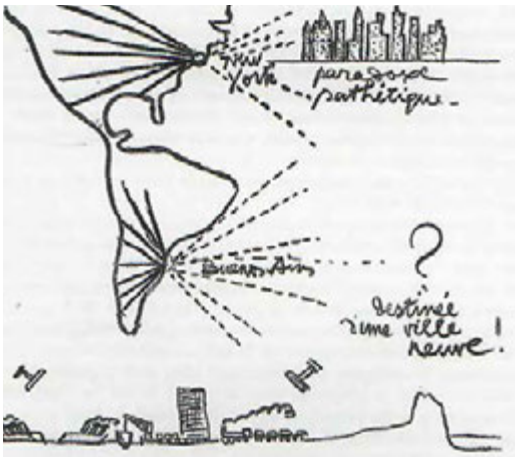
In a reaction to such results of his ideology Le Corbusier has been fiercely attacked by younger generations of architects, inclusive of the protagonist of my first case study, Rem Koolhaas (ch. 4). In his early theoretical work “Delirious New York” (1978). Koolhaas describes Le Corbusier’s proposed typology for “Plan Voisin” as a “naked skyscraper” (1978 p.212) that would leave the individual admire an abstract distant nature “jungle”(1978 p.212) in total isolation of a roof terrace.

“in ... his speculative universe, (le Corbusier in Plan Voisin, note author) adds jungle, nature in its purest possible form, then shakes up the incompatible elements ... and ... pulls out the Horizontal Skyscraper, Le Corbusier’s Cartesian rabbit” (Koolhaas 1978 p. 210-11).

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FIG. 3.1.9.10 & 11 Le Corbusiers' vison of greenery in Plan Voisin (Koolhaas 1978)



Le Corbusier sketching globalisation of Plan Voisin New York: pathetic paradox. Buenos Aires ? destiny of a new city?

Landscape according to Koolhaas is treated indifferently by Le Corbusier in his urbanism. Le Corbusier's "program for the true Machine Age is the efficiency of banality: ... sky ... , tree... , lawn ... (only exist) to go from one skyscraper to another." (Koolhaas 1978 p.225).

Koolhaas literally dissects Le Corbusier's urban theories and his "retroactive manifesto" for "Manhattism". He writes that Le Corbusier's plan "introduces honesty on such a scale that it exists only at the price of banality" (abbreviated from Koolhaas 1978 p.212). He comments above drawing of "Le Corbusier's Radiant City as a pedestrian would see - or not see - it. " (Koolhaas 1978 p.212 on Le Cobusiers drawing Fig. 3.1.9.8)

In a recent trend of critique since 2010 - many straightforward modernists were put into a different light in regard to their attitudes towards landscapes. The shift towards landscape does not only concern contemporary production of architecture from 1990 on - it occurs in critical historiography of the 20th century modernist architecture. One advocate for a rewriting of modern architecture history is Caroline Constant in "The Modern Architectural Landscape" (2012). She proposes a differentiated view on the landscape in the work of Le Corbusier (p.149 –168) among other modern architects[58]. After decades of critical separation from Le Corbusier a "new generation of researchers" (Cohen et al. 2013, back-cover) set out to propose that Le Corbusier was an intensely landscape oriented architect arguing that "even the most generic of his (Le Corbusier's) projects responded to specific geographies" (Cohen idem.). Cohen curated a large MoMA Exhibition and monumental Catalogue entitled "Le Corbusier: An Atlas of Modern Landscapes" (2013). Whether this is a blunt attempt of "greenwashing" modernism is not a judgement this thesis should be making (Fig. 3.1.9.11 Villa Savoye presented as green cover). It is plausible that a real reframing of the whole thinking in dichotomies is needed and in the face of many overruled nuances.

Maybe the vision of the "Radiant City" as it has not been realised in "Plan Voisin" for Paris still evokes a dream from its authors original narrative, that influences these "new" researchers. However invisible in effect, the modern towns that have been built, did not fulfil such a dream but in fact further enhanced the distance of nature and architecture. From today's perspective of urban landscape architecture Le Corbusier's endless green continuum of "verdure" is just a "shapeless

58 Constant also interprets the Barcelona Pavillion by Mies van der Rohe as Landscape Garden (2012 p.45 – 60).

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FIG. 3.1.9.12 "grotesque Radiant City on Manhattan" (Koolhaas 1978 p.223) Christmas greetings signed "L.C."

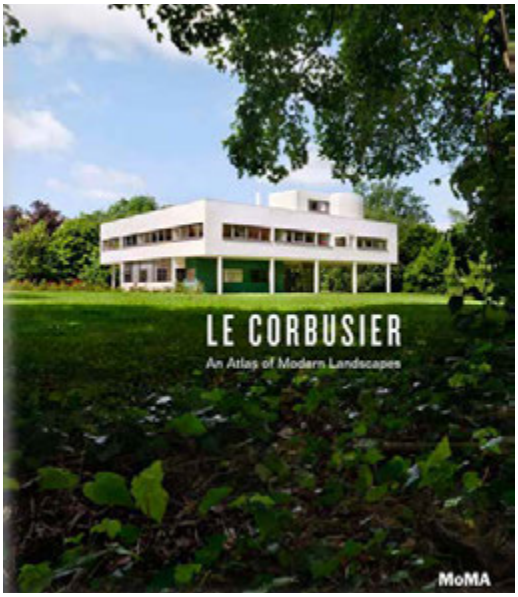


FIG. 3.1.9.13 Villa Savoye in "verdure" : green cover of recent MoMA catalogue (Cohen2013)

concept - flowing, park-like space, democratic and boundless - or at best an image, a grand composition of sun, green, horizon and mountains[59]" (de Wit 2014 p. 46). Le Corbusier with his original writing also contributed to this distancing, always insisting on the supremacy of order and civilisation above nature and wild grown human settlements. As much as Le Corbusier used the pilotis as a space divider between ground and architectural form, he elevated modern architecture out of nature onto a new urban scale. The landscape of “Plan Voisin” and it’s repetitions in Paris or America is never specific. Generic green is reduced to a commodity, garden spaces are a collateral benefit. Landscape for Le Corbusier only shows the superiority of his architecture. He does not differentiate between designed landscapes and nature. Nature appears however as a term to describe what he wants to organise with his architectural cure on any scale from a villa, to the centre of Paris, to the whole of New York City.

3.1.10 Soleri and Le Roy take their Time to Grow Architecture

In the 1970s modern architecture was well established. Profit driven architects and planners dominated. Fundamental critique would lead some exceptional personalities on paths completely outside the system and also academic discourse of architecture that involved landscape. I introduce two examples here of protagonists that provoke a change in the making of architecture using landscapes in a fundamentally different way. They propose different design strategies and another making of architecture. Both independently critique their contemporary building and planning procedures. In consequence they question the existing practice of distancing nature and building. Both not only theoretically explain a landscape approach as a counter position to architecture, but build it with each of their own practical solutions.

59 Landscape architect and phd-research colleague of the author Saskia de Wit critiques Le Corbusier here in the context of her own thesis.

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FIG. 3.1.10.1 Arcosanti near Phoenix Arizona (Photos: author)



FIG. 3.1.10.2 Bioclimatic ceramics workshop in Arcosanti

Paolo Soleri (1919-2013) is a good example of a generation of architects who became critical of modern architecture and turned away from it's modern conventions in a radical way. The example of his urban development project and ecological model city Arcosanti[60] in Arizona US (since 1970) is an early precedent of architecture with employment of landscape design strategy.

Soleri's vision was to establish a completely new life-enhancing humane city (McCullogh 2012) out of his fundamental critique of American urbanisation. As such it is to be seen as a counter position to the urban design ideology of Le Corbusier[61] or the CIAM. Key factors of Soleri's alternative urbanisation strategy are the denial of car dependence and a refusal of functional zoning and separation of work and living facilities. Soleri also questions the need for air-conditioned space even in desert conditions, and proposes work with natural ventilation and non-mechanical cooling systems called bio-climatic structures. Soleri also consciously engaged in finding a balance of "production, consumption, and worth" (Soleri 2012) in the flow of goods and materials.

Soleri was an important charismatic figure at Taliesin, where he worked with his mentor the American architect Frank Lloyd Wright. With Soleri ideas of bio-climatic design returned to the same Mesa landscape where Frank Lloyd Wright had to abandon them with the San Marcos-in-the-desert hotel project in the 1929 financial crisis (ch. 3.1.7.). To realise his visions Soleri consciously left mainstream architecture of the US. He became an exceptional figure and is hard to frame (or find) in the canonical history of architecture. He understood that the system of mortgage credits and land development inherently propagated "the current car-based city model promoting the freedom of mobility by maximising individual vehicle is arterial sclerosis. By removing people from the street and designing it for car traffic instead, the circulation system puts distance between people and impedes social contacts and civic activities in the city" (Kim in Soleri 2012). Instead Soleri designed Arcosanti based not on separation of programmes but on proximity. In the 1970s this was a fundamental shift from modern town planning.

He started experimenting with urban utopian projects, bio-climatic structures and the earth-cast house Cosanti (1956) in Paradise Valley in Scottsdale, Arizona with his wife Carolyn 'Colly' Woods Solely (1925-1982). In his projects artistic experimental elements were executed mostly in self building or with the own means of the client like the Italian ceramics factory in Vietri (1953).

60 Site visit of the author 16.7.2016

61 This opposition refers to their concepts as nor Ville Radieuse nor Arcosanti have been been realised at the scale imagined.



FIG. 3.1.10.3 Arcosanti. Model of realized (grey) and original plan (white) for 5000 inhabitants (Photo: author)



FIG. 3.1.10.4 Cosanti ceramics studio 1957 Scottsdale Arizona (Cosanti Foundation. Lima 2000 p.163)

Other than just giving form to materials imported, Soleri always preferred experimental building with organic shapes, building on site and from the site while decorating it in a sculptural and painterly way.

Soleri developed an outstanding creativity by reinventing architecture as a mediation between the needs of the human inhabitant and the means available at the site. As an architect Soleri did not have many clients in his life, but found ways to nevertheless produce buildings. Out of urge and need to realise his vision he started to plan and build Arcosanti in 1970 as a self-sustaining ecological city on a seemingly arid plot of land close to Cosanti. Arcosanti is a realised city but also a utopian project. Soleri self-commissioned the Arcosanti project as an urban laboratory. Planned as a giant structure for 5000 inhabitants, Arcosanti now on average hosts about a dozen but receives 50'000 visitors on an annual basis (Rosenfield 2013). Inside the site a model displays in grey the existing buildings as to the foreseen structure of a series of giant half domes (Fig. 3.1.10.4).

The dome shape is used also for two open workspaces and two large arch-structures for assemblies. Soleri chose the arch form for providing workspace outdoors in a naturally controlled climate. In relation to the sun it provides shadow in the summer while storing heat in the walls in the winter. [62]

In Arcosanti Soleri provides an artificial landscape to be inhabited. More than just a giant structure it is designed as an organically functioning urban system or "hyper-organism" (Arcosanti 2012). Arcosanti is based on Soleri's own theoretical Arcology (a composition of Architecture + Ecology, see SMoCA 2013, Arcosanti 2012). The design involves also a strong vegetational structure. The agricultural self-support of the communities is consciously integrated into the urban design.

Arcosanti is related to the hippie culture of the early 1970s. It was built in years of consecutive workshops with young volunteers. Financial resources were always scarce as the whole project was founded on the income of the wind bell manufacturing that still functions today. Soleri with

62 Soleri has been inspired by prehistoric structures like te Montezuma Castle that was a living structure that the Sinahua indigenous people inhabited between 1100 and 1425. It is today a National Monument in Arizona only 50km North form Arcosanti (Ontiveros 2007, National Parks Service: Montezuma Castle, fig. 8.3.5.). The dwelling spaces similarly to Arcosanti are covered by an arch - in this case not a built structure but a natural apsis shaped opening in a steep cliff dwellings, like Mesa Verde National Park in Colorado (National Parks Service: Mesa Verde). As a difference to the native american dwellings of Montezuma and Mesa Verde the at 'Mesa City' in Arcosanti the architectural form - not the natural one - provide for a microclimate that makes the dry desert inhabitable.



FIG. 3.1.10.5 Ecokatedraal in Mildam (Photo: author)



FIG. 3.1.10.6 Ecokatedraal in Mildam (Photo: author)

his proposed alternative to American urbanisation managed to fascinate many young people, in particular young men that escaped the draft for the Vietnam War. Many found refuge and fulfilment in working and learning at this place that still today is a permanent construction site. Experiments in building were always programmed and so the structure consists today as a variety of buildings, also representing changes of ideas or influences of many associates and different builders.

Arcosanti is an early experiment in dedicating a structure, a city, a giant continuous building project to finding a balance between human and nature. It shows a great potential for landscape strategies in architecture. It has a systemic approach (Arcology) that is based on the will to change architecture of the city fundamentally - it is a laboratory that engages the creativity of design to find a lean balance instead of just solving a client's problem or demolishing an unwanted historic city structure. The project in the Arizona desert still today addresses the very essential question of how we could live in urban settlements that harmonise with nature. It leads to a fundamentally different relation to nature than modern architecture.

Louis G. Le Roy (1924-2012), the artist and mind behind the Ecokathedraal (1983-ca.3000) in Mildam in the Netherlands, goes even further. Like Soleri, Le Roy looked for a production-alternative to the mainstream of modern architecture and urban planning. An artist trained at the Royal Academy in The Hague, he started working on wild and natural garden projects in the 1960s. In raising criticism of monocultures and the massively propagated use of herbicides and pesticides in the 1970s, Le Roy formulated an independent natural garden movement with his book "Natuur uitschakelen, natuur inschakelen" [63](1973). In his gardening theory, Le Roy never ceased to condemn conventional planning culture, or what his 1973 editor named the contemporary "concrete"[64] culture.

Le Roy departs on 12 points that show a fundamental shift in gardening, based on natural succession and ecological principles. Later, Ecokathedraal starts as a gigantic building project that is based on the same principles. Natural landscaping is the nucleus of Le Roy's approach to building. That approach completely undermines architectural conventions back to the Renaissance. This is a conscious provocation - hence the term "cathedral" alluding to a medieval times. Willingly Le Roy promotes a pre-modern and pre-renaissance approach to building, one that leaves out all principles that lead to the separation of architecture and nature as discussed in this chapter so far (3.1.1.-3.1.9).

63 "Switching Nature Off, Switching Nature On" transl. by the author

64 Transl. by author from Dutch: "knuppel in het betonnen hondehok" (Preface to LeRoy 1973).

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FIG. 3.1.10.7 Ecokatedraal in Mildam (Photo: author)



FIG. 3.1.10.8 Ecokatedraal in Mildam (Photo: author)

Le Roy the gardener, artist, and philosopher has a very practical approach. He despises the abstraction of planning that separates culture from nature. Le Roy believes in the transformation of society and - in the end - all planning and dwelling with the nucleus of exception he introduces. He explains in his "one percent rule" how if "one percent" of all planned land was left free, given to projects of no predefined purpose like the Ecokathedraal, this one percent would be enough to prove and finally propagate a completely different approach that would move away from commonly accepted planning practices. "Little bits given free to nature, will grow gradually and finally prevail" (Le Roy in Lendt 2009[65]) .

According to Le Roy the striving for simplicity is contrary to nature[66]. Complexity is a positive quality in Le Roy's natural philosophy -he is attacking the aesthetic eradication of complexity- founded by the greek philosophy. He draws a parallel with monocultures that are erasing biodiversity and sees both as a cultural aberration. Not by chance will Le Roy fight a similar scheme between nature and culture than the one I have observed in architectural theory so far (in this chapter 3.1.). Le Roy departs from a practical and aesthetic standpoint into a new philosophical foundation of life:

"classical statements are no longer adequate ... that simplicity is a hallmark of the truth ... we are ... being inhuman when we commit the population unduly to a simplified environment that is obtained in one go. The French biologist François Jacob once said ... the more complex an organism is, the more he is free ! ..." (LeRoy 2002 p.39.)[67]

In many ways Le Roy's Mildam Ecokathedraal is not just based on a different philosophy. Le Roy breaks open the disciplinary boundaries of architecture and attempts to undermine them. Ecokatherdaal is entirely built of rubble - every material is obtained from disposable building waste, mostly concrete. Around 1979 Le Roy bought a plot of land and started to pile up the rubble to dry walls (Le Roy and Koppandy 2005 p.9). He did not draw up a plan but just started a day's work laying stone on stone, forming foundations and higher structures that could be pillars to a giant project. He allows and uses mistakes as part of the process.

65 Video commentary translated into English by the author.

66 'If every individual is producing a complexity on his own, and is not willing to let his complexity flow into what all others do, there will be no culture and now bigger order. We all make -typically for our individualist time- individual products that we put next to each other in a sort of diversity. But to make a complexity in the connection of this diversity, the precondition is that the individuality of the product disappears into the totality of the complexity' (Le Roy in Lendt 2009).

67 "Plus l'organisme est complexe; plus il est libre" (Jacob 1970)

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Volunteers join him, many of them from the "planning industry". Like Soleri, Le Roy never ceases criticising the planned modern city with its division of functions. Time is the key term to understand Le Roy's work. The Ecokathedraal[68], he once explained to a city official, would be finished around the year 3000 (LeRoy in Lendt 2009). Le Roy does not impose order to solve any problem but triggers a landscape process to make solutions. He intends his aesthetics to be only a starting point to "give back to nature" (LeRoy in Lendt 2009).

If Mildam looks like a ruin site, it is because of this intended decay. Louis Le Roy remained small but persistant in his ambition. The grand scale of a cathedral built with limited resources, one stone at a time, remains an artistic fantasy up to today.

Le Roy puts the time horizon far beyond his own possible life span, leaving behind a foundation that takes most of what it needs and is named accordingly: "Stichting De Tijd"[69].

Regarding my question if landscape design strategies are changing architecture, the Ecokathedraal is about a fundamentally different way of relating time to an architectural project. The fact that both Arcosanti and Ecokathedraal are works-in-progress continued today, long after their authors death also shows how their strategies meant to last beyond one architect LeRoy. He was not envisioning his project finished in his lifetime.

A little bit of Archology and a piece of Ecokathedraal (merely one percent) could undermine architecture's established division from nature – if only in a very long time. But these outstanding projects have not been integrated into a mainstream movement nor have they been studied much in an academic context, nor mentioned in my reference literature. If they stand here isolated, this shows the large discrepancies between early fundamental critique of architecture and the common practice of their period.

3.1.11 Maaskant and Koolhaas build Polders and Dijkes in the Netherlands

The Netherlands are a built landscape. A large part of the agrarian and urbanised country has been gained from the sea and from lakes, rivers and swamps wrested in centuries of tensions and struggles, with many technical and cultural innovations, but most of all with polders and dykes. (Geuze, Feddes e.a. 2005, Steenbergen and Reh 2010 and 2011, and Bobbink 2013 and 2016)

Dutch history has been shaped by the "polder mentality" up to the present day. The core of the political organisation is that the farmers can only get their land out of the water with a joint effort. Even with the fragmentation and individualisation of society, which are much-favoured today, the idea of the "polder mentality" still characterises politics. Even today, "poldering" takes place regularly in the cabinet, in parliament or between employers and employees unions. It is what Dutch people call their form of consensus building.

68 Site visits of the author with students of Wageningen UR Master Studio Park Design September 2016 and 2017

69 Engl. "Foundation of Time"

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FIG. 3.1.11.1 Johnson Wax Mijndrecht in pond (Photo: author)



FIG. 3.1.11.2 Johnson Wax: view into polders (Photo: author)

The landscape engineering performance of draining the Netherlands - often in reaction to catastrophic floods - with the large water protection structures [70] have marked the building of the Dutch nation across centuries. The idea of the feasibility of the landscape, of human control over the forces of nature as a collective task for many successive generations, has left a deep cultural impact. No wonder, then, that this idea of the "feasible landscape" (Steenhuis 2009) has also manifested itself in Dutch architecture.

I systematically studied Dutch architecture towards that aspect ever since I started my research work in Delft in 2008[71]. Out of many case studies of Dutch architecture of the late 20th century I would like to point out two examples of particular interest.

The first project is before 1970 to be ordered in the broader sense of modernity (Fig. 3.1.11.1). Huig Masskant (1907 - 1977) was very active in the "wederopbouw" - the reconstruction of his native city Rotterdam, which was bombed in 1940. His design for the Johnson Wax European headquarters is located in Mijndrecht between Utrecht and Amsterdam. It is actually a two-part commission with an architecturally simple grid-based production hall behind. The expressive administrative and representative building in front of production explicitly deals with the flat landscape of Dutch polders.

In its manipulation of the landscape ground form, the pond of Johnson Wax is particularly striking. Its measures refer to the proportional system of the entire complex, as it was originally laid out in the first halls and their extensions as planned by Maaskant. The building actually has only one upper floor. The flooded space under the columns is demonstratively used only for representation - a determined landscape architectural gesture. The building floats in a dynamic form over the pond, the reflection underlines the lightness achieved only by shaping.

The spatial composition works with a Y-shaped axis system that can also be understood as a reference to the "patte d'oie" from the repertoire of landscape architecture. Diverse, scenographic staged views of the landscape characterise an architectural language with a variation of directional openings.

70 For example in 20th century the so-called Delta Works as a reaction to the 1953 storm surge flood.

71 See my List of Publications in the Appendix. The first part of this section is based on an article in Werk, Bauen & Wohnen in Gerrman as "Gebaute Niederlandschaften" Jauslin 2010



FIG. 3.1.11.3 Johnson Wax: East wing (Photo: author)



FIG. 3.1.11.4 Johnson Wax: board-room (Photo: author)

When entering the upper level from a staircase in the rectangular main building the axis is turned toward the right, directing the view into the centre of the well preserved landscape of polders. In the central lobby the two wings actually frame the wide panoramic view. From outside this dynamic has an effect of waving towards the passing by cars.

In addition to the massing, the composition and layout of the floorpans and of each of the representative office rooms is strongly influenced by the view and the panorama. At each office the wider window points onto the landscape, while the smaller one points back inward to the facade on the other wing of the Y.

Landscape metaphors are also present in materials - blue ceilings with randomly dotted lights like stars in a night sky while a round conglomerate shines like a moon above the main meeting table.

First of all, Johnson Wax had to be measured on Frank Lloyd Wright's Johnson cooperation headquarters in Racine, Wisconsin (1937-1949). "In Mijdercht too, the new building would need to exude the corporate image of the parent company" writes Maaskant specialist Michelle Provoost (2013 p.336). The sign is used programmatically here. Masskant effectively sets the scene for a dynamic exterior. A comparatively small building thus becomes visible from afar from the traffic artery, rendering architecture as billboard and landscape condenser at the same time.

Contemporary critique had difficulties in placing Maaskant's work - and up to today this "American" owned building is regarded as an exception in Dutch postwar architecture, a "unique concrete sculpture" (Provoost 2013 p.337). A contemporary critic wrote "A showpiece is being created here, something therefore highly un-Dutch, something that will cause a sensation" (Wiekant 1964 in Provoost 2013 p.338) [72]. However I believe after studying[73] this architecture from a landscape perspective, it is clearly Dutch design in the way it responds to the polder landscape in a delicate manner and interacts with it in a cultural dialogue.

72 Karel Wiekant "Ook met prefab bouwKUNST mogelijk. Maaskant bouwt fabriek in Mijdrecht" undated newspaper clipping form 1964 in Roland Maaskant archive quoted by Michelle Provoost (2013 p.338 trans. By the author)

73 Two of my architecture students describe the building as follows: "For the both of us this was the first analysis in which we came in direct contact with a design of Hugh Maaskant. ... it was a weird object to see in that kind of landscape. In Dutch it is a 'vreemde eend in de bijt', what means 'weird object in it's context'. It seams that the form of the building is most important, it is a statement and billboard for the Johnson Wax factory, and the function of being an office is subordinate to that purpose. ... When entering, you walk into a lobby with views at the landscape. ...The notched shape of the windows in the offices ensures that the focus, from within the offices, is both on the landscape and on the building itself. This triangular shape is in contrast with the smooth shape of the building. ... The design is not as flat as only a simplification of a logo, but it is much deeper than you initially see. It is form in motion, flying through the landscape." (RAVB Students Esther Kats en Jantine Merkens in Jauslin ea. 2012 p.139)

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Dutch architect Rem Koolhaas (*1944) founder of Office for Metropolitan Architecture OMA was influence by the dike, a landscape element complimentary to polders, to design the Kunsthal project in Rotterdam.

Today's Kunsthal was the second design of OMA for this building with an adapted programme 'Kunsthal II' (OMA 1995 p. 429) including café and more connections to public spaces on the park level. Changes came about after critique of the original design by a newly appointed director ad interim. Remarkably the two versions are very different - in particular in regard to how they treat the landscape - or not: Kunsthal I was completely disconnected form the ground - a floating box hovering above the park - that ought not to be touched in its wilderness. It was a fair-like large machine-hall building with it's own crane on the level of Westzeedijk but then disconnected from this southern barrier, that protects the city from the river Maas.

Instead the new design for Kunsthal II (starting in 1989) would 'start all over again' (OMA 1995 p.429, Lootsma and de Graaf in de Architect 1-1993 p. 22). Some crucial changes from the client side lead to an interweaving of architectural and landscape space. The new building was moved to the dike. The lower and upper levels are connected by two intersecting tilted planes. One plane connects the upper level Westzeedijk to the park with a public passage, the other is inside and ascends from the street just below the dike to the upper level on the park side and contains an auditorium. The outer plane or ramp intersects the building which becomes a gateway to the park. The entry is at the intersection of the two contrary sloping ramps. It is a small door at the level where two slopes meet in contrary directions[74]. A continuous spatial form knots together the cut in voids with a turning movement. Café, exhibition halls and auditorium are arranged in a sequence along this spiral. The passage through the building forms a spatial journey from the garden level ending on the top pointing skyward with an inclined roof garden.

Each of the four main facades of the building has a different material, responding to varying atmospheres of the park and city. The Museumpark was simultaneously designed with Kunsthal II by landscape architect Yves Brunier (1962-1991) at OMA.

Koolhaas made several remarkable statements about his encounter with Yves Brunier from the mid 1980s to his early death, regarding the disciplinary shift in architecture and urban design towards landscape. The moment of their encounter at the end of the 1980s is according to Koolhaas also a time of a major "shift" between "town planning" and "landscape":

"... the 20th century is drawing down to a close with the death of town planning and with this highly cynical apotheosis of landscape. Yves was a molecule in this field with its bipolar tension between city and landscape. He foreshadowed this shift." (Koolhaas in Interview with Odile Fillon in Jacques 1996 p.89-90).

Brunier had worked ay OMA in Rotterdam in 1986 on several Dutch projects. He contributed to the seminal project of Melun-Sénart in 1987. After founding his own practice with Isabelle Auricoste in 1988 in Paris he would cooperate with OMA again on Villa Dall'Ava near Paris, Museumpark Rotterdam, The Trés Grande Bibliotheque in Paris and Euralille.

74 Hera and in the following I describe the original entry unlike in the current situation that changed the routing completely after a renovation.

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FIG. 3.1.11.5 Kunsthal on Westzeedijk (Photo: Jeroen Musch)



FIG. 3.1.11.6 Kunsthal in Rotterdam (Photo: Jeroen Musch)

Brunier was a Landscape Architect who came to Rotterdam because he wanted to be an Architect - like Koolhaas. Although he was familiar with OMA's work for the la Villette Park in Paris (1982, chapter **1.4.3.)** he refused first to work on OMA's landscape architecture projects.

At this time, Koolhaas had "... discovered the programmatic potential of landscape, and so I (Koolhaas) explained to him (Brunier) that, personally, I didn't find architecture particularly interesting, but that, on the contrary landscape represented an incredible potential" Later, when Brunier got ill and his time was short Koolhaas insisted on him remaining a Landscape Architect."His future was landscape, and it was a matter of time. From then on everything became landscape for him. It was like a kind of love affair,..." (Koolhaas in Interview with Odile Fillon in Jacques 1996 p.89-90).

OMA and Brunier would work together as independent disciplinary offices on garden and building designs.

It is important that there are two designs for Kunsthal, because the step from Kunsthal I[75] to Kunsthal II and Museumpark probably marks exactly this shift - with the encounter of Koolhaas and Brunier as a working relationship between landscape and architecture.

In Museumpark, Brunier designed a sequence of different areas. The central romantic part with an unreachable island and the large bridge elevating to only cross land is a very dense and poetic work - it was based on Brunier's collages and imagination and finished - according to his own last wish in regard to the project - by Petra Blaise with OMA.

Kunsthal II and Museumpark where designed in parallel and many elements combine similar compositional principles. An important landscape strategy for both is the division of strong atmospheric spaces in a sequence. Those are arranged on a spiral across two axes in the Kunsthal and zoned as a staked series along the stretched axis in the Museumpark. The park has a spiral shaped romantic passage in the midsts of the floral beds as a reference in another scale and material to the circulation in the building.

75 OMA was attributed the design for this for the Netherlands novel type of temporary exhibition hall in a direct commission. The office of Rem Koolhaas had previously studied the area in a urban planning study (1987) and developed the concept of a museum park as a cultural forum with today 3 new Museums next to Boijmans van Beuningen (Adrianus van der Steur 1928–1935): North the Netherlands Architecture Institute NAi (Jo Coenen 1988-1991), Southwest the Natural History (Mecanoo, later Eric van Egeraat 1994-1996), and South the Kunsthal I . The 4 museums where forming a play of crossings axes that would open up a new breach of public green space trough the city of Rotterdam connecting the Spoorsingel diagonally to 'Het Park' at the Maas.

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FIG. 3.1.11.7 Kunsthal: rampt to park (Photo: Jeroen Musch)



FIG. 3.1.11.8 Kunsthal, Museumpark (Photo: Jeroen Musch)

Similar to the Kunsthal the Museumpark also uses improvised and experimental collaging of materials, often containing metaphors. At Kunsthal many metaphors of nature in architecture get collaged with a rough application of often surprising materials. Trees are the symbol of nature in architecture since Laugier's primitive hut. Raw trees with their bark on return twice in the Kunsthal – in five vertical tree-trunk columns, directly responding to live trees in the museum park, and a horizontal tree used as balustrade at Westzeedijk. Six different types of columns, developed from primitive to industrial throughout the building, some inclined with sloping surfaces, reference metaphors across the whole history of architecture.

A main landscape metaphor of Kunsthal is the typological development derived also from a dijkhuis (Engl. dike-house) – a characteristic Dutch type for farms along the dikes that divide the polders. No modern Dutch architect dared to approach this landscape related architecture so virtuously, and then create a building with the intensity of a park.[76]

By the time Kunsthal would open, OMA was a world famous practice without having actually built much more. Landscape metaphors later served as a model for several other, further developed architectural OMA projects like Agadir Convention Centre (1990), Yokohama Masterplan (1992) and the two Libraries at Jussieu Paris (1992–1993, see chapter 4) where it would further develop its concepts of landscape in architecture.

Yves Brunier would not survive completion of either the Kunsthal nor Museumpark. The two projects and the encounter of Rem Koolhaas and Yves Brunier are exemplary for a disciplinary interchange between architecture and landscape in the late 1980s with significant consequences for its development, studied further in my thesis.

76 This observation I owe to Rotterdam landscape architect Adriaan Geuze in a private conversation with the author and Matthew Skjonsberg in 2012.

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FIG. 3.1.12.1 Yokohama Ferry Terminal (Photo: author)



FIG. 3.1.12.2 Yokohama Ferry Terminal (Photo: author)

3.1.12 FOA and EMBT design Infrastructure as Architecture as Landscape

While landscape related architectural concepts became an important inspiration for many architectural projects in a wide variety of situations I understand the reasons and motives for such change in individual projects that solve particular problems. In the 1990s several projects dissolve disciplinary borders and achieve new methodical grounds for architectural design of buildings[77]. Two projects here show how the disciplinary assumptions that initially limited the task at hand were overcome - and how versatile the strategies of landscape became in architecture by the end of the 20th century. I introduce them here to show how many more projects challenge the disciplinary boundaries and contribute to landscape design methods in architecture. They are exceptional cases: As I will later explain, they fall beyond the scope of my choices for key cases of landscape strategies in architecture.

The Yokohama Ferry Terminal 'Osanbashi' in Japan by Foreign Architects Office FOA (1995-2002) is a much-regarded work of architecture. Its two young architects Farshid Moussavi and Alejandro Zaera-Polo had actually worked at Rem Koolhaas' firm OMA [78]in the early 1990s and at the time of this design hadn't completed any major building.

The Yokohama project has been cited by many relevant experts as an example of a new trans-disciplinary practice. It has been cited in overviews of architecture as an expansion into the domain of landscape as "Megaform" (Frampton 1999), "Groundscape" (Ruby 2006 p.28), "Groundwork" (Balmori and Sanders 2011), and "Landform Building "(Allen, McQuade 2011 p.26, 368). In "Landscape of Contemporary Infrastructure" (Shannon, Smeets 2010) it is rightfully qualified to be "infrastructure as public space".

The Yokohama Ferry terminal is unlike most other buildings. It is neither composed of floors nor of walls. Its structural design integrates form, structure and space in a series of three continuous undulating planes, intersecting with each other on many levels with a total of eleven ramps. All of

77 As introduced in the reference literature study (chapter 1.4.)

78 At that time other members of OMA developed the Yokohama Masterplan and Jussieu Librares (1992), and both evidently left certain traces (see Ruby 2002). During the time of theYokohama competiton AA published the Jussieu Libraries of OMA 1992- 1993. (AA Files 1994). It was on the cover page of the same magazine that Moussavi and Zaera-Polo were developing their design for, and was a project of one of the assigned jurors.

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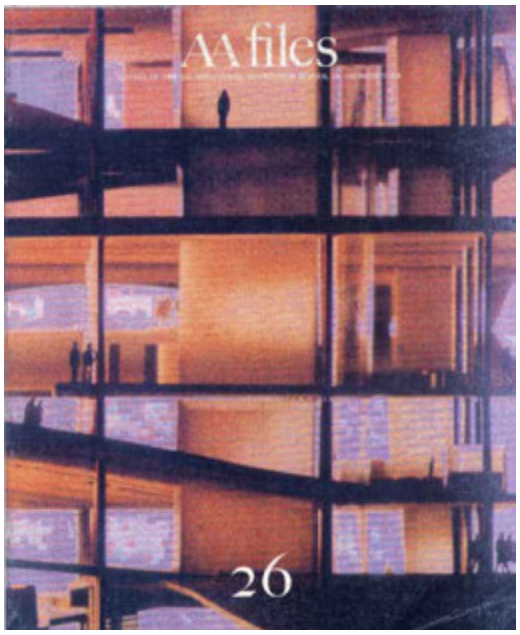


FIG. 3.1.12.3 Jussieu Libraries OMA (AA files 26)

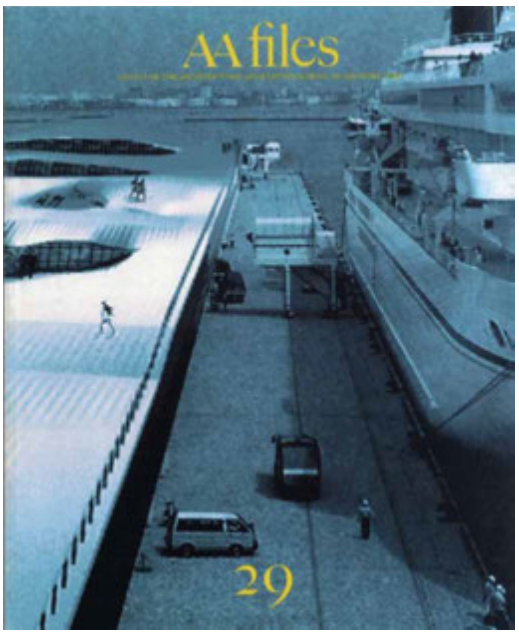


FIG. 3.1.12.4 Yokohama Ferry Terminal FOA (AA files 29)

the passenger connections form one continuous flow through the building - or rather the projected flowchart diagram of the building generated its continuous form. The building is not designed from a preconceived object shape. Rather, plan and section flow into each other with continuity of planes across the levels, and the non-object form results from this flow and the physical condition of the pier and its functionally defined edge.

The initial flowchart - a diagram of the circulation pattern was drawn up to understand the flows of passengers across the building. In the original competition drawings this flow chart is broken down into a set of views - as a non linear, manifold storyboard - identifying a series of viewpoints in between the undulating planes, in addition to framed views of sky and water. This method of using flows for creating a scenic route is practised in landscape architecture as 'Sequencing of Composed Views' (Nijhuis 2011). - to this day Osanbashi still remains a rare example of such a high level of spatial, structural and formal integration of a multi-directionally open space.

The building also uses the form of folding waves for the structural design. The main planes integrate the bearing system - there is no other structure of columns and walls to do the usual shifting and distributing of horizontal to vertical load bearing elements that architects call tectonics.

Even for me as a visitor that knew the building rather well from many publications, in reality it has still had many surprising aspects[79]. Firstly, one's approach to it - from extremely busy Tokyo through dense Yokohama - provides for a sudden relief and surprising calm. The sea view and gently undulating surfaces create a very special atmosphere. Like in an English landscape garden, movements and routes and views are guided through, and framed by, the manipulation of the designers in order to connect a space to the wider landscape of the fields – or in this case, of the sea.

79 Authors site visit in Japan 7.11.2010.

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FIG. 3.1.12.5 Scottish Parliament Edinburgh (Photo: author)



FIG. 3.1.12.6 Scots- stitting on their -land (Photo: author)

The most surprising aspect besides the spatial appearance is the usage of the building. Joggers, parents with baby strollers and couples taking wedding pictures occupy the building. People oftentimes sit on towels or cushions, just as they would for a picnic in a garden or park. Many visitors alongside appear just to enjoy the building for leisure time, talking to friends, outdoor exercise and merely walking. It is obvious that this infrastructural building is also used as a kind of park or public open space. Its indoor and outdoor spaces are inviting for walking and experiencing as a landscape – this curious convergence of uses practically overcomes the separation of architecture and landscape.

The traffic zones for the docking of ships, designed to host large numbers of visitors, are often empty and used for strolling in an informal manner. Large continuous spaces open onto the harbour city panorama and to the sea on three sides. This gives the impression of a passageway, the far-flung feeling one can experience on a ship deck.

The architectural form is not condensed into an object but opened up. The spatial concept crosses limits of the plan or section into a multidimensional environment with exceptional programming of the halls and rooftop as a public space. The park-like composition of the viewing decks forms complex relations to the surrounding horizons extending across the skyline to the slopes of Honshu and the Tokyo Bay. The design strategy at Yokohama overcomes disciplinary borders between landscape and architecture as the result of an extraordinary design experiment.

The Scottish Parliament Edinburgh project employs the idea of landscape in architecture as a conscious and strategic narrative by Enric Miralles and Benedetta Tagliabue (1998-2004) to solve a dilemma of political and historical dimensions.

After a referendum in 1997 and the consequent Scotland Act of 1998 (McCone in Balfour 2004 p. 22, Scottish Parliament 2011) a new parliament would represent Scotland in its diverse opinions and complex, unpredictable, political streams and interests. From the Referendum there was literally no text of constitutional character that could be easily transformed into a diagram of powers. A building could therefore not simply depict the role of the parliament in an abstract form.

The conceptual intuition of the Catalan Architect Enric Miralles (1955-2000) and his Associates (EMBT, RMJM) led to a representative building for Scotland in what Miralles called – a 'social landscape' – an architecture connecting people and environment.

This building's metaphorical and spatial relation to landscape is immediately experienced. From the popular Arthur's seat southwest of Edinburgh the building and park embrace the landscape and interweave it with the urban structure.

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FIG. 3.1.12.7 Presentation sketch of Scottish Parliament with notes by Enric Mirailles (Balfour 2004 p.64)

In a collection of eleven hand drawn and annotated sketches of the intellectual form finding process (fully annotated in Balfour 2004 p. 61-81) landscape explicitly propagated this narrative of presenting a design solution with two key concepts: “the parliament is a place in the people’s mind” and “the parliament sits in the land” (Miralles in Balfour 2004 p. 39). People are drawn sitting on the land on lines continued into the chamber where people sit in the rows.

The spatial composition culminates in the main chamber, which as a centre of gravity, seems to attract several lines which are repeated to divide the grades, representing seating in the landscape.

Spaces to the public are provided under the main hall in a foyer composed of a series of curved vaults. They follow the lines from outside the garden and literally carry the assembly floating on top.

Despite severe anti-bombing security these public areas of the building are still very inviting.[80] With directed light like a grotto it connects the formal language of the outside garden to the inner logic. Spaces appear like a land-formed agglomerate of forms that constitute the parliament. At the other entry, behind the sequence of park and grotto opens again to what originally should have been an enclosed garden or giardino segreto for the Members of Parliament MP. The initial Flower Garden here turned into the “Garden Lobby”, a covered informal hall for informal MP gathering, chatting, plotting, experimenting and testing. It has a distinctively floral shape, a salad pot for mingling the emerging ideas of the parliament. A dozen leaf shaped openings reach out into the garden, that again connect to a series of green roofs which, from afar, connect to the bigger landscape gesture.

In the north wing offices each MP has a cell-like room. Cells at the outer wall opposite the hall offer seat shaped niches that stick out of the facade. 129 seats as a facade element represent to the city

80 Authors site visit in Scotland 18.7.2011.

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each seat of an MP, and on the inside give each MP a private space for reflection. This metaphor reminds every MP of his electorate and the connection of his powers and duties with the world outside his office. Each window is shaded with a bunch of curved sticks, again reminiscent of the larger ground-form of the building and the lines from the Scots' land into the building.

This repetition of shapes at each window – like in the main assembly hall – looks like an ancient emblem of knighthood abstracted into a modern shape. Almost archaic signage returns in another strange repeated motif on the remaining facades: a curved and turned L-shape that again appears in a tapestry pattern of alternating panels. The shape is derived according to the designers from a portrait of Reverend Dr. Robert Walker by Sir Henry Raeburn (Tagliabue 2002 p.141).

It is a strange portrait of an apparently stubborn Scott ice skating in an evocative landscape background. As in ice skating, a stream of lines, redrawn and overlaid by continuous adoptions and readjustments flows from the open land at the feet of Athur's Seat, represented even in the site plan as a series of isolated height lines of the hill. They come together in one space to inform a composition in the city, colliding on the strong fortification wall towards Cannongate. It's opening to the land makes the building not another object in the city of Edinburgh but rather a confluence of all the Scot's lands into one place. Architectural strategy is using landscape as the metaphor for what could constitute Scotland in absence of a constitutional text.

The landscape metaphor is opposed to the idea of a house in the city, it falls outside typological conventions. A collection of different volumes at the collision point of the urban fabric of Cannongate and the maintained Quensberry House are held together by the overrule of strong curving lines. Volumetrically the parliament is not one building but rather a series of agglomerated volumes.

The grouping of people, sitting on the land is detailed in the building quite literally. But how the parliament can be a landscape more than an object is also expressed in a less tangible spatial metaphor as the converging point of three elements – "land", "water" and "air " (Handwritten on Sketch Illustration 8 p. 76-77 in Balfour 2014).

The Scottish Parliament scheme is a personal and poetic (or even romantic) interpretation of landscape. The Scottish Parliament is perhaps one of the first political buildings that is not representative architecture. Instead the architectural composition dissolves into the landscape and provides for abstract ideas like the "autonomy" of the people on a "land" – without recurring to architecture's own language of monumentality. Landscape becomes an intellectual spatial strategy to the expression of the political identity of Scotland beyond it's political processes.

These are only two buildings of many that I visited in several years of research (Appendix 3)[81]. Like many good projects they touch upon the margins of the discipline of architecture and could be seen as "outlier-cases", meaning that they are too exceptional to be treated as "key-cases" (Thomas 2011) in my study. I clearly explained why limitation to a few key-cases is needed in the methodology section (1.5.) and out of the critique of my literature review (1.4.9.). I included these "outlier-cases" here to illustrate how much the importance of landscape strategies in architecture had suddenly grown in the 1990ies, which made the deliberate limitation to a few choices that would allow profound study difficult.

81 Until 2016 of 116 projects identified as potentially suitable candidates for further study I visited 57 projects for evaluation before the final selection (see chapter 3.3.).

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3.2 Architectural Design Analysis

So far I have established the notions of landscape, landscape architecture and strategies of landscape design (Chapter 2) in the Western tradition, and touched upon potential methods for this thesis while exploring the theoretical deposition or gap in a 'natural' architectural theory (Ch. 3.1).

A premise to my further case study is to choose a specific position and apparatus for our investigation on the workings of architectural designs. In the following sections, I will introduce the method for analysing architectural designs, much of it based on analytical methods after other authors in their tradition have done about Vitruvius, Serlio, Alberti, Palladio, Laugier and Semper. Paul Frankl's influence of the specific 'Delft Method' is undisputed. It combines the holistic understanding of architecture as a composition of elements and the human oriented approach within an empirical framework.

3.2.1 Design Analysis in Architecture

Within architectural theory also falls the development of the tradition of design analysis. Instead of describing rules, design analysis looks at built or designed examples as an expression of ideas and is thus less susceptible to theoretical limitations outlined before.

In my view, design analysis in the broadest sense provides a way of understanding a composition of a design by dissolving, dismantling and juxtaposing the components that form a composition. Design analysis is a method to research design intent through the study of (built or unbuilt) projects based on specific research questions (Wilms Floet 2004). My preferred analytical apparatus is (re-) drawing a design with conventional representation techniques and/or the techniques specifically developed for the project in question. It should lead to understanding the essence of a design and conclusions regarding the research question.

According to the TU Delft Faculty of Architecture textbook Projectboek BK1100 Huis en verankering "analysis and design have a direct relation in two manners. Firstly both use the drawing as their most prominent medium. And secondly there is a reverse relation (of analysis) with making a design" (Wilms Floet 2004 p.47-56)[82]. For the design analysis of select precedents, I therefore choose to investigate my research questions about architecture with landscape design strategies through understanding its 'underlaying principles and ideas' (op. cit.).

Although design analysis might go back as far as the early renaissance treaties of Serlio, Alberti or Palladio, it distinguishes itself from other fields of architectural theory, style critique or art history. The most important difference is that design analysis uses means of design, most prominently drawings (or etching in the case of older printed books) for research into the architectonic composition of buildings.

82 translated from the Dutch textbook by the author

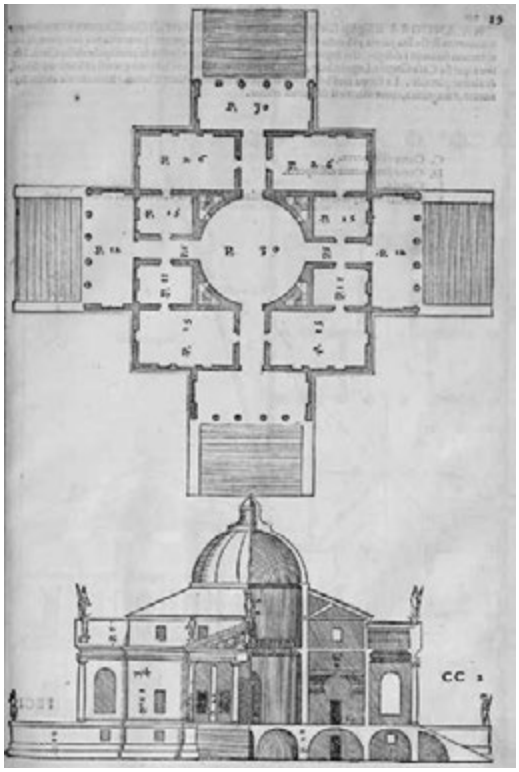


FIG. 3.2.1.1 Villa Rotonda (Palladio 1750 Book 2 p. 19)

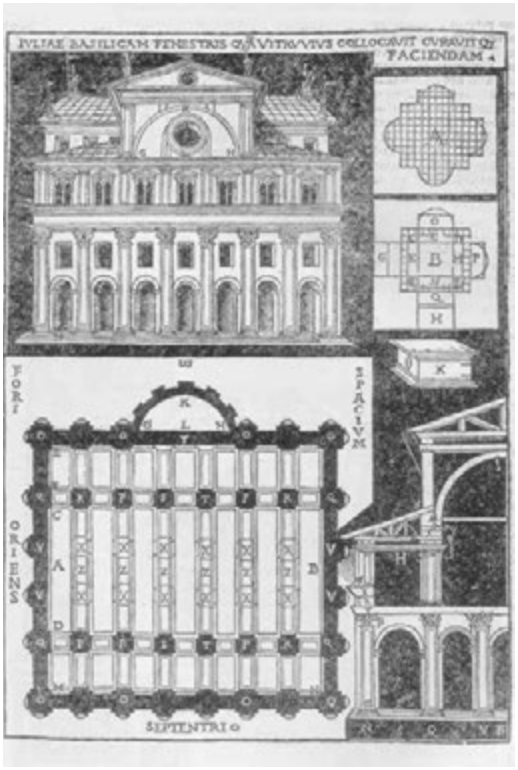


FIG. 3.2.1.2 Basiclica of Fano (Cesariano in Vitrvius 1521)

From the very beginning in the Renaissance, many architecture theorists have been also architects. They often used the same means to design and build their ideas as to disseminate them in engraved illustrations in their books. The drawing of the Villa Rotonda (Fig. 3.2.1.1. Palladio 1570 Book 2 p. 19) is a good example of the powerful use of imagery by the architect-author Palladio while Cesare Cesariano illustrates the Basilika of Fano after Vitruvius in the 1521 Italian translation (Fig. 3.2.1.2 Vitruvius 1521). Since the printing press, illustrations accompanied architectural treaties and the culture of drawings emerged. The canonised representation of buildings in plan, section, elevation, and perspective led to a wide spread of representation and practice in the development of architecture as a artistic and scientific discipline.

This form of representation is still present today and has not been dissolved by the rapid change of representation techniques through the digital revolution since the 1980s. We could even argue that analysing architecture in (slow) drawings has become more urgent and useful in times of accelerated design processes with increasing technical and juridical complexity.

As there are many ways of analysing buildings with drawings, I would rather concentrate and argue for the means specific to this thesis. They relate the architectural composition of buildings to the specifics of landscape, landscape architecture, and landscape design. For this thesis I chose to connect to the methods that apply a few generations of design academics in TU Delft, related to the holistic approach that I postulate on theoretical grounds based on Wölfflin and Frankl (section 3.1.6.).

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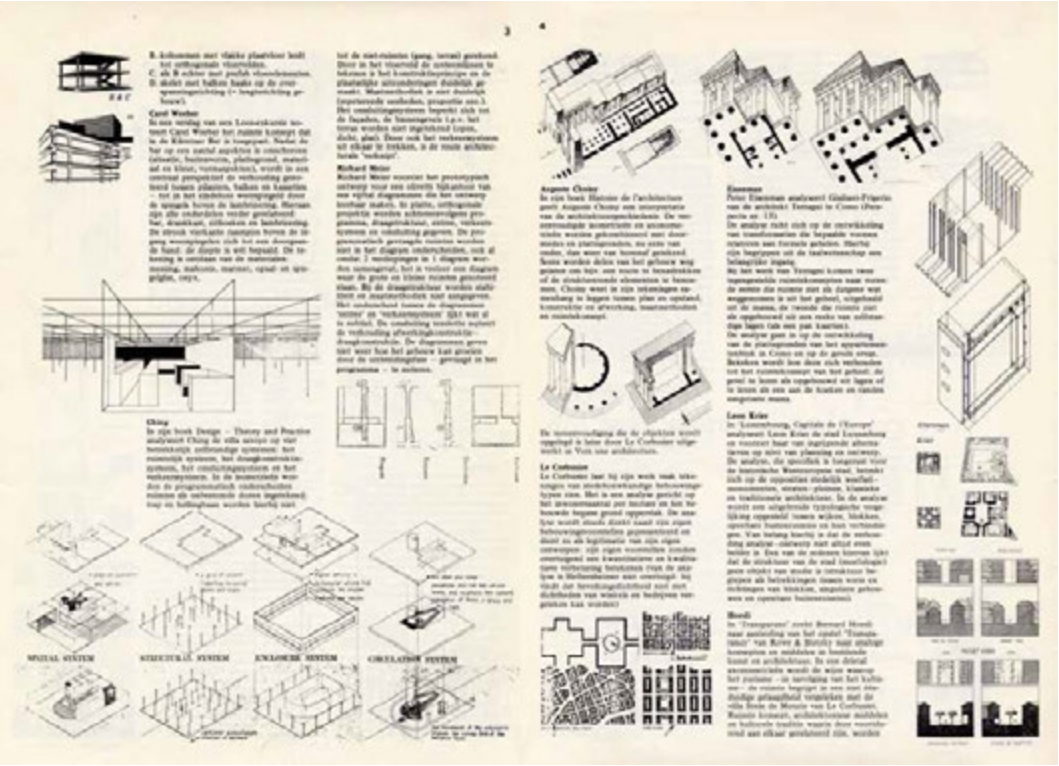


FIG. 3.2.2.1 O: ontwerp: onderzoek: onderwijs (Drijver, Döll, Karthaus e.a. 1981 p. 3-4)

3.2.2 Architectural Design Analysis at TU Delft or ETH Zürich

In Delft I found a tradition of design analysis that goes back to a conscious shift away from theory into practical research in the 1970s which is still used in the first year education today (Leupen e.a. 1993 p. 8, Wilms Floet 2004). This plananalyse can be interpreted in English as the analysis of (or with) a plan (or drawing) or in ontwerpanalyse which translates literally to our preferred English expression, design analysis.

An early witness of the emerging Delft way of analysing architectural designs is the journal 'O: ontwerp: onderzoek: onderwijs' (Drijver, Döll, Karthaus e.a. 1981). In his essay 'Plananalyse en planlegitimatie' (design analysis and design legitimation) Miel Karthaus (1981) relates the emergence of Delft plananalyse to a crisis in the faculty and the discipline of architecture in general. We may note the rhetorical emphasis of this text on the importance of such analysis.

"In days that everybody that wanted to gain knowledge in architecture had to follow 'at the feet of a master'; in days that architecture in its 'counter form' needed to propagate the truth of a human togetherness against a hypocritical bureaucratic society; in days that a design could only exist through the power of an utterly personal and independent imagination and could only obtained meaning in the 'experience'; in those days 'plananalyse' began to ask questions about all this neurotic scribbling (sic!) of a discipline that had lost its function. It asked simple questions: What is all of this built of? What is actually standing there? ... Plananalyse made visible that the totality of a piece of art or a design can be dismantled, divided into components whose workings in the

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whole can objectively be determined. A determination that makes it possible to continue on with the material - further in an utterly arbitrary choice of direction." (Karthaus 1981)[83].

A more or less systematic and continuous method of plananalyse was developed in Delft architectural education from around 1973. An early Delft plananalyse textbook is the "LAS-boek' (Geurtsen, Leupen, Tjallingi 1982) for analysis of Landscape-, Architectural- and Urban-Design (LAS is in Dutch an acronym for Landschap, Architectuur, Stedenbouw). Later Leupen edited the book Ontwerp en analyse where many Delft faculty staff contributed texts and studio or research drawings (Leupen 1993). Representatives throughout these three spatial design disciplines of the faculty collaborated here, which could in retrospect be seen as a fertile ground for interdisciplinary collaborations like I study here in architecture or others in the aforementioned "landscape urbanism" in the 1990s (section 1.4.2.). A well known publication with a focus on my subject architecture is Max Risselada 'Raumplan versus Plan Libre' (1987 Engl. 1988) comparing the villa projects of Le Corbusier and Adolf Loos. Other Delft authors in our focus and with the tradition of plananalyse are C. Verwoord, J.D. Besch. Rein Geurtsen; Michiel Polak, Clemens Steenbergen with Wouter Reh: and Sibrand Tjallingi (Döll 1981: Wilms Floet 2004,:Leupen 1993).

The objectivity pledged by Karthaus can be easily related to Hoesli's term 'transparency' that he introduced for spatial design in architecture in the ETH Grundkurs, a foundation course inspired by the Bauhaus tradition (Jansen e.a. 1989). Ever since the beginning of his teaching career at ETH in 1959, Bernhard Hoesli (1923–1984) refined the methods that have been developed by the so called Texas Rangers, a group that had brought Bauhaus-inspired education to the rather remote University of Texas School of Architecture in Austin, Texas form 1951 to 1958, including, besides Bernhard Hoesli, Colin Rowe, John Hejduk, Robert Slutzky, Werner Seligman among others (see Caragonne 1995). Hoesli understood and propagated 'transparency' as an analytical and design method that he drew from the composition analysis of modern buildings, plans and paintings in the book of the same title by Colin Rowe and Robert Slutzky (1964). "Transparency frees us, because we allow it, to see buildings and structures in connections and independent of the differences between 'historical' and 'modern'." (Hoesli 1964 p. 82). Another disciple of Colin Rowe (1920-1999), who later taught at Cambridge in England until 1962, was Peter Eisenman. Eisenman's own thesis (Eisenman 1963) under Rowe would initiate a life long occupation with formal analysis and theory at least equally important as his internationally well known architecture.

Today at Delft plananalyse is still practised in teaching design; I became involved in it as a design teacher form 2008 to 2015. Several of my courses at TU Delft, Rotterdam Academy of Architecture and Wageningen University involved various analytical tests on a variety of the projects (Bibliography List of Publications by the Author to the Subject in Appendix). In design teaching through analysis we understand a project only with an informed critical reflection of its essence - a designer's understanding needs its own physical experience of (re)drawing a design - confronting it with thoughts and ideas that structure the complexity of what is present (or designed) in space.

83 ‹»In de dagen dat een ieder die zich vertrouwd wilde maken met architektuur dit deed ‹aan de voeten van de meester›: in de dagen dat architektuur in haar ‹contravorm› de waarheid van een menselijk samenzijn tegenover een leugenachtige verburocratiseerde maatschappij moest hooghouden; in de dagen dat een ontwerp alleen bij machte van een uiterst persoonlijke en onafhankelijke verbeelding tot stand kon komen en slechts betekenis verkreeg in de ‹beleving›; in die dagen begon ‹plananalyse› vraagtekens te zetten bij al het neurotisch gekrakeel van een funktieloos geworden discipline; zij stelde de eenvoudige vragen: ‹Waarmee is dat nu allemaal gebouwd? ‹ ‹Wat staat er nu eigenlijk? ... Plananalyse deed inzien dat de totaliteit van een kunstwerk of een ontwerp uitneembaar is, ontleed in bestanddelen waarvan objektief vast te stellen is dat zij werkzaam zijn in het geheel. Een vaststelling op grond waarvan het mogelijk is verder te werken met het materiaal. Verder in een uiteindelijk willekeurige richting." (Karthaus 1981, transl. by the author)

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In Delft, Zurich or Texas like everywhere, many practising designers and design educators in (landscape)-architecture have learned and taught analytical methods that inspired their design strategies. In fact a design incorporates analysis and synthesis, all drawn, built in models and even in the actual building. No design can seriously claim to answer the needs of it's users and react to it's context that does not incorporate an analysis. What we thus differentiate here for the sake of logic of my thesis into 'design strategies' (like that of landscape architects, architects, and urbanists in general or OMA, SANAA and Eisenman in particular) and 'analytical methods' (the 4 layer model of Steenbergen and Reh 2003 or the attitudes of Marot 1999) are in daily design practice and education two sides of the one coin. Design and analysis are the of currency in architecture, landscape and urbanism and extend to many other design disciplines. The nuances of that integration though can strongly vary: More or less analytical methods and completely different focus areas can be part of individual design strategies.

For all designers though, drawing is thinking (Treib 2008). This essential fact may not be forgotten in theorising about the development of the discipline of architecture and landscape architecture. Therefore I chose design analysis as a method for this thesis that embraces the practice of drawing at its core as a scientific method.

3.2.3 The 4-Layers Model of Architecture and Landscape

In these next two sections I will establish the method chosen to proceed with our design analysis adding to the precedent literature in 1.4. At each selected project, in order to understand ideas and design strategies, we will not simply catalogue landscape inspired projects and divide them into categories. Rather, we will choose specific lenses or filters to understand which landscape ideas are instrumental in architecture and how they work specifically.

There is a trajectory in opposite directions, an entry into landscape architecture from the side of architectural theory, that is connected to the Delft tradition. Steenbergen and Reh (2003) adapted Paul Frankl to the Delft interpretation for their analysis of the great epochs of European garden history. Their book 'Architecture and Landscape' is a compendium of research at TU Delft. Clemens Steenbergen (1990) studied the precedents of the Italian and French Garden of the Renaissance and Baroque (1990) and Wouter Reh (1995), the precedents of the English garden of the Enlightenment (1995) in their respective dissertations at TU Delft. In this work the two authors employed and refined the methods of design analysis executed in the plananalyse tradition of Delft. Their unique contribution to the understanding of garden design lies in the unravelling of its architectural composition, placing it in the realm of design more than in purely historiographic studies, and thus making research instrumental for understanding the spatial workings of designs in the context of design research and education. They recapitulate the essence of Landscape Architecture in a grammar of design instruments by adopting Frankl. (Section 3.1.6)

To try and understand the architecture of landscapes, Steenbergen and Reh have established a set of layers in basic, spatial, metaphorical (or image), and program forms, and explain landscape as a composition of these four overlapping layers (2003). Their adoption of Frankl's model of four polarities (Begriffspare Frankl 1914 p174; Raumform, Körperform, Bildform und Zeckform) onto a four layer model of landscape guides the analytical study of landscape methods in this thesis.

For the purpose of this thesis, I briefly define the four layers of the landscape architectural composition of Steenbergen and Reh (Steenbergen Reh 2003, Steenbergen 2008):

1. Ground form is the way in which the natural landscape is reduced, rationalised and activated. In the case of architecture, we must consider here also landscapes that are generated artificially and the tension between grown morphology and built topography.

2. Spatial form is about the experience of the landscape space, including circulation paths, framings, and picturesque compositions. The relation and manipulation of the horizon is an essential design aspect to this layer.

3. Image or metaphorical form is the use of iconographic and mythological images of nature, always connected to the other layers and mostly represented in one of the others.

4. Form of the program is the division of functions and organisation of their relationships influencing the composition. The programmatic form incorporates the tension between business (negotium) and contemplation of nature (otium) in a constant search for balance from the classical landscape up to our times.

For each approach and in each specific design, many types of drawings, often experimental ones, have to be executed to unravel the formal qualities specific to that layer. But besides the decomposition and unravelling into more essential layers is the interrelations of these layers that form a composition.

After filtering and layering separation, the essence in this form of analysis is the composition of the layers. Steenbergen and Reh enrich the plananalyse approach of reduction into different layers by focusing on the interdependence among these layers. Their emphasis on the composition compares to the models of Ian McHarg (1969, quoted in our section 2.3.1.) and his following tradition. The interrelations of layers identified by Steenbergen and Reh as the landscape architectural composition is the essence of the design, not each reductive layer on its own. In this unique and, for purpose of operability, simplified model, the holistic aspects of a landscape composition can be worked out by unravelling and recomposing a specific design. The complexity of the 4-Layer approach is essential to Landscape Architecture. It was used and refined in many subsequent research investigations at the Delft Landscape Architecture chair.

In parallel to this thesis four of my colleagues at the chair have each studied a different subject of landscape architecture with a similar approach. We corresponded regularly about the development of the methods. In order of publication Saskia de Wit adopted the method for the Metropolitan garden (de Wit 2014 p. 137-143 and p. 354), Steffen Nijhuis for the Garden of Stourhead in relation to Geographical Information Systems (Nijhuis 2015 p. 48-56), Inge Bobbink for the Landscape Architecture Dutch Water Systems (Bobbink 2016 p.35-44) and René van der Velde for Brownfield Park-Designs (Van der Velde 2018 p.66-68).

An important aspect Rene van der Velde was missing in the original method for his analysis of urban parks was the social aspect. He concluded that that was a flaw of the method, whereas Saskia de Wit “would say the method is more about structure, framing than about content, and content like the social aspect … (would) typically fall under the layer of program form.” (correspondence de Wit 2019). In our discussion, Saskia de Wit pointed out not to “consider the aspects that Clemens (Steenbergen cum suis) did not address as shortcomings, but as content that has as yet not been addressed, to ‘fill’ the method with…” (correspondence de Wit 2019).

In the respective chapters about the form of the program (5.5.4, 6.5.4, 7.5.4) I will focus on aspects of social and political sense a public building makes.

In their forward to metropolitan landscape architecture Steenbergen and Reh (2011 p.8-13) summarised the ongoing doctoral program. From the perspective of their 'Delft Method' of Landscape Architecture analysis this thesis must be seen as an extension onto architecture. In all studies the method reveals the importance of form and structure of design compositions. It is also retrospective into the roots of the methods, stemming from the tradition. This thesis particularly explores "what influence the concept of landscape has on contemporary architecture" (Steenbergen and Reh 2011 p.12) as an extension of their work in the context of establishing it at the connection of the then established master track of landscape architecture in the TU Delft Faculty of Architecture. In our PhD group about the "trias architectonica" (Steenbergen and Reh 2011) the other 4 theses focused on the realm of landscape itself (Nijhuis or Bobbink) or on the relation of landscape and the town or metropolis (de Wit or van der Velde). This thesis focuses on the remaining pair of the trias: Landscape Strategies in Architecture. It is the last piece to circle back to "Architecture and Landscape": While Steenbergen and Reh described Landscapes from an Architectural view, I describe Architecture from a Landscape view two decades later.

While this thesis is the only one of the five to address architecture and it's fully man-made creations, the others involve a stronger natural component. Three focus on designed landscapes, each in a different cultural, temporal and geographical context, while Bobbink looks into landscape architectonic water structures of the polder-boezemsystem which are not designed but grow over time.

The studies of de Wit and van der Velde regard projects in the urban landscape, and even in some cases involve architects.[84]; as such they are more similar to course of study. In her study of the role of the garden in the context of the metropolis de Wit (2014) originally missed the sensory aspects of mostly smaller scale enclosed gardens. De Wit included sensory analysis in an original chronographical method because "at that time" de Wit "considered that aspect to be allocated under all four layers, in different levels of importance." (de Wit 2019[85]).

I see a connection of Steenbergen and Reh's method (as in others mentioned in 3.2.2) in the tradition of the post-modern critique of modernist architecture narratives (like that of Mies van der Rohe in 3.1.8.). They have consciously chosen a more objective formal position - which I follow at first instance not without (at each case and in general conclusion) pointing out how to look further. In my thesis I use the four attitudes (Marot 1999, Chapter 2 of this thesis) within each project to give an extension of the 4 layers method that would critique the project in a wider sense, and engage in contextual issues beyond formal analysis. These attitudes contain questions of social responsibility, relation to the present and the future and the design-craftsmanship of architecture.

84 Arne Jacobsen (1902 – 1971) designed at St. Catherines college Oxford a "Hidden Landscape" case analysed by Saskia de Wit (2014 p.170-203) and Bernard Tschumi (*1944) won an international competition for Parc de La Villette in Paris, a contemporary urban "Brownfield Park" analysed by René van der Velde (2018 p.105-168).

85 Saskia de Wit writes about her thesis of 2014 in discussion with me, towards completion of my own thesis: "I now think otherwise. The only layer of the four that addresses the direct experience of the design and/or landscape is the spatial layer, which is about the experience of moving through space. (parallel to Sebastien Marots description of spatial structure in ... 'The reclaiming of sites') (Marot 1999) ... I now consider the spatial layer to contain all experiential aspects: visual as well as the other senses." (de Wit 2019).

3.2.4 The 4-Layers Design Analysis of Landscape in Architecture

The practice of analytical drawing follows a certain scheme that informs the analysis in order to understand specific design aspects. In education (section 3.2.2), this may pertain to the understanding of basic aspects of designing a house or a garden. In our case of design research it relates to our research question, in particular the methodological subsidiary research question:

With which research apparatus can we better understand the idea of landscape and its design strategies, specifically for application in architecture? Which analytical tools best reveal landscape design strategies in architecture? (Question 1.1.7.).

In their model Steenbergen and Reh combine the analytical and abstract approach of plananalyse (for architecture) with a synthetic and holistic layer composition analysis (for landscape architecture).

In the following three study cases (chapter 4, 5, & 6) I will test and elaborate on applications of these distinctions and recomposition of layers. Then we can ascertain if the chosen model clarifies if and where the landscape analogy influences the architectural form of selected projects. In the analyses of study cases, I flip Steenbergen and Reh - from architecture to landscape architecture - to define my model of choice and to analyse and understand architecture as andscape.

One important aspect of design analysis for this thesis identifies different approaches to landscape in architecture and makes them comparable. This is reflected in standardised drawings throughout the three case-study chapters in regard to most types of drawings using the same drawing techniques, similar scales, lines, colours, and projections. During the course of the research, I found that each project actually deserves an individual type of drawing - something specific to an underestimated or overlooked landscape quality that parallels particular research gaps that I identified. As a result, in the three chapters I propose for each case an individualised representational method, which is a unique experiment beyond comparative analytical drawing. Both the four comparative layers of analytical drawings and the specific experimental design analysis are in my opinion essential to a wider understanding of these three projects, and are the essential research contribution of this study.

While analysing the projects under a certain aspect, one could easily over-interpret or completely misunderstand the intent. Beyond my own interpretation of architecture projects with landscape methods, I still find it essential to understand the design process, the implications and difficulties of each project from the perspective of its designers. I therefore interviewed each architect at length in parallel to my own analytical work.

The crucial point of analysis, as explained in the previous section, does not only focus on the layers but also their interconnection. Separation is the reductive filter needed to see clearly. But only through overlaying the separated layers and reading the interrelations in between them, one will be able to understand a composition scheme. Only in comparison will I be able to discuss how similar landscape compositional relationships between the layers are used as strategies in designing architecture.

The 4 Layer Model or Delft Method of Landscape Architecture analysis is often criticised for it's limitations onto formal and compository aspects of landscape architecture. While this is indeed inherent to the analytical model, and partially also a result of its historical roots, I understand landscape strategies as they work in architecture in a wider field beyond just their formal aspects in the next section.

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TABLE 3.2.4 Research Framework Landscape Strategies in Architecture

Research Framework			
4-layer design analysis (Steenbergen & Reh 2003)			
Ground form	**Spatial form**	**Image form**	**Program form**
is the way in which the natural landscape is reduced, rationalised and activated. In the case of architecture we must consider here also landscapes that are generated artificially and the tension between grown morphology and built topography.	is about the experience of the landscape space, including circulation paths, framings, and picturesque compositions. The relation and manipulation of the horizon is an essential design aspect to this layer.	or metaphorical form is the use of iconographic and mythological images of nature, always connected to the other layers and mostly represented in one of the others.	is the division of functions and organisation of their relationships influencing the composition. The programmatic form incorporates the tension between business (negotium) and contemplation of nature (otium) in a constant search for balance.
Landscape attitudes (Marot 1999)			
Anamnesis	**Process**	**Sequencing**	**Context**
Anamnesis integrates the history that led to the present state of landscape. Traces of history are readable in landscapes as a set of strata or as a palimpsest. This is often represented in layer models. Describing also the wider temporal relationship of a project with the past and future of the site. (ch. 2.3.1.)	Landscape process focuses on natural and induced dynamics of landscape transformation. Effects of nature but also design strategies prepare a site to grow in a certain direction. Landscape process describes the actual ecological, anthropogenic, and seasonal changes of a landscape over time. (ch. 2.3.2.)	New dynamic changes our perception of and relationship with landscape. Sequencing is the design of visual sequences. The route through a landscape is a crucial part of any landscape design. Wandering through landscapes can be translated into individual buildings or cities as a whole. (ch. 2.3.3.)	A landscape does not just react to an existing context but landscape design generates a context in and of itself. This design attitude generates dense functional, visual and spatial relations and constellations. Designed landscapes oftentimes define their own limits and field of intervention and determine the context. (ch. 2.3.4.)

3.2.5 Understanding Landscape Design strategies with attitudes

The research framework (Table 3.2.4.) for this thesis is twofold. While the formal analysis (as described above in section 3.2.4.) is important to understand landscape forms[86], the deeper question of this research is whether landscape strategies also contain a different attitude towards architecture in domains beyond form-making - to promote a certain social vision, an idea of change of their own function in the world and a position towards the discipline of architecture or it's future relevance. To look beyond the formal implications of landscape design strategies, in each case I use the same four attitudes (Marot 1999) that I use to describe the wide and rapidly evolving collection of strategies of landscape design (in section 2.3.). Although these partially overlap[87] they are sufficiently different in a focus on the inner composition of four separate layers (Steenbergen & Reh) as opposed to a focus on various aspects of context (Marot) explored in four different angles as attitudes.

It is not by chance that the two theories combined in this framework arise in a similar period of time than the projects I analyse with them. Numerous links exist between architecture scholars like Steenbergen and Reh who thought for two decades in the architecture faculty of Delft and Marot teaching ans publishing in architecture and urban theory in several French speaking faculties. Both theories are developed approximatively in the same two-decade period[88] (1992-2014) I look at in

86 As Meto Vroom notes in Leren Kijken (2014), among Dutch research on Landscape Architecture the "Delft School" founded by Steenbergen & Reh was the first to concentrate on the form.

87 for example in spatial-form (Steenbergen & Reh) with the notion of spatial sequencing (Marot)

88 In a recent encounter at EPF Lausanne Sebastien Marot told the author he was currently "teaching permaculture to architects". In fact his lecture series for architecture and urbanism students there develops on the global territorial history of agriculture as a trigger of the development of urban civilisations summarised today also as the Anthropocene.

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architecture. The authors exchanged ideas among them. [89]They develop (among numerous other authors) the field of landscape architecture with the scientific context of urbanism and architecture research and education in numerous disciplinary crossings.[90] Landscape architecture theory is rapidly evolving as much as is the need for landscape architecture in our rapidly growing urban settlements. Many find promising new ways to relate the development of the urban or rural domain to landscape theory (recently in phd research of Bélanger 2013 or Skjonsberg 2018, see also 'Landscape Urbanism' in ch. 1.4.2.) and the landscape in the metropolis (afore mentioned de Wit 2014 or van der Velde 2018 see ch. 3.2.3.). My research is projecting a set of theories of landscape architecture not onto urban therory but onto architecture in it's more narrow definition as art and science of building design.

The reason for choosing a twofold framework ist is that the limitation of the 4-layer method of landscape design analysis allow only a 'structural' reading of landscape in architecture. It only shows landscape qualified by it's material structure[91]. The building's landscape geometry can be structurally informed as well as their landscape morphology is functionally informed. The qualified approach to form helps me to avoid the danger of superficial interpretations, choices of taste, and phenomenological speculation.

Likewise the relation of architectural design strategies to Marot's attitudes also avoids my own over-interpretation. Assumed or declared landscape attitudes of architectural designers measured on the a baseline of landscape architecture's practise, each differentiated by these same attitudes. It is important that also the non-material instances like concepts, ideas and intentions are compared to each other in a consistent terminology of a common research framework.

The common research framework introduced here is showing the choice of formulation of my vocabulary that I repeat throughout the dissertation in a consistent way[92]. It is introduced with this thesis to architecture to understand its contemporary landscape design strategies. I introduced Marot's attitudes (1999) with the chapter 2 on landscape design strategies and briefly recapitulate them as follows:

Anamnesis - integrates the history that led to the present state of landscape. Traces of history are readable in landscapes as a set of strata or as a palimpsest. This is often represented in layer models. Describing also the wider temporal relationship of a project with the past and future of the site. (Marot 1999, ch. 2.3.1.)

Process - Landscape process focuses on natural and induced dynamics of landscape transformation. Effects of nature but also design strategies prepare a site to grow in a certain direction. Landscape process describes the actual ecological, anthropogenic, and seasonal changes of a landscape over time. (Marot 1999, ch. 2.3.2.)

89 For example a foreword of Marot to the international edition of Steenbergen & Reh 2003

90 Examples of such crossings are Steenbergen & Reh writing on Peter Eisenman's architecture (2011 p.424) or Marot writing on Elements of Architecture (in Koolhaas 2018).

91 Comparable to "the charter of elements" introduced in simultaneous phd-research by my colleague Matthew Skjonsberg 2018 p.407, to whom I owe advice on this paragraph with gratitude.

92 I included this section in the final formulation of my thesis thanks to a valuable request of several of my external peer reviewers. I thank them for insisting with their remarks on the continuity of my terminology and am grateful for the chance of clarification in final editing of this thesis for better accessibility.

Sequencing – New dynamic changes our perception of and relationship with landscape. Sequencing is the design of visual sequences. The route through a landscape is a crucial part of any landscape design. Wandering through landscapes can be translated into individual buildings or cities as a whole. (Marot 1999, ch. 2.3.3.)

Context – A landscape does not just react to an existing context but landscape design generates a context in and of itself. This design attitude generates dense functional, visual and spatial relations and constellations. Designed landscapes oftentimes define their own limits and field of intervention and determine the context. (Marot 1999, ch. 2.3.4.)

Landscape attitudes lack in western canonical architecture. Throughout the history of architecture in the history examples of chapter 3 as a result to architecture's complicated relationship with nature as I will summarise this in the next section (see 3.3.1). The suspicion of the presence of landscape attitudes made me chose three cases by their concept – and not only their formal appearance. After the introduction of each case in chapters 4 to 6 and their analysis again the attitudes will reveal the design strategy. Through the attitudes the landscape methods of each case are related to the making of architecture. Three different practises (OMA, SANAA and Eisenman) are made comparable with a common set of design theory. I do not pretend that the three use the same strategy but rather show their differences. Such differences occur in the form (to be shown in the 4-layer analysis ch. 4.5, 5.5. and 6.5.) as in the attitudes (to be shown in the critique of each design ch. 4.7, 5.7. and 6.7.).

The interviews included in the appendix verify the attitudes, but only to a limited extend. Designers do not always reveal all their concepts. In the Interviews Cornubert would refer to "alchemy" (A 1.1.1), Nishizawa might deny formal landscape analogies (A 1.2.3) or Eisenman might bluntly state he is "not interested in landscape" (A 1.3.2.). This only affirms that each designer has a different strategy and the comparison in attitudes shows varied positions that lead to different treatments of architecture.

The comparison in chapter 7 will again look at relations of attitudes and forms of the projects with the same framework. My differentiating of form and attitude does not mean that one comes before the other. On the contrary: I believe that form and the idea cannot exist without each other. In my research on architecture I assume that pure form is meaningless without understanding it's idea. Also an idea is not architecture that cannot be built.[93] The explanation of strategies in this thesis should not suggest that design is a linear process: The landscape form of architecture is made with landscape attitudes. But when a designer –or a design team – develops a form this also transforms his attitude. Design strategies are not determined ahead of a design but developed ad hoc during a design process. This back an forth –form design to concept and back to design– is essential to any design strategy. A landscape design strategy is twofold like my research framework. The two folds of the framework influence each other. The aim of the framework is to understand architecture designed as landscape – it therefore is adapting to it's research subject – research and design are complimentary but the two should not be confused. This is a research thesis on design, it remains in a critical distance and will also show what's lacking at each case.

93 For my understanding of ideas the unbuilt is equal as long as it was supposed to be built. The intent of the architect to build counts more than the collateral circumstances of political turmoil. Often in the reality of architectural production better ideas have a harder time to be realised than the usual ones.

3.3 Selection of Case Studies

3.3.1 Summary of historic examples

In the summary (Table 3.3.1.) I recapitulate the relation of each architecture (theory) to nature or landscape and underline this with a "key quote" or my commentary on the position of nature or landscape in architecture. It shoes that the convergence of landscape forms and attitudes lack in western canonical architecture.

My approximative evaluation shows if each theory or building would lend itself to relate to the an analysis with landscape methods according to the 4-layer model of Steenbergen and Reh (2003, ch. 3.2.4.). In a second brief evaluation [94]I estimate how far historic design strategies where relatable to the landscape attitudes of Marot (1999, ch. 3.2.5.). There are six groups of similar evaluations, each representative of a time period:

First group (from antiquity to 1864): A narrow concept of nature prevails at architecture theorists such as Vitruvius, Alberti, Palladio, Laugier and Semper (sections 3.1.1. to 3.1.4) each from a very different time and position revolves around the distancing of nature and architecture in various shades. Semper himself limit the classical period in his idea that all man's stiles culminated in the Greek peninsula and archipelago in one short period of time. For the relation of architecture to nature various creation myths valuate nature as an ideal. But activation of landscape form in architecture that could be divided in ground form, spatial form, image form and program form remains outside the domain of classical architecture.[95] Also design strategies that would be related to landscape attitudes of contemporary design are not applicable to classical western architecture.[96] Without disputing the value of this concentrated architectural culture, it is quite obvious that in our cultural context, architecture has evolved in a particularly different direction in regard to landscape.

Second group (from 1850 to 1934): Our image of nature radically changes with the discoveries and inventions of the later 19th century under the influence of naturalists like Alexander von Humboldt (1769 -1859) or Charles Darwin (1809 -1882). This also has impact on architecture, be it the populism of nature exhibition structures like Crystal Palace at my example of Paxton or a new phenomenological approach to architecture at my examples of Wölflin and Frankl.

In architectural theory their phenomenological approach is new. So far architects had defined architecture form an internal set of ideas and opposed it to nature - now the perception of architecture becomes guiding. Architects would start to shift to the perspective of the object and consider it's environment. Theories (like the ones described in 3.2.) would recognise this aesteticial shift. The naturalist view is culminating in Frank Lloyd Wright's vision of "natural architecture" as the real modern suitable to the American continent.

94 The estimate is either √=yes, (√)=limited, (-)=little, or - = no

95 Note that these forms do develop however in the domain of garden design in exactly this period since the renaissance. But in a parallel and as a separate profession with a rigid disciplinary divide to architecture.

96 As opposed to ancient non-western architecture as demonstrated i.e. in the excellent Global History of Architecture of by Ching e.a. 2011

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TABLE 3.3.1 Summary of historic examples

Architect	Featured Text or Work	Relation of architecture to nature or landscape	"Key quote" on nature or landscape in architecture	Landscape forms v.s. 4-layer model[1]	Landscape design strat. v.s. attitudes[2]
Vitruvius 50 BC	De architectura,	Architecture conceived ex negativo from Wilderness	"to construct shelters … from a rude and barbarous life to civilisation and refinement"	-	-
Alberti 1452	De architectura	Harmony in connicitas as natural order	"The forms … of buildings contain something excellent and perfect by nature"	-	-
Palladio 1570	4 libri dell'architettura	nature as mirror of divine perfection	"… architecture imitatrix of nature".	-	-
Laugier 1753	Essai sur l'architecture	Natural human instinct as measure of natural order		-	-
Semper 1860/68	Der Stil	cultural refinement of nature by man	"Urkunst" man's instinct of making things (Ching)	-	-
Semper 1864	Stadthaus Winterthur	Classic order, crowned by Pallas Athene	Human-centred argument for architecture	-	-
Paxton 1851	Crystal Palace	Integration of building, landscape and park design	Semper critiques as non-architectural. divide between architecture and nature must persist	-	-
Wölflin 1886	Prolegomena	The beautiful form is conditioned by organic life	"architecture not independent … environment, … garden under rule of architectonic spirit"	-	-
Frankl 1914	Entwicklungsphasen …	emphasises the complex interactive forces	phenomenological and structural critiques of architecture combined	-	-
Wright 1934	Fallingwater	House designed in dialogue with waterfall	"a natural architecture of nature and for nature."	(√)	√
Mies 1945	Farnsworth	Glass-box open plan building opens to nature	"Nature should also live its own life"	-	-
Le Corbusier 1925	Plan Voisin	Bulldozer Urbanism: Destroy Paris for Nature	rational principles as a "surgical cure" of geometry to organise "naturally "grown settlements	-	-
Soleri 1973	Arcosanti	Arcology as synthesis of Architecture & Ecology	urban settlement in desert, bioclimatic design, anti-urbanism, harmonise man with nature.	-	√
Le Roy 1979	Ecokatherdraal	architecture with time to grow until year 3000	"Little bits given free to nature, will grow gradually and finally prevail"	-	√
Maaskant 1965	Johnson Wax	polder becomes Architecture	interaction with landscape in and cultural dialogue	√	(√)
OMA 1989	Kunsthal	Dike becomes architecture	"…didn't find architecture interesting, but on the contrary landscape represented potential"	√	(√)
FOA 1999	Yokohama	Inside topographical waves	overcomes disciplinary borders between landscape and architecture as an experiment	(-)	√
EMBT 1999	Scottish Parliament	The Scot – Land - Building	Built Landscape expressing political identity of Scotland beyond its political processes.	(-)	√

1) Are landscape forms relatable to 4-layer model? (Steenbergen & Reh 2003)
2) Are landscape design strategies relatable to attitudes? (Marot 1999)

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Frank Lloyd Wrights Fallingwater however I estimate to be the only of my featured example that goes beyond phenomenological interest and could reveal real landscape attitudes in it's design strategies. The formal composition could lend itself with limitations to a 4-layer analysis method, but it is still an architectural language at foremost - the natural attitude to architecture remains a postulate even at Wright.

Third group (from 1922-1968): The successful modernist architects as our examples of Le Corbusier and Mies van der Rohe, enhance the divide or architecture and nature with their models of abstraction. They use landscape as a decor for their own formal rigidity. Or they try to eradicate their hated "academism" of existing cities with indifferent greenery. Analysing this amalgam of 'verdure' as landscape form is not what I have in mind nor would I see such this strategy of instrumentalisation of landscape for the promotion of a universally valid international style as a landscape attitude in architecture.

Forth group (1973 and 1979): The two outstanding figures of Soleri and Le Roy represent a period of radical experiments that also impact the relation of architecture to nature. While the formal language is fully inspired by processes of climatic design at Soleri or of material deterioration at Le Roy their innovation does alter architecture's form in a tangible way. Each develops a radically different attitude towards architecture. They unveil urbanism as destructive for nature and humanity. They counter-attack with a natural architecture of radical consequence. My problem is that formal analysis of such fundamentally different architecture would not lend itself to any comparability. Therefore I estimate them not relatable to the 4-Layer model. I think however they emblematically demonstrate a consequent landscape attitude in architecture. Each would go so far as to abandon all canonical grounds cherished by two millennia of architecture history before him. Only recently have scholars started to understand the consequence of these early deep-ecologists in architecture. I think research about the utopian models of Soleri and Le Roy has a great future, but I see them as outstanding idealists, that remain admired more than formally analysed.[97]

Fifth group (1965 and 1989): Two of a whole series of examples of architecture relate to the specific situation of the Dutch artificial landscape. I have studied these in several courses of design analysis in Delft and Rotterdam (Jauslin e.a. 2010 and Jauslin, Skjonsberg e.a. 2012). While it is very plausible here to dissect and recompose this architecture with landscape analytical methods of the 4-layer approach of Steenbergen & Reh (2003). I see only rudimentary relations to landscape attitudes in these designs strategical intentions.

Sixth group (1995 and 1998): These two architectural projects fall into my research period (1992-2014) of landscape strategies. I can easily demonstrate how Yokohama Ferry Terminal and Scottish Parliament represent two of many examples of contemporary architecture design strategies that use landscape attitudes[98] (as in literature of 1.4.3 to 1.4.8). However it would not feel safe to fully dissect them into a 4-layer landscape analysis. I think each composition is too particular and unique. Both do not lend themselves to full comparability within my research framework.

I summarised this historic development again to demonstrate how I limit my choice to the three following case studies. This summary relates the chapter 3 to the main chapters 4 to 7. By generations of architects landscape was touched upon but never completed as a fully grown

97 Testings of analysis have been executed by the master students of park design of Prof. Adriaan Geuze and myself. See Bachem e.a. 2017

98 I also note here that these same architects have also created outdoor public spaces and are frequently exchanging between the disciplines of landscape and architectural design.

comprehensive design strategy. Architecture that can be compared to landscape in its formal structure and in its design strategy remains a rare good. In the next section I will further elaborate the three choices that I can best describe fully developed landscape strategies in architecture.

3.3.2 Selection of Three Case Studies

The literature study and the outline of the theoretical relations between landscape and architecture underline the necessity of examining theory-building cases of three projects that apply landscape design strategies to architecture. After the analytical tools are chosen **(previous section 3.2.4 and question Q. 1.1.7.) the now** framed research and its methodology are applied onto three diverse cases.

The aesthetic implications of landscape as spatial phenomenon are broad, and it is not an easy subject. Particularly in the context of design theory and critique, the physical appearance of landscape is often confused with its significance as a category of thought. Designers are thinkers who associate diverse variables and solve complex problems. A solution does not necessarily follow a logic that can be completely unravelled. Perhaps this is why narratives often play an important role in architecture. My students' analysis of many designs in 'Dutch Architecture with Landscape Methods' (published in 2 e-books) showed how landscape method[99] is also a form of narrative (Jauslin e.a. 2009, Jauslin, Skjonsberg e.a. 2012).

Together with the studied literature (chapter 1.4.) I made the selection of three cases after a series of preliminary studies and drawn analytical tests in the first period of my research from 2008 to 2014. The time-frame of the search began with a project realised in 1990 and ended around the time of final selection in 2014. In this time-frame of 25 years, numerous projects were studied and selections were made from an extensive list. In the case of Dutch architecture the selection was more systematic: I relied on the editorial pre-selection of the official Dutch Yearbook of Architecture, where I focused on 2-4 projects from a list of roughly 20 each year that exhibited an apparent dominance of landscape elements or aspects in the design. International projects were selected in a less systematic manner. They were either featured in other literature (chapter 1.4.) or resulted from frequent study of architectural publications and websites, or discussions of my emerging subject with colleagues in and outside the faculty. I visited as many shortlisted projects as possible until 2016. Of 116 projects identified as potentially suitable candidates for further study, 57 projects were visited for evaluation of the final selection. Besides this thesis as an employed researcher in Delft from 2008 to 2015, I authored articles about roughly 20 of the visited projects, many of the Dutch projects in collaboration with students in my courses of design analysis in Delft and Rotterdam. About 16 were published, while a few remain unpublished in earlier draft versions of this thesis. A summary of these visits in a chronological overview had been drafted, but is not included in the final version of this thesis. However, all projects considered in the selection process, including summary commentaries and bibliographical references to the literature and my own publications can be found in the appendix of the thesis (see table in appendix A3).

99 The distinction between landscape design strategies and landscape analytical methods was made in this thesis in a final phase. The former title was "Architecture with Landscape Methods" and emphasised the unity of analysis and design. All this is part of the necessary complexity and contradiction in architecture (Venturi 1966) of even the simplest of buildings. But for the final editing of this text "design strategies" are kept apart form "analytical methods".

The methodological approach of this thesis demands an instrumental decision on those cases which seem most operable for our purpose, while maintaining a variety in geographical and urban contexts and the background of the architects. As opposed to the precedent literature studied (ch. 1.4.) that summarises many projects, in this thesis I concentrate on three key examples that are different from other in terms of time, context and authorship.

In order to evaluate how the landscape approaches change the way we understand and create Architecture through methods and strategies, I offer three exemplary cases. In order to understand the evolution of ideas, we need the holistic inner and outer mechanics of the ideas that will provide clear insight of the actual design, rather than a wish-list of possibilities.

If the natural sciences of the enlightenment serve as a reference as I have previously laid out in this chapter, it would be for how we have to explore alternatives to our historically situated designs. We should not look at why there are so many varieties but how they occur and work individually.

I will approach three projects in total with increasing detail of my own research. Consequently the case study consists of only three key projects. Each of them is a particular case that I could study in depth here, each as a full chapter with a study of all the aspects that we established as my own method in this chapter and previously (or simultaneously) tested as ideas across disciplines (Jauslin e.a. 2014) or hands-on Dutch designs (Jauslin e.a. 2009, 2012).

The limitation to three cases was made to reach a greater depth of analysis for each, compared to other literature studied, which in some cases contain dozens of examples.

The three following case studies focus on experiential qualities of the landscape and architectural space. Theoretical insights are advanced though the study of landscape experience as demonstrated through built examples, and vice versa. It is necessary to sharpen architectural theory by better understanding landscape thinking as a framework for design.

A composition of any kind is a successful integration of many variables into a formal strategy. Common to all three projects is their difference, yet shared “will” to integrate diverse approaches to architecture into a unique combination.

Analysis and design prove to be like following the same path but in different directions. Each movement helps understand the other. In two of my publications with Steffen Nijhuis and Inge Bobbink (2011 & 2012), we described ‘a mirroring process’ of research by design and design by research. As such, research always invites an ‘experimental moment’ and thus becomes a creative process in our experience more than is generally assumed.

One way to enhance understanding of architecture is visiting and experiencing the space and its context. I attempted to enhance my understanding of the case study projects with critical interpretation of each project’s composition as landscape. Of the many projects I visited or studies in literature I have decided on the following three that I studied for years with increasing intensity. All those I left behind contributed to the focus to the three I selected.

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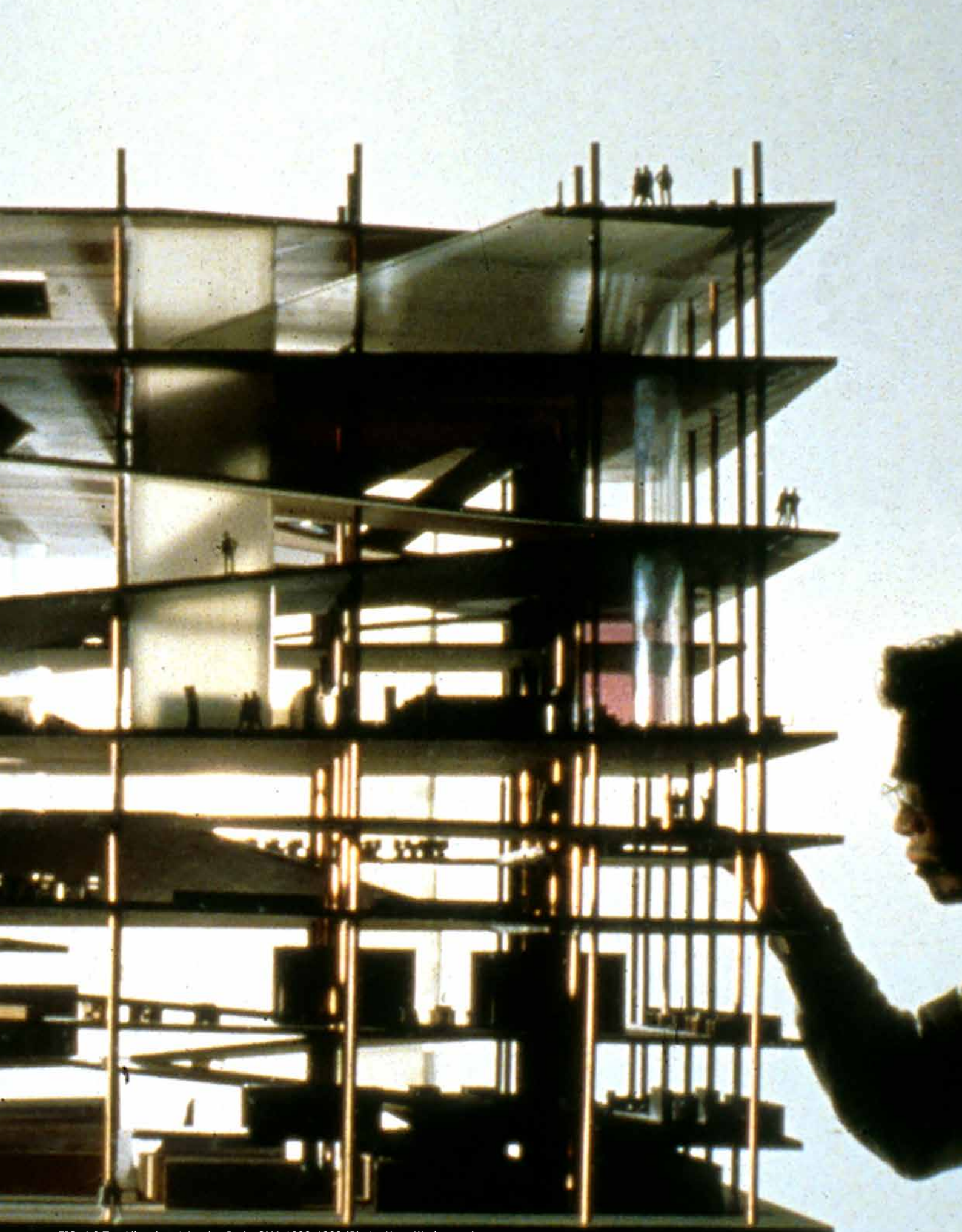


FIG. 4.0 Two Libraries at Jussieu Paris, OMA 1992-1993 (Photo: Hans Werlemann)

4 Two Libraries at Jussieu, Paris

OMA – Rem Koolhaas

1992-1993 unbuilt

The lack of OMA's Jussieu project in the reference literature could easily be interpreted as a sign of unimportance. However this design for a university library holds essential keys to our question how architecture is spatially composed using landscape strategies. This unbuilt design is an influential work at the turning point of the discipline, where new principles are explored. A whole series of projects by many architects in contemporary architecture could in some way or another relate to this project.

In the first section of this chapter I will introduce the argumentation of our various reasons for the choice of the Jussieu project as en example of architecture designed as landscape in regard to existing research in reference literature (4.1). Then I will explain the project in its larger context (4.2). Although Jussieu is an unbuilt design, I will describe the building in a guided walk through from my reading of the design in the sources and the specific 'pro-construction' imagery (4.3). I will describe the steps that lead to this imagery later in the chapter. I keep a brief a paragraph about the design (4.4) to explain more about why this project was not built. To analyse the Jussieu project's workings I display the account of the 4-layer method with all relevant drawings (4.5) and our interpretations of them. As a specific method for this project I chose virtual representations of the design that will be explained in 4.6.

I will then test the concept of landscape in our framework of landscape architectural attitudes (4.7) to conclude with a theoretical framing of the essential contribution of proprietary design instruments of this project to architectures emerging landscape design strategies (4.8).

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4.1 Choice of Jussieu for Architecture with Landscape Methods

The Jussieu project is significant to this thesis because:

- Firstly landscape is introduced as a manipulation of the urban ground plane that responds to complicated requirements of the program specified by the competition.

- Secondly, the project, by means of the above manipulation, explores spatial effects of the multi-fold floor and the fluid horizon by introducing an undulating plane as space divider in a deliberately open building with very few vertical dividers.

- Thirdly, it introduces into the architecture of a library single urban landscape elements like the collaged site plan to the nearby Jardin des Plantes. With this a building is positioned in the Parisian context of urban garden design. An aspect to this point hardly noticed, as these parts of the competition design were not pursued in later, published versions of the project.

- Lastly, the project exemplifies how a "grand projet"[100] could play the role of a catalyst in making Paris Universities public spaces again. This is a larger programmatic dimension with a political note. It includes an explicit critique of modern architecture present on the site with the Jussieu Campus (1962-1973, see chapter 4.2) which dogmatised the university's building culture. The project incorporates a fundamental critique of architectural discipline and its conventions by incorporating landscape design strategies.The Jussieu project presents an idea of solving architectural tasks with the creation of landscape. It is relevant to my thesis also because of the impact of its multi-fold understanding of landscapes appearance in the 1990s against the backdrop of a key project of French modernist architecture: The 1960s Jussieu Campus design. From there the project takes a novel approach to solve a complex problem of an architectural program and urban situation at once. In order to understand this unbuilt project however we need a synthesis about the scattered sources.

This project can be called a discovery. It was a "kind of fusion of the city and a building, of urbanism and architecture, and (...) in a more contemporary mode what you would call Landscape Urbanism. We (the designers, note author) didn't really have that term at the time(but) I think that is precisely what it was about,...". (From the interview with Christophe Cornubert, Appendix A1.1.1). However in the reference literature to this thesis the only mention of the Jussieu project is Ruby's: "... the project became famous as the first use of topological geometry to spatially organise an interior." (Ruby 2006 p. 26). I aim to expose here, that the case of Jussieu is significant to the observation of landscape design strategies in architecture. It explicitly introduces landscape as a means of solving a design problem: It activates landscape as public space. A quality is being introduced, that was lost in previous dogmatic dealings with public space, a dogma that has separated landscape and architecture both physically and intellectually. As a case it directly intervenes on a theoretical problematic of Architecture and Landscape as separate disciplines as explained in Chapters 2 and 3.

100 Literally translated a major project. A specific French term used for public architecture of national importance since President Mitterand as explained in chapter 4.2.

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The choice of this project for analysing with landscape methods is connected to a jump or paradigm shift, that seems relevant not only to OMA's oeuvre but to the development of the discipline in general. In an Interview in 1993 Koolhaas himself expressed great interest in building the Jussieu libraries in particular (Kuhnert e.a. 1994 p.16). Koolhaas considers aspects of this project as an unexpected break or jump (Dutch: 'sprongen' op. cit. p.16) in development of the discipline. Of particular significance at Jussieu is a new kind of connection made between the city, the building and the program using the idea of landscape. Exactly the separation between space and program in a new type of order is particular in this introduction of landscape (op. cit. p. 21) as we shall see in later analysis. Through original source material and analysis I intend to reestablish this project as a turning point in architecture towards landscape strategies

4.2 Context of Jussieu

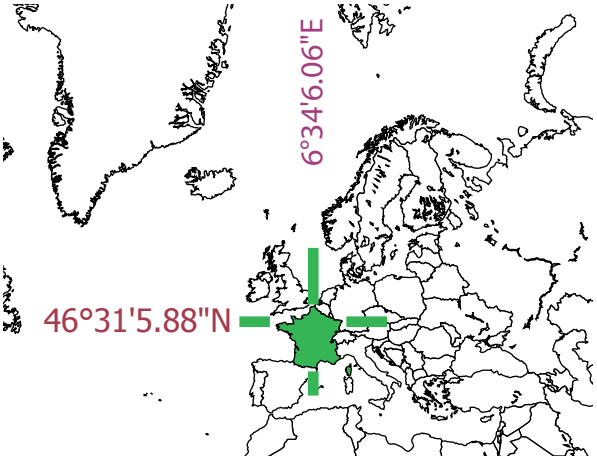


FIG. 4.2.1 Global Position Paris, France



FIG. 4.2.2 Jussieu in Paris Region Scale: 1.250'000

The OMA project for the two libraries of Jussieu in 1992 takes part of its strength from the interaction with its urban context between Haussmann's Paris on one side and of the late-modernist design of the 1960s Jussieu Campus on the other. This urban context is essential to the contribution to landscape strategies through OMA's design.

The site of Jussieu University Campus in Paris's 5th arrondissement is on the South Bank of the River Seine. In the 17th century, the area just south of Île St. Louis was originally occupied by low rise sheds along the Seine, and on the outskirts, the abbey of St. Victor in the 18th century Faubourg St.Victor. (Fig. Saint-Victor & Halles aux Vins form Plan Félibien 1734).

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FIG. 4.2.3. Paris' 5th arondissement, Jussieu (centre) Sorbonne / Pantheon (bottom) and Jardin des Plantes (bing.com 2012)

Next to the abbey was the Jardin du Roi - today known as Jardin des Plantes. The gardens where installed here by Louis XIII in 1635 and are one of the oldest public gardens in Western Europe under the Sorbonne University.

While Jardin des Plantes was blossoming after the French revolution, the abbey of St. Victor was demolished in 1811 and replaced by the Halle aux Vins. Around 1860 Baron Haussmann restructured Paris and traced the most important intervention on the Rive Gauche - the Boulevard St. Germain - in a long bow across the Seine from Concorde to Bastille, crossing the Pont de Sully (1877) just west of the site.

In the 20th century the university showed interest and acquired parts of the site for expanding the nearby Sorbonne, where Paris university had resided since 1257 (Marray in Campus... 1993 p.34). With the vicinity of the Jardin des Plantes the area was predestined for the natural sciences, hence the naming of a street and the later campus after the Botanist Jussieu (1748 – 1836).

After WWII, evolving demographics and high university attendance trends within the baby boomer generation led to the expansion of the Paris university. The first two university buildings of more than 200 meters in length where built here in 1957 along the river Seine and orthogonally along Jardin des Plantes.

Still today, the most dominant building on the site is the giant faculty complex, the so called Grille Albert (1962-1967) which has a size and impact comparable to the largest buildings in Paris, such as the royal palace of the Louvre or the Hôtel de Invalides (Fig. project Albert in undated tourist map source Scarif 1992). The structure is nick-named Grille because of its large scale shape and the use of steel. It was designed by beaux-arts architect Eduard Albert (1910-1968).

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FIG. 4.2.4 Plan de la Ville, Cité, Université, Faubourgs de Paris (Tavernier 1630 after Merian 1615)



FIG. 4.2.5 Paris. Halle aux Vins. (Postcard ca. 1907)

Albert was commissioned in 1962 by the minister of culture, writer and art theorist André Malraux (1901-76, in office 1945-46 and 1958-69) to design the Faculty of Sciences as a extension to the Sorbonne. He designed a giant complex of 277 x 333 meters with six crossing parallel and lateral bars. The rigid grid is only interrupted by one entry at Rue Jussieu and the tower opposite to it. The whole complex originally was to contain 5 x 5 courtyards of which four where joined to an entry plaza around the tower (Hottin 1999 p.6). The six-floor bars have round staircases at their intersections and elevators that are numbered 11-16,21-26,...,61-66 in big letters on the big round tons. Albert's gigantic structure is said to be inspired by the 16th century Escorial complex outside Madrid (reprint of 1967 technical project description in Campus... 1993 p.16). On a footprint of 126,000 m2 the whole Grille Albert complex has an enormous surface of 350,000 m2 of roughly 10 times the net surface of the current TU Delft Faculty of Architecture (OMA 2009 as compared to Fokkema 2012).

The crossing buildings of the Jussieu complex are entirely lifted from the continuous pedestal -named parvis[101] by Albert - except for slender steel columns and round tons at the crossing points following a doctrine of modern architecture by the influential Architect Le Corbusier (1887 - 1965). He named it the 'pilotis' (Engl. Pilars) in his five points towards a modern architecture (Le Corbusier 1923) stressing the continuity of an ambiguous continuous green (3.1.7.). This principle was adopted by Albert (Albert's project reproduced in Scarif 1992).The Jussieu complex is in many ways a manifestation of modernist architectural ideology. It's almost stubborn rigidity (though not yet it's scale) also recalls the Ville Radieuse (Corbusier 1925) that had been described by Koolhaas as Anti-Manhattanism in Delirious New York (1977, 1994 p.225). It is the reproduction of Corbusian rules through Albert. Under the the idea of continuous public green space under buildings on 'pilotis' under the 'Grille Albert' is led ad absurdum through it's realisation. But the crucial space of the new campus was realised quite differently from Albert's initial ideas. Soon after Albert's death came the May 1968 student revolt in Paris. Both events would turn around the development of the campus site and the university organisation in general. In consequence the giant Grille was never finished.

101 The French (and old English) word parvis usually describes "an enclosed area in front of a cathedral or church, typically surrounded with colonnades or porticoes." (Dictionary.com : parvis last access March 2018). It was introduced by Albert to describe the continuous platform at Jussieu Universities, that is partially a series of courtyards and partially covered by the soffits of the elevated buildings. OMA adopt this term from the competition program (Scarif 1992) and use it throughout project descriptions (i.e. OMA 1995). I will keep it as a project related term in this thesis.

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FIG. 4.2.6. Jussieu Campus Aerial View (bing.com 2012)

According to Rem Koolhaas, then a journalist for the Haagse Post who was “critically” reporting from Paris during the student occupation of the Sorbonne in May 1968, the Jussieu Campus was an important centre for the students at the time, as he recalls in an Interview in De Architect (Koohlhaas 1994 p.16). OMA’s own publications connect the Jussieu site to “1968” with the depiction of a street barricade (Koolhaas 1995 p. 1306). The 1968 clash between students and the establishment led to a major reform of universities. They would never become the large, popular and open institution Malvraux had imagined with Albert’s design at Jussieu. Instead, the Sorbonne was split up between 1968 and 1970. This made the concept of a large central unit at Jussieu useless for the no longer existing Central University of Paris.

The building was later occupied by two differently structured faculties of science and humanities. In 1971 the site became Université Paris VII “Denis Diderot” and Université Paris VI “Pierre et Marie Curie”. The two different universities not only have different subjects but follow diverging pedagogical and also political concepts and diverge in labour organisation of the scientific staff. This makes living together difficult (Hottin 1999 p.11). The once intended flagship of the Sorbonne has become subdivided with negotiations among diverse institutions.

Besides these institutional changes, at Jussieu the repression of the ‘68 revolt also had built consequences. The campus entry was strategically reduced to one controllable and centralised access point from Rue Jussieu and fenced off on its large perimeter. For apparently practical reasons (namely parking facilities) the important parvis had been raised above a line visible from the streets. Albert’s idea that the level change would lead to a “ha-ha” effect of visual connection between city and the deck with many bridges connecting across the level jump completely abandoned. The closed edge is to this day the most difficult zone (Marray in Campus… 1993 p.46). Marrey suspects that the openness of urban space simply was undesirable after 1968, as University campuses became strategic fortifications that could be gated and controlled during potential moments of unrest.

Officially the science faculty project stopped, unachieved, in 1973. By then minister Malraux and dean Zaminsky had left office. Architect Albert had died in 1968, leaving oversight of the work to

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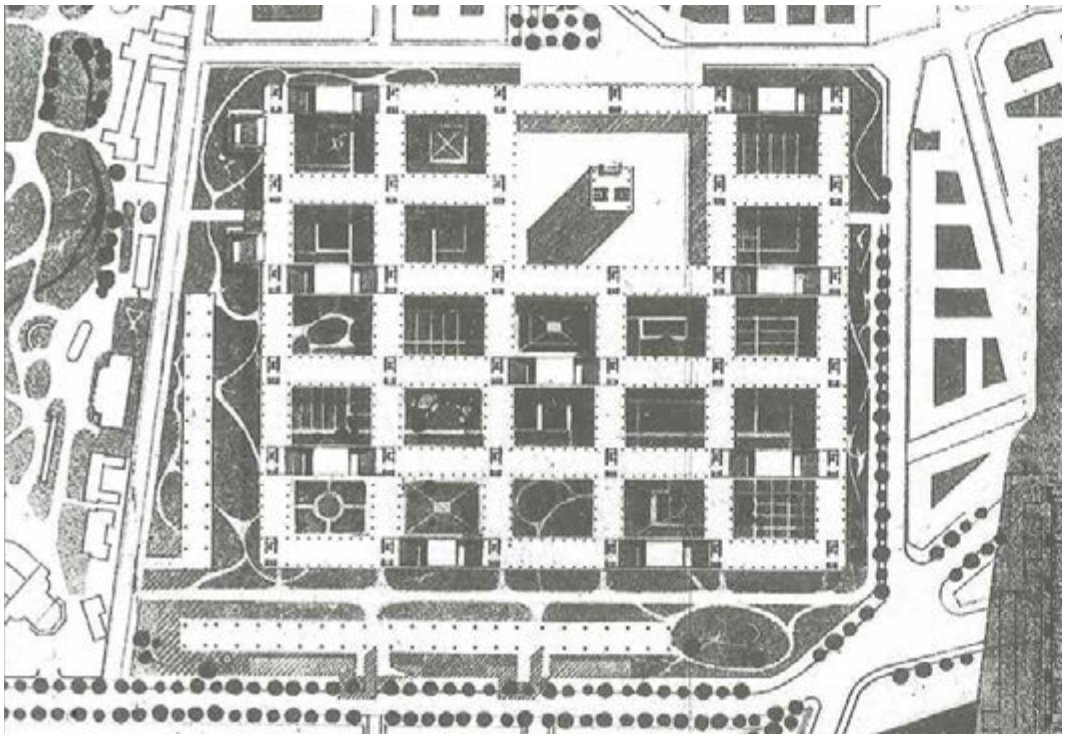


FIG. 4.2.7. Project of Albert. Not realised are the park-like sourroundings connecting to courtyards and Seine-side wing (Jussieu 1993)

Urbain Cassan, René Coulon and Constantin Gortchakoff. The tower was built in 1970, and at 90 meters, became 5 meters higher than planned by Albert. The Art budget reserved by Malraux for courtyards was never fully used. At the unfinished edges, the temporary perimeters where never solidified. Numerous technical and spatial problems, including partial drafts in the parvis, frequent elevator failures, orientation problems and bad acoustics made Albert's buildings very unpopular and many occupants of the building complained about or attacked the design. The parvis space to this day is highly problematic as a public space - rarely activated, even with today's large student populations.

In 1980 the neighbourhood changed (significantly for the OMA project) with the design of a new building. The construction of the Institut du Monde Arabe IMA by Architecture Studio AS and Jean Nouvel created a new entry-square to the south on the backside of Jussieu. The IMA was opened in 1987. It became famous for the southern glass façade with a square pattern of iris diaphragm shutters that are reminiscent of arabic ornaments - a symbolic juncture of French modernity and Arab tradition. The new square south of the IMA towards Boulevard St.Germain suddenly opened a new grand perspective - a vista at Haussmann's scale across the site with a new informal access point for students. This vista remained important for OMA's Jussieu Libraries project.

The IMA was the first of a series of 'grand projets' (1980-1995) that altered Paris with a series of important public buildings. Paris had been an important place for contemporary architecture through the grand projets under François Mitterrand (1916⊠96, President 1981-1995) (see i.e. Chaslin 1985, Nizon, Carloni e.a. 1988). A series of key public projects of transformative character to the city not only involved French architects like Nouvel, Chemetov, Portzemparc and Perrault but also involved leading foreign Architects including I.M.Pei as the architect of the Louvre Pyramid (1984-89). International competitions where held anonymously until the Bastille Opera (1983-89), won by previously unknown architect Carlos Ott. Later competitions where mostly on invitation. Foreign observers of the grand projets (Nizon, Carloni e.a. 1988) compared it with the

tradition of Royal and Imperial French representative architecture in Paris, such as Place des Voges (under Henry IV 1605-12) , The Tuileries Gardens (Le Nôtre 1664-72) and Tuileries Place (later Louvre 1664-1872) or even the much larger urban restructuring of Paris (1854-68) under Baron Haussmann. But Mitterrand's renewal also promoted, as a cultural intervention, the (preferably socialist) intelligentsia of French and foreign architects. Around the 'bicentennaire' (200th anniversary) of the 1789 French Revolution in 1989 many of the grand projets where completed. The grandest project, Très Grande Bibliothèque TGB (Dominique Perrault 1988-96) was announced by Mitterrand on the 14th of July 1988 and is today named Bibliothèque Mitterand after him.

Meanwhile at Jussieu, the success of the IMA building alongside with the élan of Paris's transformation with the grand projets, enforced the ambition of a long overdue renovation of the campus, the unfinished leftover of the late 1960s transformations. Several proposals to complete Jussieu where designed (two of them by Jean Nouvel) but no decisions made (Campus Jussieu 2003 p.56-57, p.60-61, Hottin 2007 p.21, Scarif 1992). Around 1991 the realisation of a 50,000 m2 reserve was finally formalised in a program which resulted in a project brief for a library with sports facilities and a conference centre in the development of the master-plan "Univeristé 2000' (Scarif 1992, Javoy in Campus... 1993).

Besides this program, the actual high architectural ambition at Jussieu must be seen in this context of the grands projets. Its key client was minister Jack Lang (*1939, in office 1988-93), who saw his chance to build a monument to his own double legislature, when he became jointly minister of culture and education in 1992. It should have been a monument the size and ambition of André Malraux's 1962 Jussieu plan - he himself was also minister of culture and education simultaneously (usually two portfolios in France).

In the publication of the 1992 competition results, Lang put an excerpt of meeting minutes regarding Albert's contact from 25.4.1963 with Andre Malraux (Campus uni. ... 1993 p. 11). Lang clearly expressed how his plan for Jussieu was meant to complete the unachieved Malraux project for the Paris Universities.

In that ambition Lang asked the client's project manager Patrice Mottini to hire philosopher Jean Attali (*1950) for the programming and jury (Interview with Jean Attali in OMA 2011 p. 522) bringing the technical competition program onto an higher level of discussion about the malfunctioning public space, university education & research and the future of libraries in the IT-revolution (Attali OMA AMO 2011 p. 522). The new project at Jussieu should transform the segregated Paris universities to become a strong public and democratic institution again. It was a symbol for a long overdue institutional reform after repressive post-1968 measures.

A 100-page programming document was issued in September (Scarif 1992) with two pages alone full of jurors' and advisory experts' names. Out of 100 applicants ten where shortlisted. Five international teams - Herzog de Meuron, Coop Himmelb(l)au, Toyo Ito, Cruz & Ortiz and OMA - and five French teams - Jean Nouvel, Architecture Studio, Pierre Du Besset & Dominique Lyon, Laurent Beaudin and Jacques Hondelatte - all handed in their projects on November 10 1992 (OMAR 2004 #2958, OMA-AMO 2011 p.524).

When invited OMA had already been involved in several competitions of the Grand Projects in Paris like TGB (1989) and Parc de la Villette (1982). They had also just finished Villa Dall'Ava in Saint-Cloud near Paris (1991) and held an exhibition in Paris at the Institut Français d'Architecture IFA (Goulet 1990). Still they where a relatively unknown and exotic team compared to some of the acclaimed French competitors. The proposition that OMA came up with was unique in the competition field.

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4.3 Impression from the Field-Trip and Design

Even though OMA won the competition (ex aequo, see ch. 4.4) the project was never built. My field-trip to Jussieu libraries is an imaginary visit. OMA previously neither designed nor built anything comparable to Jussieu in size.

Despite the absence of a building I chose a 'walk through' perspective of a visitor. I 'pro-constructed' the building's appearance (based on available records and newly retrieved sources; see Bibliography).

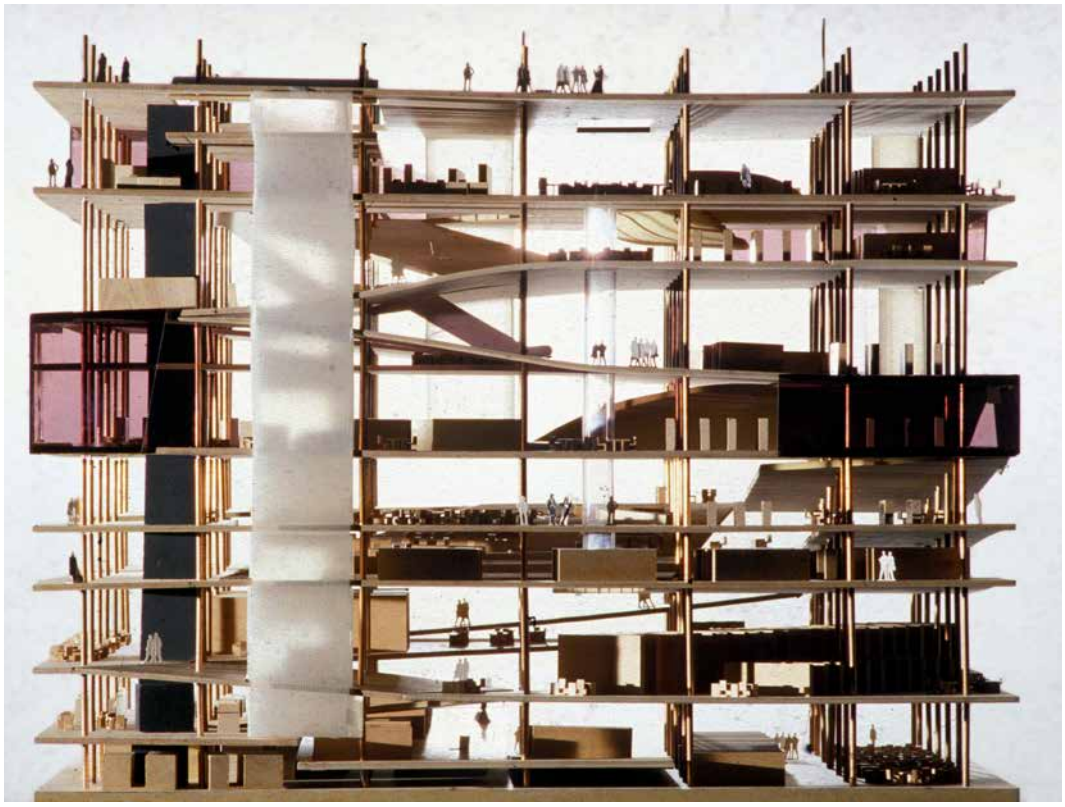


FIG. 4.3.1 Jussieu Libraries. Model Photograph (Jussieu 1993)

OMA's proposal for Jussieu is approachable in a crossing of two platforms connecting access at different levels in four directions. One platform is a park that leads from the Boulevard St.Germain across the Square in front of IMA across Rue Cuvier to the Jardin des Plantes. The other platform leads from the Seine Riverfront (Quai St. Bernard) through the adjacent 1950s University building to the elevated Parvis of Jussieu containing a conference centre for both disconnected parts of the University.

The cube of the library is strategically positioned on the crossing of these two trajectories and thus incorporates the movements across the whole 350 x 450 meter large urban block into a new centre. Similar to OMA's Kunsthal in Rotterdam (1989-92) the building is at once a bi-directional gate, a new axial orientation point and a containment of space.

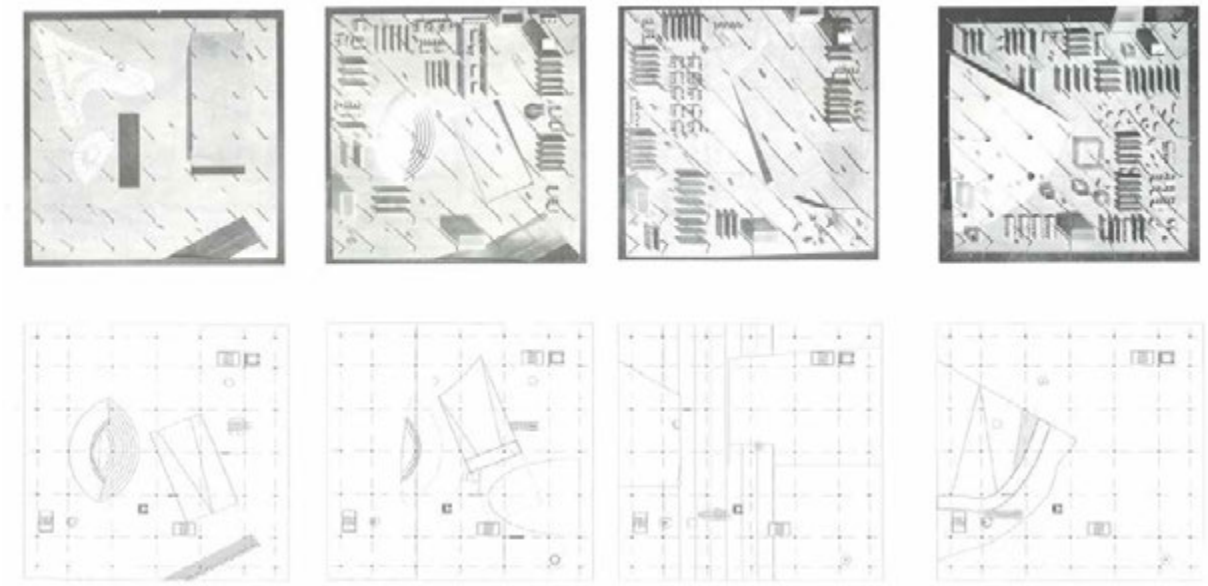


FIG. 4.3.2 Literature library Jussieu: Above ground levels, starting at top level +4. Model view and plan drawing of project status 1993. (OMAR)

Access is provided on two levels by partially external and partially internal ramps or undulation gradings, but essentially the building has no “datum level”. The dominant level of the parvis is though its elevation form the streets an absurd “ground level” completely detached form the actual street levels around the sit. The condition generated is similar to what Koolhaas would later describe in Junkspace:

“The ground is no more. There are too many needs to be realised on only one plane. The idea of a datum level, the absolute of the horizontal, has been abandoned” (Koolhaas 2000).

This level adjacent to the parvis was called niveau Jussieu in the competition project and from there the building develops upward counting levels +1, +2, +3, +4. The lower ground level connecting to the opposite side was called niveau St Bernard and further levels -1, -2 develop downward. As I will show when (virtually) walking through the building, these levels are merely indicating the height of cutting planes or horizontal sections through a huge variety of stepped levels on a continuous space of sloping planes.

Already Between niveau Jussieu and niveau Bernard access form the exterior is provided at various levels. Christophe Cornubert (1993) explains the this spatial composition as a response to the parvis :

“These new territories - vertical intensified passages are urbanised: the specific elements of the libraries are planted like individual constructions in a city. ... a continuos passage transgresses the whole structure like loops of a interior boulevard.” (Campus uni... 1993 p.126)[102]

From the entry square of the IMA is the only grand view from the urban space. An adventurous topography of the ‘sports park’ enhances the 200m distance. It contains a running-track that twice crosses under the long bar that blocks off the Seine and passes through tunnels. University sports

102 “Ces nouveaux territories ⊠ passage vertical intensifiée - sont alors urbanizes: les elements spécifiques des bibliothèques sont implantés comme des construction individuelles dans une ville. ... un itinéraire continu traverse la totalité de la structure comme les boucles d’un boulevard interieur” (Campus uni ... 1993 p.126, transl. by the author)

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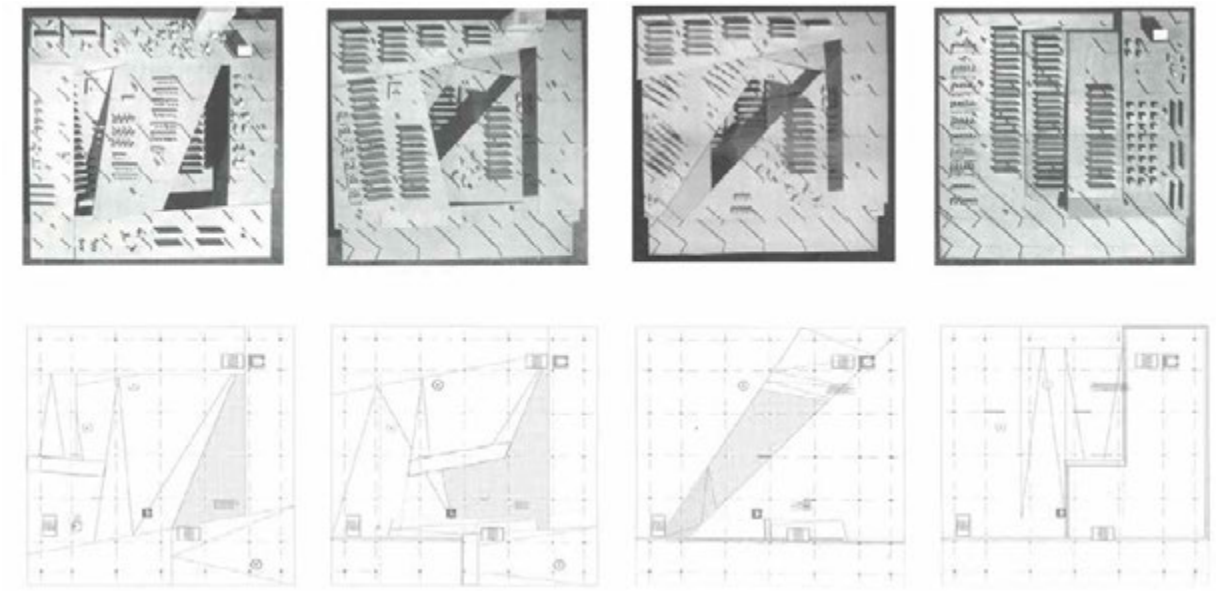


FIG. 4.3.3 Entry levels Parvis Jussieu and Quai St. Bernard. Science library below ground levels, ending at bottom level -2 (OMAR)

facilities are implemented in boxes and plateaus at different heights, with an outdoor swimming-pool on top of a half underground sports-hall. The sports park establishes the continuity from Haussmann's Paris at Boulevard St.Germain to the Jardin des Plantes - the oldest public garden of Paris and predecessor of urban parks. The new continuous landscape, including a 'landscaped' library, links the university with its own public garden to the Jardin des Plantes. The strategic placing of the sports-park gives sports an important role, as it was well received by the university (Javoy in Jussieu Campus ... 1993 p. 63). This large landscape plan of the outdoor areas was part of OMA's proposal but is little developed after the competition, when an executive decision by minister Jack Lang awarded this area of the design second place winner Jean Nouvel. (Architecture d'aujourd'hui, 1993 Apr., n.286, p.24-25[103], Interview A.1.1.1)

Orthogonal to this strip the design proposes another one with a functional connection: OMA develops the congress centre with the missing large auditoria in the form of a bent and folded strip between the various access levels. The two strips cross at the cube. Access is provided from the three sides of the cubic volume to the inside on several levels. The interconnectivity of levels into the volume changes the site condition completely. It solves the problematic disconnection of the grille Albert from the ground of the parvis and the street level. The outdoor design of the project was never published after the competition (except for Campus uni... 1993 p.130) but I demonstrate here how it is crucial to understand how Jussieu uses landscape design strategies in (correcting past) architecture.

The footprint of the square block of the building is approximately the size of the square where the two orthogonal strips meet. But then the building is set back into the 'grille Albert'. With a setback of almost half its depth behind the facade line from the main viewing axis the library displays its functional attachment to the main campus and the parvis. The main attraction of the Jussieu libraries is the inner development of these continuous bands in a series of planes that are sheared, cut and bent in various forms to build one continuous floor with routes leading on a 1.5km continuous path or folded plane.

103 "deux, lauréats ... l'autre pour son parti d'aménagement, et c'était Jean Nouvel." (Architecture d'aujourd'hui, 1993 Apr., n.286, p.24-25)

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FIG. 4.3.4 Jussieu Libraries. Pro-constructed view from sports garden and IMA (rendering author and WAX, see chapter 4.6)



FIG. 4.3.5 Jussieu Library Lettres Auditorium with View on Nôtre-Dame de Paris (rendering author and WAX)

The building is actually a 1.5 km long Boulevard. (Imagined) visitors are strolling through a city of books made of shelfs that are arranged like an urban plan. Inside the square crossing of the two outdoor strips, student and visitors facilities develop in two directions: upward into the library of letters (humanities), and downward into the library of (natural) sciences. Both are one continuous promenade with several loops and shortcuts across a variety of topographical deformations. Access ramps and platforms are an interwoven layer in the midst of the promenade that continues from archives deep down in the subterranean labyrinths to a viewing platform far above on the rooftops. (Fig: Sketch Rem Koolhaas 1992 Source OMA AMO 2011 p.296 OMAR).

Unusually high ceilings bring light into the core of a series of large voids that form deep ravines. Some precipices are four-stories deep, like in alpine landscape conditions. As one walks (or would walk) through the building the organisation and detailing change. Zones, like different urban quarters, include vivid squares and acute corners, as when walking in a landscape, a visitor's orientation needs to rely on landmarks and the light. In the lower floors orientation is provided by the always visible terraced gardens (the roof of the conference centre) diving down into the basement. With spiralling and zig-zagging paths along ravines exploring the library of (natural) sciences becomes an expedition into a cave deep down in the earth.

While moving downward uncovers a secret world, moving upward into the (humanities) library reveals a reconnection with the rich cultural context of Paris. The connections to the urban tissue become increasingly present with the composed views, and offer new perspectives on the city. Through the levels, the directions of spatial orientation continuously change. Shortcuts are provided with escalators, and a series of elevators provide vertical access from several entry areas.

The building has seemingly no facade, as the slabs run through to the outside of the skin. A great variety of glass is combined in many sizes like a mosaic. It is as if the building is immersed in both the city and the campus, not only through views but also through mirrors. The greatest feature of the building would have been the views onto Paris. A new kind of highly reflective dark glass at some spaces strategically mirrors the space, even reflecting views from the opposite side. At night one could have walked on an upper floor and had the impression of flying over the night sky of Paris towards Nôtre-Dame or several other (illuminated) landmarks. The continuing path through the building is a montage of urban sensations and impressions connecting the inner urbanity of a boulevard with a colonised landscape with the outer reality of Paris - intermingling inner and outer space. The outside is used as a spatial structure for the inside, while the inside grows more and more complex. The densifying montage technique merges reality and fiction, the architectural and imaginary landscape of literary Paris. The design merges inspiration and performance. A virtuous 'play' of the city in a building becomes a story in itself; revealing how Baudelaire - the writer flaneur - inspired Koolhaas the storytelling architect (i.e. In OMA 1995 p. 1323)

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FIG. 4.3.6 Jussieu Library Sciences with view on site for terraced garden court (author and WAX)



FIG. 4.3.7 Jussieu Libraries with Views on Paris form roof of 7-9 Quai Saint-Bernard (author and WAX)

Exemplary of this spatial strategy are the upstairs amphitheatre or the great viewing platform on top (both ch. 4.5.2). Through the whole building there are always surprising moments, new spaces, unexpected perspectives and a great variety of spatial situations. Together with the constant movement of people and the shear amount of information accessible it would create a vivid and contrasting atmosphere, where, through landscape, urbanity invades the building.

It is the kind of urban life that may have been imagined by Albert but never could be realised on this campus. Koolhaas had great respect for the work of Albert and may have felt encouraged to enhance the project's misled architectural intentions. Koolhaas writes about OMA's project in relation to the campus "While the project (of the 2 libraries) represents the insertion of a new core, it should also resuscitate the significance of Albert's original project" (1995 p. 1307).

In an interview Koolhaas leaves no doubt to the political implications he sees in his building, that he also nicknamed a 'social magic carpet' (Balmond quoting Koolhaas in OMA AMO 2011 p. 518). At that stage he also said "I would prefer to do nothing else than build the Jussieu Libraries" (Koolhaas in Kuhnert e.a. 1994 p.16)[104] The great expectations and excitement that Koolhaas and other OMA architects had from this building and the incredible energy that came out of this discovery still is visible in old documents and even recent statements. It is now up to us to imagine how this building would have worked, how this vegetation would have changed - programd by the usage of the building changing throughout 25 years.

This evocation of a walk though helps establish an idea of the sensation this building would have created. For sure the account of how it would have been built would be an interesting story to tell here - instead the next section is a less heroic one in the history of architecture.

104 "Het liefst zou ik niets anders doen dan de bibliotheken van Jussieu bouwen" (Koolhaas in Kuhnert e.a. 1994 p.16. transl. by the author)

4.4 Not Building the Two Libraries

When OMA won the Jussieu competition in 1992, problems with the realisation started soon after the first verdict of the jury. The following should explain why the two new libraries at Jussieu were not built.

Shortly after OMA was announced a winner, the competition result was a split first place finish. The surrounding area was to be designed by Jean Nouvel, who had also been (one of) the architect(s) of the IMA and the Jussieu building was reduced to a container. Patrice Mottini, former advisor on Jussieu to the minister of culture and education Jack Lang recalls how the minister intervened in the decision of the Jury. Lang reportedly did not permit a one-voice majority to attribute the first prize to OMA, against Jean Nouvel, a well connected intellectual figure and most celebrated architect in Paris (Mottini in OMA AMO 2011 p.530).

In the context of the thesis and analysis it will be important to hold onto the initial and conceptually more intense connection between the continuous surface of the building and the different levels of the urban surface, when OMA was able to "work with the environment" (Interview with Cornubert, Annex A1.1.1.).

The French periodical Architecture d'aujourd'hui (n.286 p24-25) is quite frank about what most probably happened: "On friday December 11 (1992), a communiqué of agency France-Presse announces the victory of Rem Koolhaas. Next Monday, in a press conference, Jack Lang announced that there were from now on two winners, one for the actual architectural object itself, that was Koolhaas, and another for its surroundings, that was Nouvel."... "after Nouvel could during a whole week end try this and that." The French Architecture d'aujourd'hui (No. 286 p.24-25) insinuates that Nouvel attempted to influence the minister[105].

Soon after the competition the political situation in France changed dramatically in spring 1993. Jack Lang and François Mitterrand's Socialist Party had already suffered a landslide loss in the Regional and Cantonal elections in March 1992. Consequently on March 21 and 28 1993 their socialist government lost the majority in the national assembly elections. When President Mitterrand saw his "presidential majority" reduced, Jack Lang, the key client of the Jussieu project, left office by the end of March 1993 - and with him 'his' grand projet diseappeared.

In this climate the development phase of the project up to spring 1993 progressed very slowly. In February 1993 it was put on a list of "uncertain" projects in an internal memo (OMAR unnumbered). There remained many practical concerns collected from library and university bodies that were taken into account in the revisions of the project. A meeting was arranged where sloping surfaces (found at the time only in OMA's own Kunsthal in Rotterdam) were tested for book storage and transportation (Fig. AMO 2011 p.366, 367).

105 French minister of Culture Jack Lang was a successful client of Jean Nouvel on the same site. He i.e. visited the construction site of the Institut du Monde Arabe in Paris on 12 November 1985, as reported by the press (gettyimages.com :Nouvel + Jack Lang, last accessed March 2018)

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FIG. 4.4.1 Book robot testing at Kunsthal (AMO 2011 p.366)



FIG. 4.4.2 Jussieu Campus asbestos removal (Reuters 2011)

The last major revisions wrapped up in a project design dated March 30 1993 that was probably presented on April 1 and 2 in Paris (OMAR 2949), in the week after the fatal elections. After this, despite many efforts by the architects and remaining client representatives, the project does not move forward. Meeting minutes form Paris in April and May 1993 show how the climate on the client side is extremely hostile to their project (OMAR). Finally, putting financial arguments in false context (Mottini AMO 2011 p. 532), the conservative led ministry of finance decides in a meeting (May 15 1993, OMAR) to close the project account while also putting forward that no actual assignment had ever been given to the architect.

The protagonists of the project where still so excited about this design they assumed or hoped it would be realised (Mottini in 2011 p. 533). In 1994 OMA prepared a larger exhibition at MoMA and decided not to show Jussieu as a single project but rather an overview (including the Jussieu model however). In our Interview Cornubert draws sketches of sloping planes inside the New York gallery (A1.1.1.). But after it “became clear that Jussieu was ... not going to move forward” (Cornubert A1.1.1.) that exhibition concept was abandoned.

The two libraries of Jussieu will never be built. Instead other changes take place at the Jussieu University complex. In 1996 a large operation was began to remove asbestos from the campus (désamiantage). A mix and match of pavilions and numerous temporary buildings spread on the site. The renovations take more than 15 years to be realised (3 times the construction time) and its initial budget of 183 million EUR is expected to be multiplied by ten by 2015 to 1’850 million EUR (La Cour des Comptes 2011 p.81).

The central tower completed in 1970 and meanwhile called Tour Zamansky was renovated with a lightning project designed by architect Thierry Van de Wyngaert in 2004 and built in 2009. (see Lamarre 2009).

In 2006, the eastern corner of the grille of Albert that was left open with the OMA design is closed off with the Atrium Jussieu, a building by Peripheriques Architectes (documented in Tallon 2006). Peripheriques’ infill in that corner solves the paradox of the Jussieu campus with a solution that looks incomplete. The new 16,700 m2 wing of closes off the grille of Albert for good. For this building, Peripheriques was awarded with a Mention spéciale at the Équerre d’argent, The same prize which Jean Nouvel and Architecture Studio AS had received in 1987 for the IMA and that Rem Koolhaas received in 1998 for OMA’s villa in Floriac near Bordeaux.

As of today it is sure that OMA’s 1992 Jussieu project will not be built. Still the building design remains a particular moment in architectural history. The meaning of the project as architecture if analysed with landscape methods will be explained in the following chapter.

4.5 The 4 Layers of the Landscape Architectural Composition

Repeatedly and with great emphasis Koolhaas, Cornubert and other designers at OMA explained this unique building as a landscape. In the midst of one of the large metropolises of Europe, the ancient program of a university library leaves no doubt that this is an urban building task. The large-scale, built artificial landscape is “vegetated” or “urbanised” with program. The project emphasises and “montages” landscapes in design in regard to the versatility and complexity of the landscape elements to be applied.

While still in a concept phase – the use of four layers of the landscape architectural composition in this case incorporates a wide range of strategies at each layer. Ground Form here not only reacts to an urban context, bringing in park elements, urbanised and tamed landscape, but also starts from a context dominated by large planning operations like that of Baron Haussmann and the architect Albert. The study of all the (many) formal manipulations of the ground plane and horizontal slabs in the framework of ground form into one continuous multi-storey floor will reveal the main invention of this project. The spatial form of Jussieu deals with the route across this continuous floor and an evenly collaged and diverse series of visual relations including reflections and manipulated or montaged inside-out relationships. The metaphorical form deals not only with landscape entering the building, mainly as topography, but also with very abstracted allusions to nature. Besides, a landscape narrative of another dominant metaphor is that of an inner urbanisation: Incorporated by the Parisian flaneur exploring this city of books as a literary urban landscape. Programmatic freedom is a main goal of the design: It does not derive order from the architecture but facilitates the changing needs of librarians and users. Program is also explicitly understood as political, especially from many explanations of Rem Koolhaas himself. Jussieu is also a proposal to completely change the way public space is provided inside a building and how the occupation of public space might even transform a society.

4.5.1 Ground Form

Even if the original landscape or topography of Paris is largely overruled by urbanisation in this central area of the city, some elements of the outer landscape are still very present. Particularly in the competition design, the Jussieu project makes strong connections to these urban and landscape elements. In a 1:10’000 overlay of topography and built structures (Fig. 4.5.1.1) one can still read the hilly site of the former Faubourg St. Victoir and hills of the Quartier Latin with the Sorbonne west of Jussieu. On the east the (partially artificial) hill of the Jardin des Plantes with its romantic zoo design is a landscape that became an enclave in the city. North of the site the are the two Islands – the oldest part of Paris – with the river Seine – a landscape element with strong presence. On the West we have the Hausmannian axial web of Boulevards, nearby Boulevard St. Germain and in a view from upper levels the Place de la Bastille with its eight crossing streets and boulevards. Further visual connections across the city web and its monuments will play a important role in the design.

However, the most dominant surrounding, the incomplete Jussieu university campus (1962-1973), negates any topographical connection of architecture. The elevated structure of the grille Albert on pilotis strongly separates topographical ground and architectural form.

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FIG. 4.5.1.1 Jussieu site relief 1:10'000 (Drawing: author)

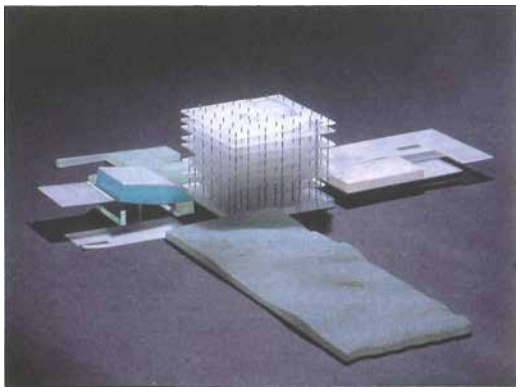


FIG. 4.5.1.2 Site model insert competition (Centre Pompidou)



FIG. 4.5.1.3 Original design sketch (OMAR 2883)

The separation is reinforced by the underlaying ground floor on a pedestal that is even fenced (altered from Albert's plan as in 4.2.). The campus as a whole, in particular the grille Albert, represents a typical modernist attitude opposing architecture against landscape (3.1.8.) in its canonical manifestations of the 1960s and 1970s.

In opposition to that negation of topography, the design of the two Libraries activates and transforms topographical situations. At 1:10'000 scale it is visible how the 1992 design for the two libraries at Jussieu transforms the ground by inserting two linking undulating platforms (Fig. 4.5.1.1). The platforms provide a "cross-link" through an "urban-landscape" (Fig. 4.5.1.4). The importance of this link to the site is also visible in the initial competition model (Fig. 4.5.1.3 now at centre Pompidou collection) and two documents from the design. A collage of plans of the existing ground levels makes it clear that this connection should be a landscape with the 1950s university buildings on double rows or pilotis.

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FIG. 4.5.1.4 Jussieu ground floor plan collage with Swiss topographical map (OMAR 2914)

This collage of plan and map photocopies on tracing paper (Fig. 4.5.1.2 OMAR) also shows the Grille Albert on its massive staircase tubes and slender columns and the IMA square. In between all these, the architects collaged a copy of a topographical map of the High Alps (Sheet 1327 'Evolène', 1:25'000 topographical map of Switzerland). Landscape in this montage is introduced into the core of the abstract modernist campus to reconnect it to its surrounding and ancient urban topography. My analytical drawings (Fig. 4.5.1.5, ...7) show how this cross-link works, and even connects to former interventions. The design was based on a crosslink from the river Seine to the 'parvis' and from Bd. St. Germain and IMA to Jardin des Plantes. This connection already includes different datum levels and thus would require ramps or slopes that are exaggerated.

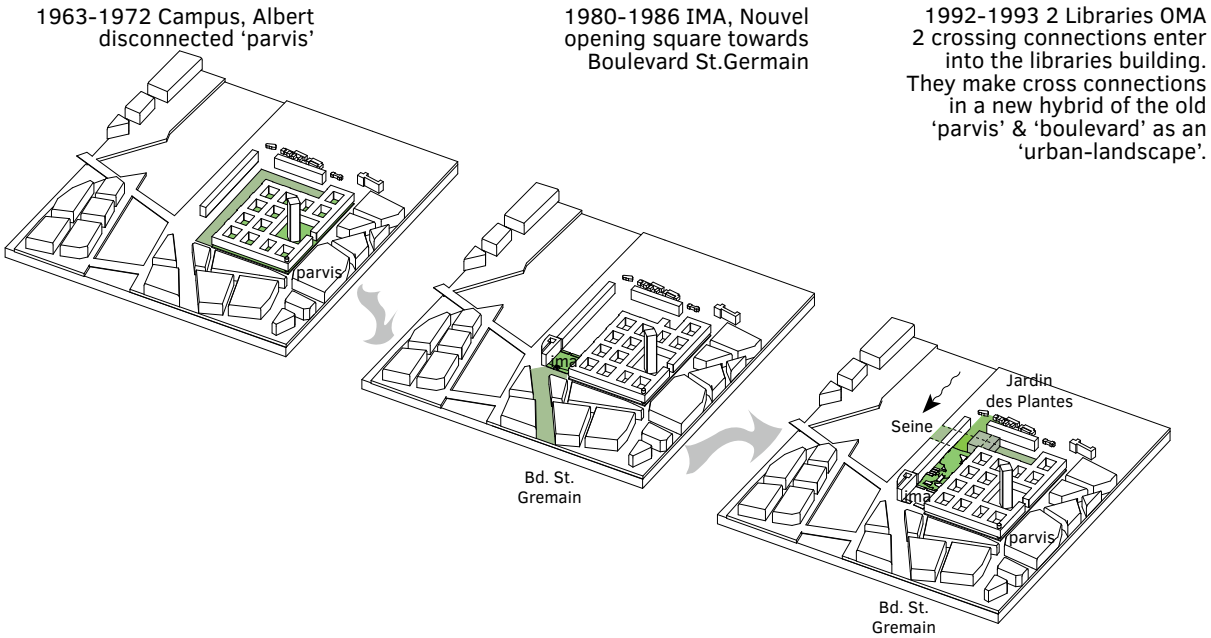


FIG. 4.5.1.5. Jussieu historical stages of developement of the ground form with the OMA project on the right (Drawing: author)

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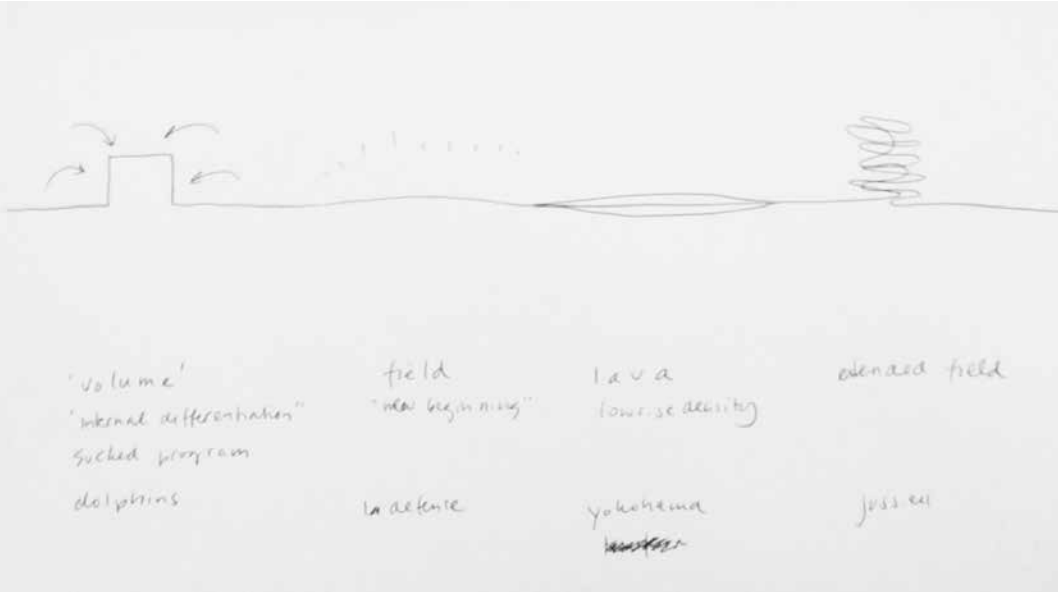


FIG. 4.5.1.6 Jussieu ground floor plan collage with Swiss topographical map (OMAR 2914)

This crossing strips connect the site with different programs. Sports and conference connect to the whole campus (see also section 4.3.). The crossing of these two directions and different levels interweaves a central spiral-shaped space inside the crossing volume. Both crossing strips manipulate the ground plane with platforms articulated in artificial topographic cuts and tilted planes. Inside the square area of their crossing where the volume lies, these articulations start to get more agitated, turning into a spiral and other continuous forms. The outer interweaving 'infects' the inner volume. All the stacked planes get deformed, folded and manipulated with cuts, bends and a series of other transformations. The generating idea in the composition of the Two Libraries building is a result of this crossing: The ground form of the site is activated and turned into the ground form of an inner volume.

The two crossing positive forms were meant to generate a non-space or non-form in the way that two negations make a positive or "-1 x -1 = +1". This formula is a typical design approach of OMA that Koolhaas himself calls "paranoid critical method" (Koolhaas 1978). It is a subtle expression of the negation of context in later essays like "Bigness, ..." (Koolhaas in S,M,L,XL 1995 p.494). At Jussieu the main problem of the context is attacked, reversed and taken hostage by the architect to turn it into a value.

The central idea of 'double negation' of the neutral and inactive parvis- seems to connect several other concepts. In a sketch the development is named 'volume', 'field', 'lava' and 'extended field' (Fig. 4.5.1.6). The term 'extended field' here alludes to the occurrence of Non-Object Sculpture later named Land-Art coined by Rosalind Krauss in 'Sculpture in the Expanded Field' (Krauss 1979). In a similar way to Non-Object-Sculpture OMA overcomes object-centred thinking. They propose 'Jussieu' as a way to overcome an object-centric architecture they call 'Dolphins' to describe a building of 'large masses' ... 'in the periphery' ... 'which house the secret processes' of the 'registration-storage-distribution cycle' (Rem Koolhaas in a Fax 'To: Winy' (Maas) dated '03/05/93' OMAR OMA/AMO 2011 p.293).

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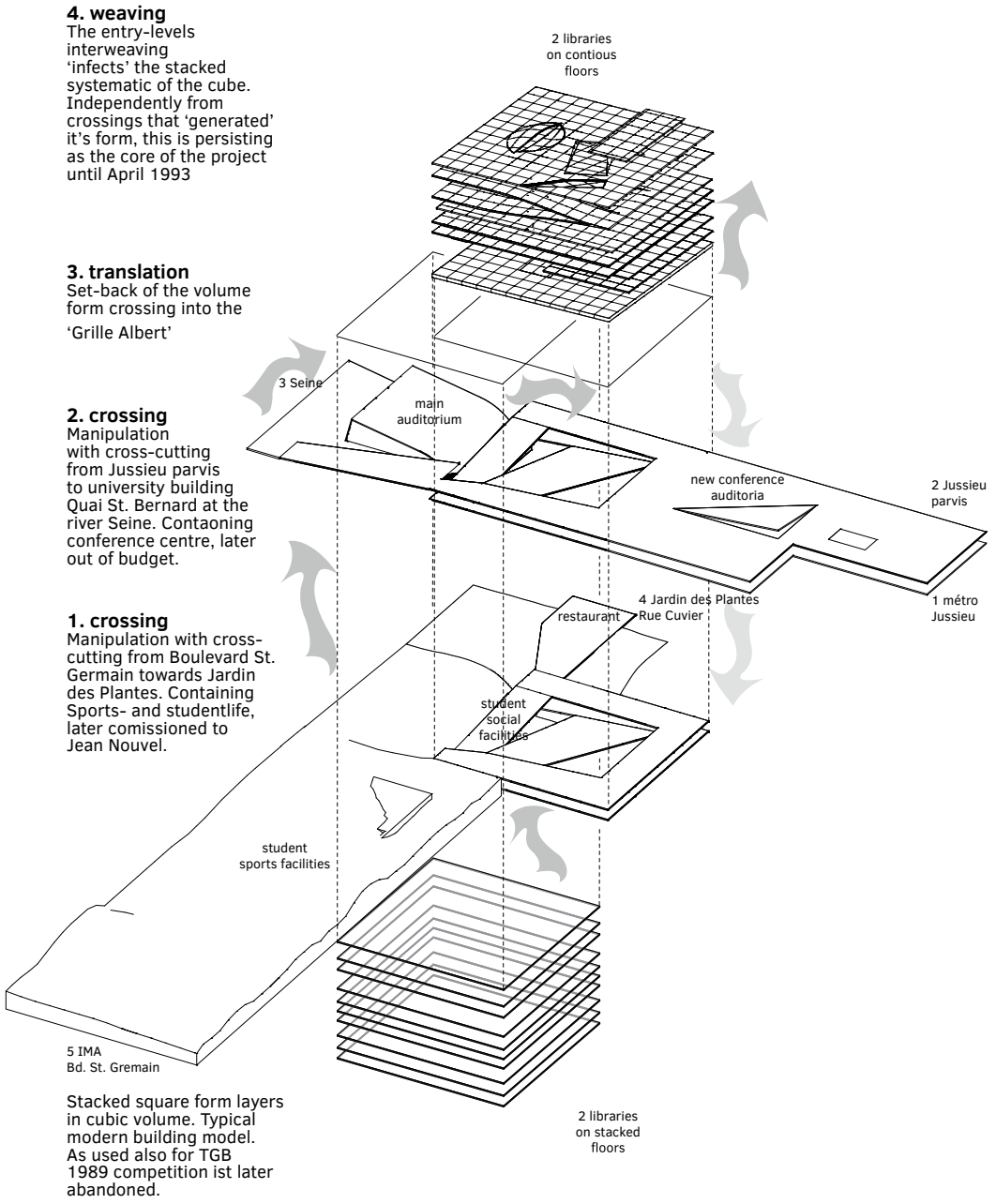


FIG. 4.5.1.7. Jussieu developement of the Ground Form form buttom to top: stacked floors, crossing planes of sports park and conference centre. resulting in intertwining floors (Drawing: author)

Some earlier sketches and study models organise the library program of Jussieu as a series of stacked floors in a cube-like form. At Très Grande Bibliothèque TGB competition (1989) OMA's concept for Paris proposed a 'solid block of information ... (where)...the major public spaces are defined as absences of building, voids carved out of the information solid' (OMA 1995 p. 636). The Jussieu design departs from a similar concept of stacked floors (shown from bottom to top Fig. 4.5.1.7.). The almost-cubic volume is inserted in the incomplete eastern corner of the grille Albert, the Jussieu library competition site. OMA chooses a somewhat simplified visual explanation for this method to manipulate and activate the ground-form. A series of photographs show hands manipulating a sheet of paper (the ground form, or plane of the parvis) and transforming it into a cubic volume with two folds (Fig. 4.5.1.9-11 in our analysis Fig. 4.5.1.8. bottom). This way of folding suggest an activation of the underused parvis, as the central and most important idea of this ground-form landscape method.

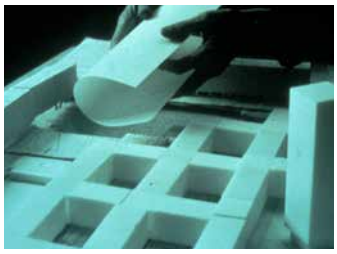
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It leaves out how nuanced and versatile the strategy actually is in relation to a series of other site problems and connections - namely to Seine-side buildings, IMA square, Jardin des Plantes park, restaurant, auditoria, metro and the surrounding quays, boulevards and streets.

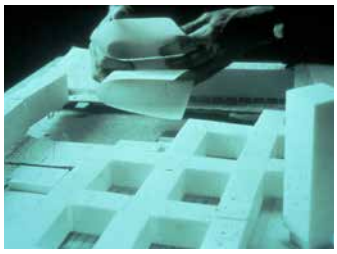
Another design principle is illustrated with a similar series of photographs (Fig. 4.5.1.12–14) that is also a manipulation of the ground plane, as used inside the building. The planes inside the building are cut at strategic places to be bent up or down and interconnect with other planes. My analysis (Fig. 4.5.1.8. top) identifies eight such cuts in the last design on various levels. Four of these cuts are straight cuts, two are L-shaped with one bend in plan and another two U-shaped, double bent in plan. In the typical collage manner of OMA this folding and cutting is combined with another strategy of the void (from the TGB design): Volumetric insertions that cut out in a boolean operation. The most important are three triangular voids in the central floors, a U or horseshoe shaped one on the upper floors and an eye shaped void on the top floor.



FIG. 4.5.1.8-10 Folded parvis ...



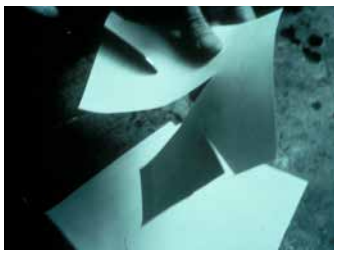
... paper folding by OMA to ...



... illustrate concept.



FIG. 4.5.1.11-13 Cut planes ...



... paper cutting by OMA ...



..configured. (Photos Hans Werlemann)

The manipulations of the ground form with folding, cuts, and voids interact in a complex way. A summary sketch on one A4 page shows the main characteristic topographical transformations as applied in the last design (Fig. 4.5.1.16). The last analytical drawing of the ground form (Fig. 4.5.1.15 left) shows the interaction of various manipulations in eight topographical transformations of the ground plane slabs, each of them different and used either once or a few times. Next to these I identified fourteen cuts or 'voids' that are boolean volumetric subtractions (Fig. 4.5.1.15 right) of the TGB strategy (Fig. 4.5.1.17). Some of them are repeated often, others are specifically designed for typical situations. They each provide a specific space, for example a ramp rising from a counter-slope, or a tunnel in a falling horizon. The most complex interaction is the space called 'eye'. In the ground form this eye-shaped void is inserted into the otherwise horizontal top floor plane. That plane is cut thorough in the centre of the invisible void (a surrealist metaphor to be discussed in 4.5.3.). At the inward side of the cut the plane is pushed down to cover the eye like a lower eyelid, and on the outward side it is lifted up. Here a little auditorium profits from a vaulted ceiling that reflects the sound of a speaker and uses the grade downward like an amphitheatre. The outer side of the shell is imagined as a viewing hill with a series of panoramic views (noted with an arrow 'to Paris' in sketch Fig. 4.5.1.16). The 'eye' ground form intervention has strong spatial consequences, a metaphorical dimension and even a programatically provocative space. It is a good example of how in a single landscape element can form a connection though the different layers.

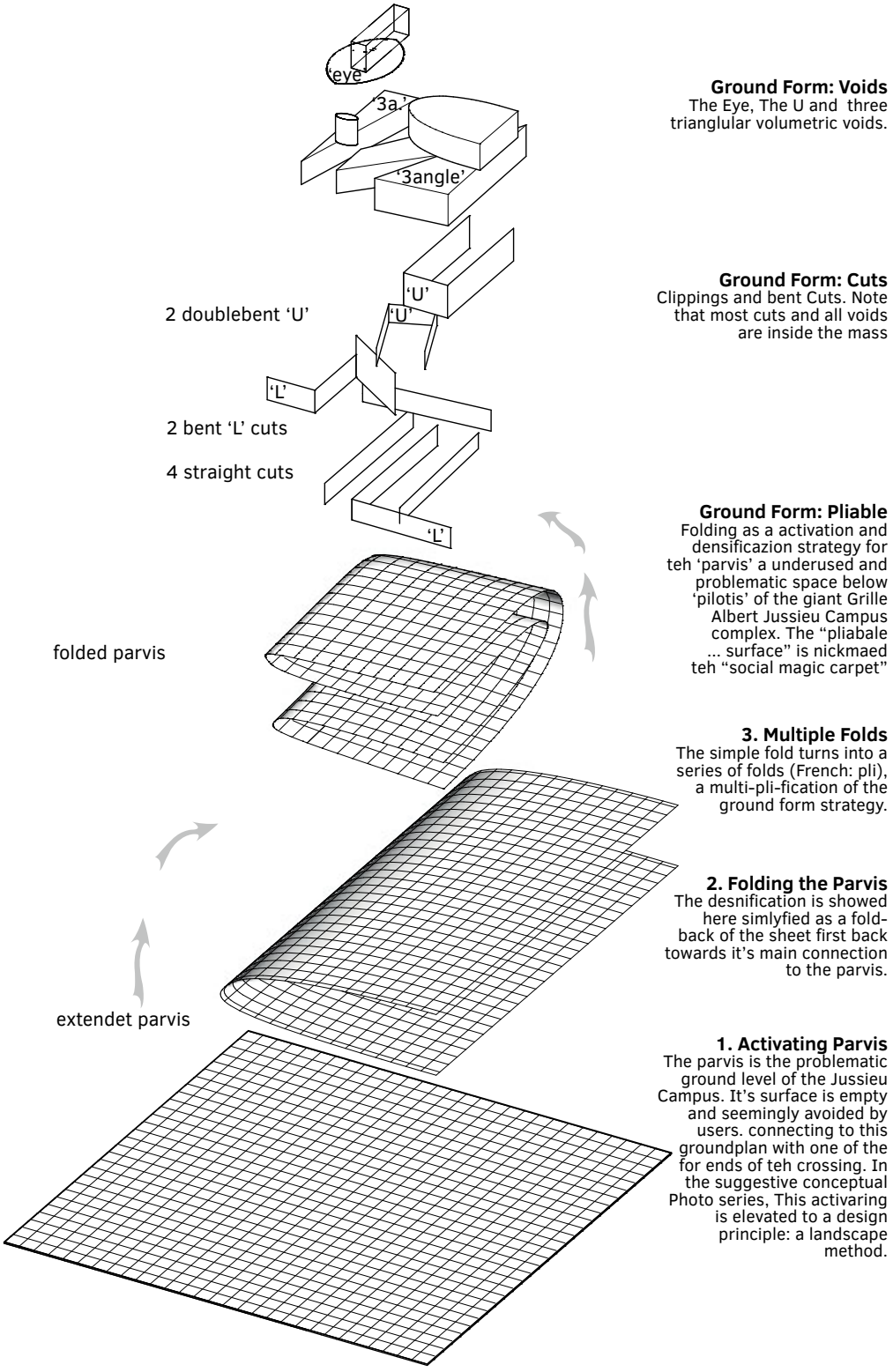
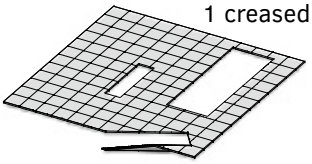


FIG. 4.5.1.14 Bent planes and cuts (Drawing: author)

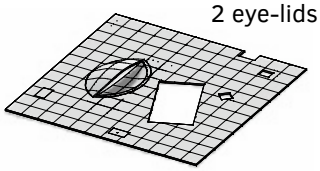
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8 Topgraphical transformations of slabs

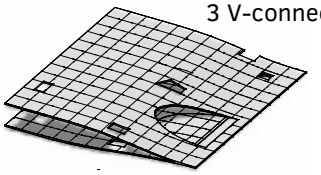
1 creased - down roof



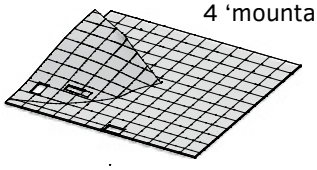
2 eye-lids



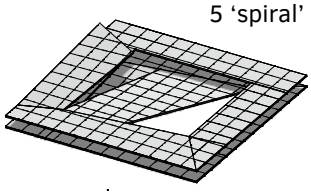
3 V-connected horizontal split



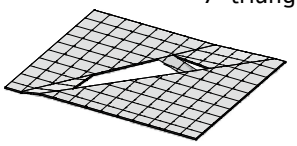
4 ‘mountain’



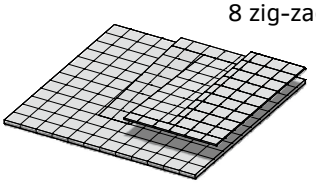
5 ‘spiral’



7 ‘triangular slits’

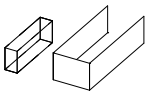


8 zig-zag of terraced ramps



14 cuts and ‘voids’

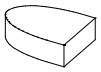
1 box-void
2 U-cut



3 eye-void
4 U-cut



5 horseshoe-void

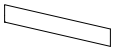


6 L-cut

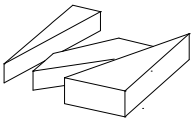




7 cut
8 cut



9 triangular void
10 quadriagular void
11 triangular void



12 cut
13 L-cut
14 cut

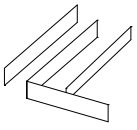


FIG. 4.5.1.15 Levels with respective cuts and voids (Drawing: author)

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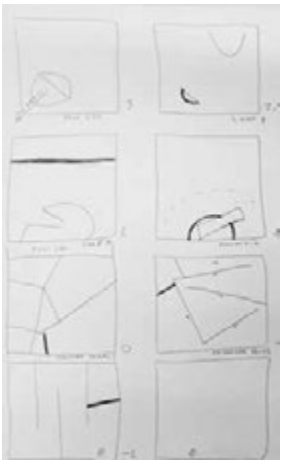


FIG. 4.5.1.16 Sktech of ground form elements (OMAR 2914)



FIG. 4.5.1.17 Volume and void models of Très Grande Bibliotheque. Another competition design by OMA from 1989 (OMA 1995 p 660)

In summary, the ground form of the two libraries at Jussieu project is a collage series of techniques and manipulations of the ground plane. Quite typical for an OMA project of this period, the design applies many different tactics to create a large variety of situations. This intended density at Jussieu also reacts to the monotonous situation found at the campus. These manipulations of the ground-form create a large density of spatial events within a relatively small space. The richness of urban life in Paris enters in between the basement and roof of a single building volume.

4.5.2 Spatial Form

The main landscape principle applied to the spatial organisation of the two libraries is a continuous route, that leads up and down for each department with several loops and short cuts. The connection with a route is essential to the development of the architectural space. It translates the spatial reading of a city by a wanderer into a landscape experience: Like the literary walks in poetry of the flâneur Baudelaire, evoked by Koolhaas in his presentation (i.e. OMA 1995 p. 1323) or like the derive of a situationiste (i.e. Koolhaas 1993 in Arch+ 117 p. 22). The analytical reading of a space designed for such a poetic or situationist experience is particularly complex when interpreting an unbuilt building.

The ground-form and spatial form cannot be separated into two discrete entities. Rather they constantly inform each other through the development of the design. The routes form the building and the building forms the routes. The form is a dialogue between ground and space. Two ground form principles have great influence on the spatial form of Jussieu: The collage of sloping planes and the insertion of varied cuts and ‘voids’. Like a wanderer planning his route through a landscape on a topographical map, the architects sketched routes on the plans, connecting inner programs, the facilities in the vicinity and outer urban elements around the city of Paris. One of these previously unpublished sketches (Fig. 4.5.2.2 OMAR) served as a basis for my analytical representation of the path (Fig. 4.5.2.3).

At the place of the crossing area in the ground form paths from several entry levels form a complex knot, leading into paths to both upper and lower areas of the building. The formative design phase in the spring 1993 shows four routes (A,B,C,D) that are named ‘circulation extérieure’ in a sketch (Fig. 4.5.2.1).

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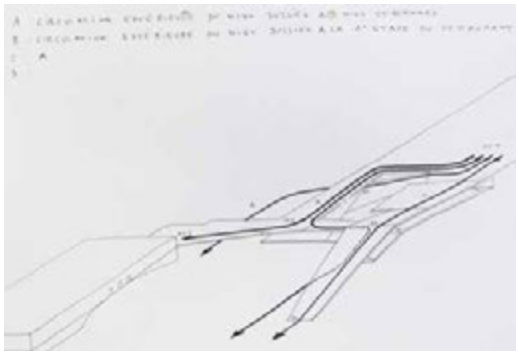


FIG. 4.5.2.1 Design sketch routing entry levels (OMAR 2915)

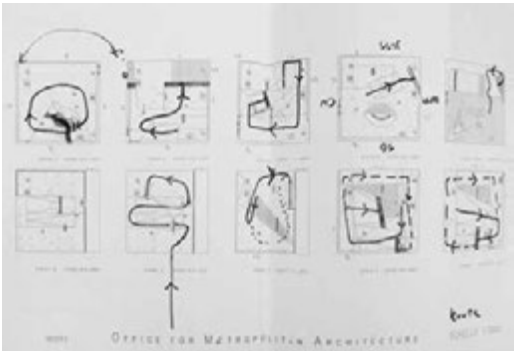


FIG. 4.5.2.2 Design sketch routing upper levels (OMAR 2887)

They are not exterior but are actually routes that lead trough the interior libraries building and connect exterior program. In this core spatial and ground-form are one, the ground forms a 'spiral' (Pos. 5 in Fig. 4.5.1.15) and the inner route here forms a 'spiral', (Fig. 4.5.2.3) too. Routes spiral up and down in the core of the building, while four other passages are cut through it.

It was an important part of the project to generate this movement inside a building, to put the library as a central public space into the campus rather than as a discrete closed object. At Centre Pompidou by Richard Rogers and Renzo Piano (1972-1976) the public movement is exposed with the iconic exterior escalators in the main facade (referred to by Koolhaas 1993 in Arch+ 117 p. 25). At Jussieu movement trough a continuous landscape becomes the generating force of the whole building design. It radiates from the core of the entry crossing into remote areas of the 1,5 km of continuous folded route.

The other spatial strategy is the strategic placement of the cuts and 'voids' (see ground form fig. 4.5.1.15). In the core of the entry levels we find no less than three 30-40 meter deep voids, completely inside the building. They cut through one or two levels that form 15 to 20 meter high spaces and would provide very long views. The many views into the different areas of the library would tease passengers to dive into remote worlds between the covers of thousands of books.

OMA's home city Rotterdam has two book-related buildings with a similar space, most probably known by the architects of Jussieu: The Donner bookstore at the Lijnbaan (formerly furniture shop 'De Klerk', Architects Van den Broek en Bakema 1949-1956) and the public library on Blaak (Architects Van den Broek en Bakema 1978–1983). At Jussieu besides the opening fireworks of spatial effects on the entry levels, two ramps and additional elevators and staircases lead up and down into the Libraries, providing alternative access options from three sides of the building.

The downward route starts counter-clockwise (contrary to i.e. the Guggenheim Museum in New York 1943-1959, Frank Lloyd Wright).[106] The route goes down almost two full rounds along the outer facade then takes two narrow turns and dives on a steeper ramp into a ravine-like space provided by a narrow central void (Fig. 4.5.2.3. Bottom left). Walking against the back wall the route then takes two right turns, opening on a sequence of three sloping terraces (Pos. 1 in fig. 4.5.1.15)

106 In landscape architecture it is often prescribed which direction is to be taken on a route through a garden or park. An example of clockwise is the riding route through the Bosco at La Cetinale closed to Siena (Steenbergen and Reh 2003). An example to counter clockwise is the promenade through Stourhead, closed to Stonhenge (Nijhuis 2015). Although do not know about the intentions of each designer of these gardens, nor about those of Frank Lloyd Wright or OMA to chose a direction for their routes. However is relevant to discuss routings in Landscape context.They could be related to the direction of sunlight turning (in the northern hemisphere) clockwise around buildings, which already is a large scale connection than any object centred architect may make, if not alluding to landscapes.

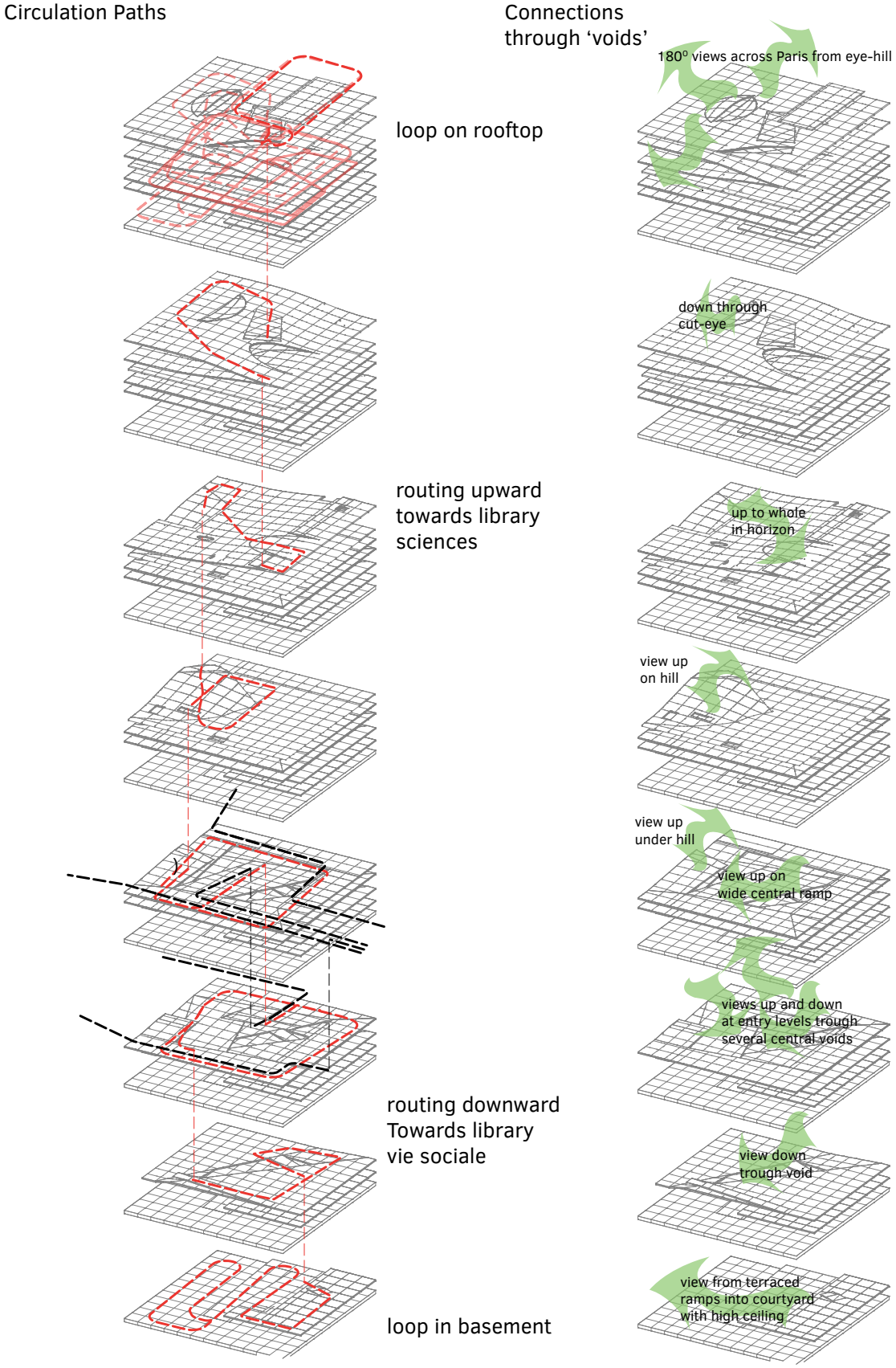
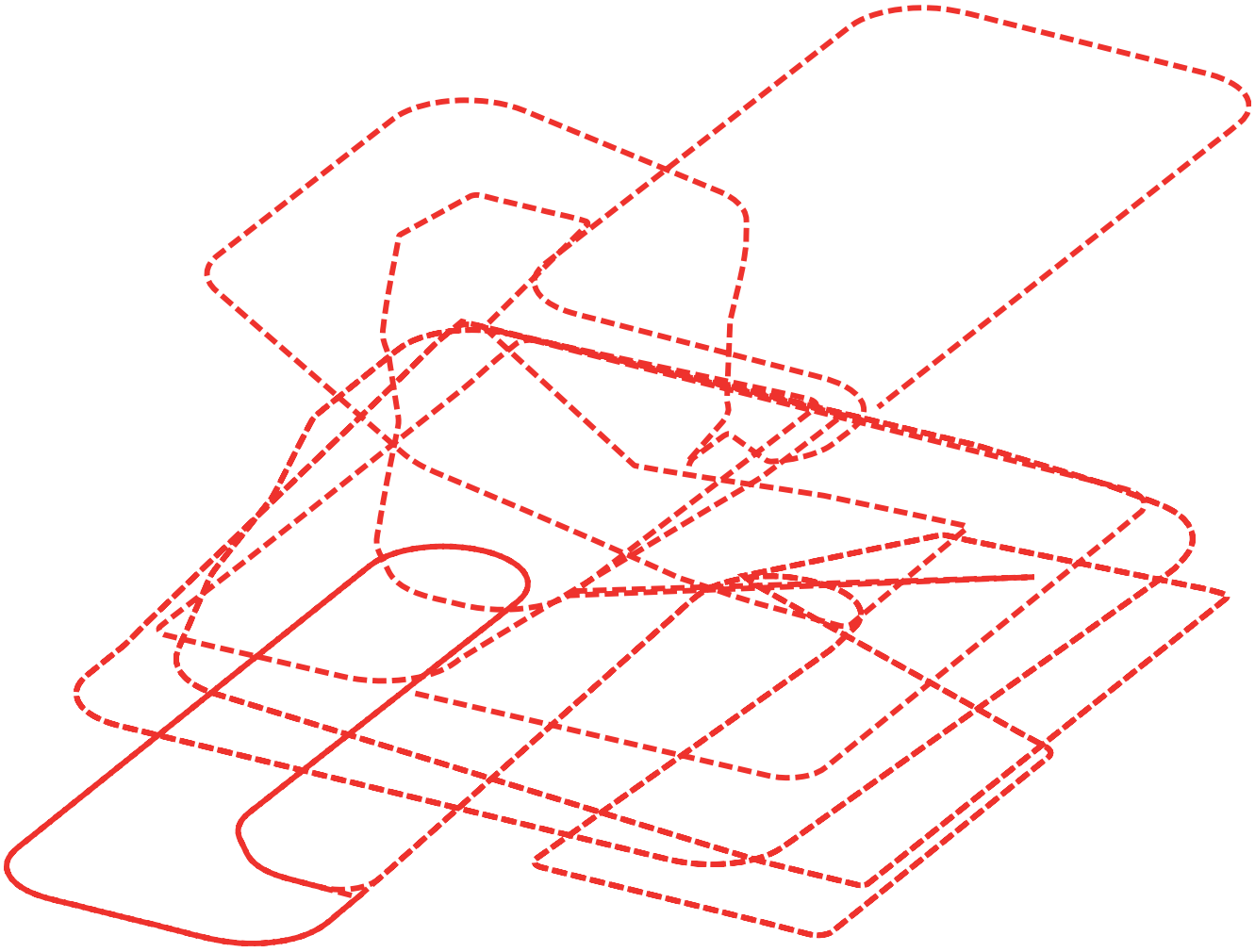


FIG. 4.5.2.3. Analysis of the Spatial Form (Drawing: author)

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Route



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that zig-zag down into an overly high hall on the lowest level. That hall opens with a two-storey high giant window onto an exterior courtyard that was imagined (but never designed) as a giardino secreto or hidden garden. The layout of the furnishings in this area would suggest that the route ends in a loop here. The space under the ramps is filled with book depots.

The upward route starts clockwise, and leads after one loop that can be taken narrow or wide onto a free formed slab nicknamed 'the mountain' (Pos. 5 in fig. 4.5.1.15 left). On top of the mountain, where the floor is lifted upward, the ceiling is pulled downward (Pos. 6 in fig. 4.5.1.15 left) and generates a tromp l'oeil effect of depth. A similar spatial effect was used for the foyer of the Nederlands Dans Theater in The Hague, one of the first public-buildings realised by OMA 1983-1987, demolished 2016 (OMA 1995 p. 322-323). In Paris the seemingly endless horizon has an opening formed by the 'horseshoe' shaped void (Pos. 5 in fig. 4.5.1.15 right). This passage though a space that is a hole in the sky and tunnel at once must be exited left or right on top. Continuing right, after another clockwise circle, the visitor reaches a ramp about half way on the upper sloping slab or 'on-top of the sky'. Still moving clockwise around the 'eye'-void, the inner route ends on top with a wide converging stair that leads to the roof. Until 'on-top of the sky' the visual connections more or less follow the route (fig. 4.5.2.3 left). The 'eye'-void actually provides a more surprising view though the cut and a panoramic gaze on the city-landmarks of Paris. One view goes across the beginning of boulevard St. Germain and the Seine to Nôtre Dame de Paris on Île St. Denis. Another view goes across the tip of Jardin des Plantes and the Seine towards the Bastille. Up here the route is anchored in the surrounding city.

In the initial design this route would reach its summit with the panoramic roof terrace, that would have provided views up to all important landmarks of Paris. The effect is similar to the top floors of Centre Pompidou when diving out of the roofs of the dense Marais and Beaubourg districts. The Jussieu libraries should have stuck out of the campus. However, according to Christophe Cornubert (Interview Annex A.1.1.2), the competition design was too high for the building regulations and had to be lowered. Later, two smaller hills appeared on the roof to provide for panoramic views. The roof was proposed as a garden, although no specific design proposal was worked out and only some sketches remain.

In terms of routing, the roof space is again a short loop. One can walk through the libraries in an endless loop of 1.5 km in total up and down. There would have been three alternative loops across main floors of both libraries to get around the building, just as in a city there are different routes and shortcuts. Koolhaas himself compared the design to a film-script but pointed out that it is not following a linear story line. Rather it is more layered and available for many different interpretations[107].

Similarly I could not identify a strict logic to the axial views inside or outside the building but rather see them as a sequence of surprising cuts or twists in a storyline. Two spaces ('eye' and roof) are designed for panoramic views sketched by the designers (Fig. 4.5.2.6.) naming 'Sorbonne', the 'Tour' (today called Zamynski), the 'TGB' (Très Grande Bibliothèque today B. Mitterand), 'N. (Dame) de Paris' and 'Bastille'. This sketch shows the site of the competition empty, which suggests that this (undated) sketch is part of the early site analysis design phase: That views onto Paris have been important throughout the whole design is even more peculiar for a building in an inner courtyard formed by modern buildings that completely negated the old city.

107 "Bij de Bibliotheeken ben Jussieu tracht ik daarnaa de linëaire structuur van een verhaal te ontkomen, het ontwerp is niet zo linëair, het is gelaagder en voor velerlei interpretative vatbaar." (Koolhaas 1993 in interview with Kuhnert, Oswalt, Zaera-Polo e.a. In de Architect 1994-1 p. 18 german in ARCH+ 117 Juni 1993 p.24 re-transl. by the author).

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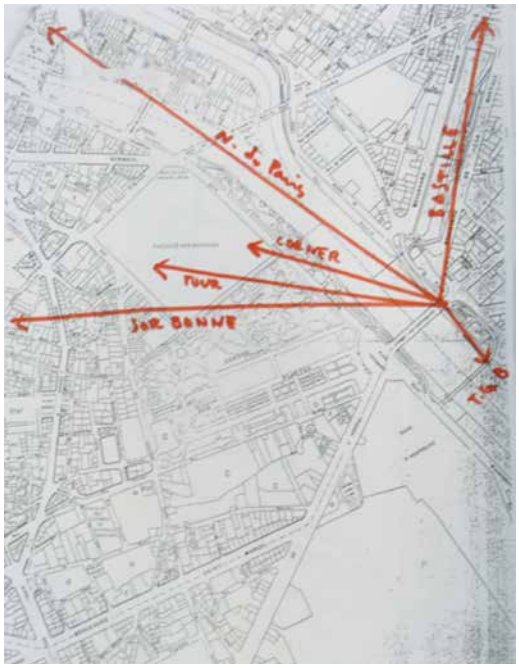


FIG. 4.5.2.4 Design sketch of views (OMAR 2914)

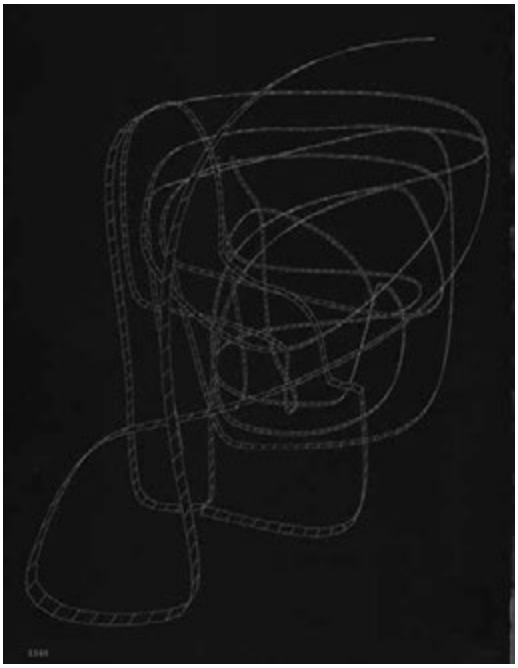


FIG. 4.5.2.5 Route from a CAD model (OMA 1995 p.1344)

Hausmannian boulevards are a composition of directed views and long axes (I.e. Louvre and Champs Elysées, Boulevard de l' Opera or nearby the Place de la Bastille). But the inner landscape space of Jussieu is not composed in axial relations. Still the typology of the Paris boulevard as an urban space is a major source of inspiration for a building that was imagined like a long varied boulevard to stroll along. The Boulevard St. Germain for example, that starts just outside, gently bends through the Quartier Latin like a third arm of the river Seine. It is the central public street-space of the Rive Gauche, and was literally the main conflict area in the '68 student revolt. At Jussieu the inner boulevard is surprising urban space, that allows shortcuts and distractions and that connects to all sorts of aspects of life and science in the many books. The many relations to outer views lead to a transparency to outside except for some interior mirrored glass (4.3.). OMA tried to 'render' animated sequences of the inner space (Fig. 4.5.2.8). But in the early 1990s computing of CGI in movie quality was financially unavailable for architects. Even if not made visible as architects would nowadays, I believe the inner Boulevard is the core spatial concept. Wandering though such a large surface public building is a landscape experience in architecture. This spatial concept is not rigid but versatile. The open spatial system opposes the enclosed 'Grille Albert'. It does not impose a hierarchy of views. Although routes are supported by slopes, cuts and 'voids' this boulevard-building would be experienced in different individual ways. As one Paris boulevard triggers a number of stories in poems, novels and movie scripts. Jussieu space is about openness and not enclosure - essentially this is the landscape effect or 'expanded field' reached with this design. The design of the two Libraries at Jussieu solves the paradox that space is cut off form the urban landscapes with it's spatial form; it captures on an extremely limited site its widest possible openness to urban space. Such an urban public space has seldom been realised inside a building.

4.5.3 Image or Metaphorical Form

The use of metaphors or image allusion is very different in each of the three cases' specific approach. This also counts for landscape metaphors in architecture. To describe the form of the Jussieu libraries, OMA used the word 'landscape' (OMA 1995 p. 1316) as the overall metaphor for the whole design. However, that landscape is not designed for the pleasure of strolling though it - it is to be 'urbanised' (OMA idem.) with the program of the library, the 'City of Books'.

We divide the landscape metaphors in the Jussieu project into two groups: the first related natural landscape elements that are translated into an architectonic expression of the building; and the second group, the several forms of urbanisation of that landscape. In an interview while working on Jussieu, Rem Koolhaas said he had a "very cannibalistic attitude towards metaphors," (Arch+ 117 June 1993 p.23)[108] alluding to the fact that the natural sciences have become hard to understand for anyone. This helps understand the haphazard use of landscape metaphors at Jussieu. They do not seem cherished as individual story elements but are devoured quickly to fulfil the general plot. The support and development of the fascinating argument for a novel type of building leaves no time to develop the individual aesthetic experience of a particular novel form.

Design metaphors are here also in an embryonic development phase. Concepts of how to materialise each aspect of the landscape were not all fully developed when the project halted. Other metaphors had to be abandoned in the process, like the sports park; or were heavily questioned, like the sloping storage floors for books. This is an important aspect of designing landscapes: To develop a design further while key ideas are sacrificed to the general cause. Metaphors are not left dead but absorbed in the whole. This is what could be interpreted as design cannibalism. Its combination with the previously described collage technique leads to a thrilling speed of ideas in one design in only few months.

Some metaphors have been named by the designers in texts or archived sketches, those we put in between 'quotes' as opposed to the metaphors I gave names myself from the formal analysis. In the analysis of the ground form - integrating also the larger site design - I showed how the two crossing strips of a sports-park and a conference centre turned into the continuous folded landscape. The continuous 'fold' is a real discovery - ironically OMA proposed a fictive patent (Number 8,728,220) together with the 'interior boulevard' as 'inside-out city' (Fig. 4.5.3.2) (OMA 2004). This folding up of the ground plane is a much copied principle in a number of projects by other architects. With the cutting off in a cube the landscape becomes visible outside as a layering of geological sections, varying in height and in material. Everything was undertaken to expose the slabs in favour of a covering skin. The metaphor is expressed with a folded sheet of paper (Fig. 4.5.1.9-14) from the 'parvis' ground plane (as discussed in ground form 4.5.1).

The continuous fold takes a series of different formations that are landscape forms. As all of them are listed already (Ground Form fig. 4.5.15) we concentrate here on the most metaphorical ones relating (first) to natural landscapes and later to urban ones.

108 «Ich selber habe eine sehr kannibalistische Einstellung gegenüber Metaphern» (Kohlhaas in Arch+ 117 June 1993 p.23, transl. by the author)

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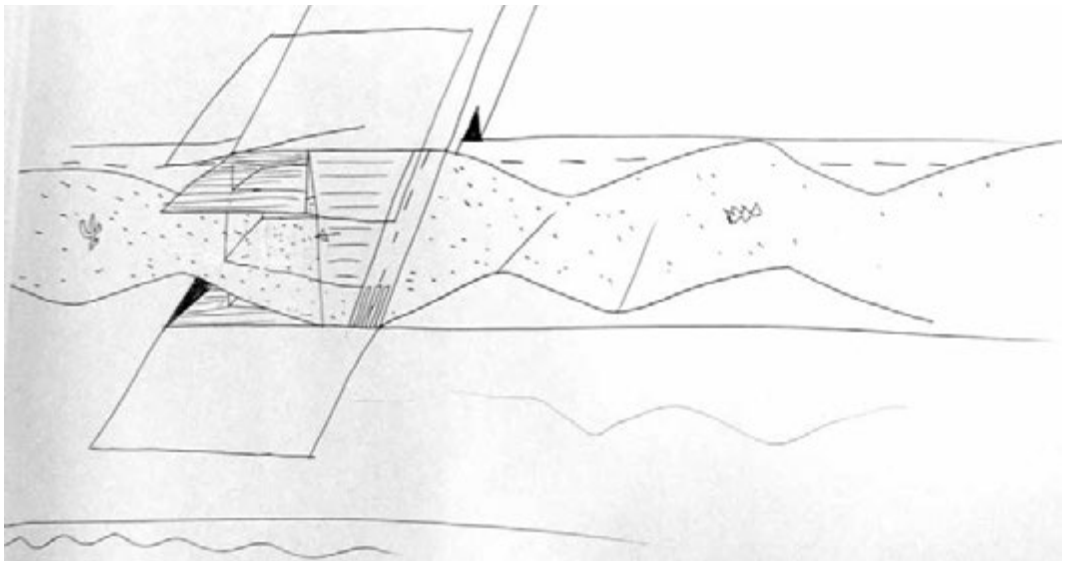


FIG. 4.5.3.1 Landscape Sketch (OMAR)

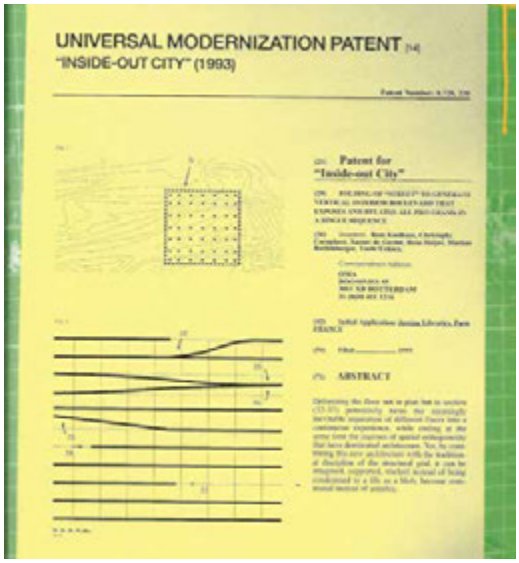


FIG. 4.5.3.2 Patent for "Inside-out City"for Jussieu

(OMA 2004 p.79 and Collection Centre Pompidou AM 1991-48)



FIG. 4.5.3.3 Conical Intersect Paris Gordon Mata Clark 1975

Surprisingly for a landscape, there are relatively few elevations in the folded plane that appear like natural hills. One is represented by the free-formed elevation that is part of the spatial continuum of the connecting route upward to the science library (Pos. 4 in fig. 4.5.1.15). Two other hills are loosely introduced on the roof (probably in order to compensate for missing height of the viewpoint). The upper 'eye'-lid could also be considered a hill looking into Paris.

Besides the slopes, the spatial impression of landscapes is also triggered by the cuts and 'voids', especially in the entry area the connection to the lower floors is kept wide open into the deepest floor of the lower level humanities library. Three 'voids' and several cuts form a series of breaks that tear into a complex ravine landscape. The main purpose of these openings is to bring light into the library floors that have only one facade lit. With my pro-construction - replacing retrospect of re-construction by prognosis. (section 4.6.) I show that these cuts with sloping planes form a complex interplay in all direction across five floors. It would be a spectacular space that would make some visitors shudder as if in a sublime landscape.

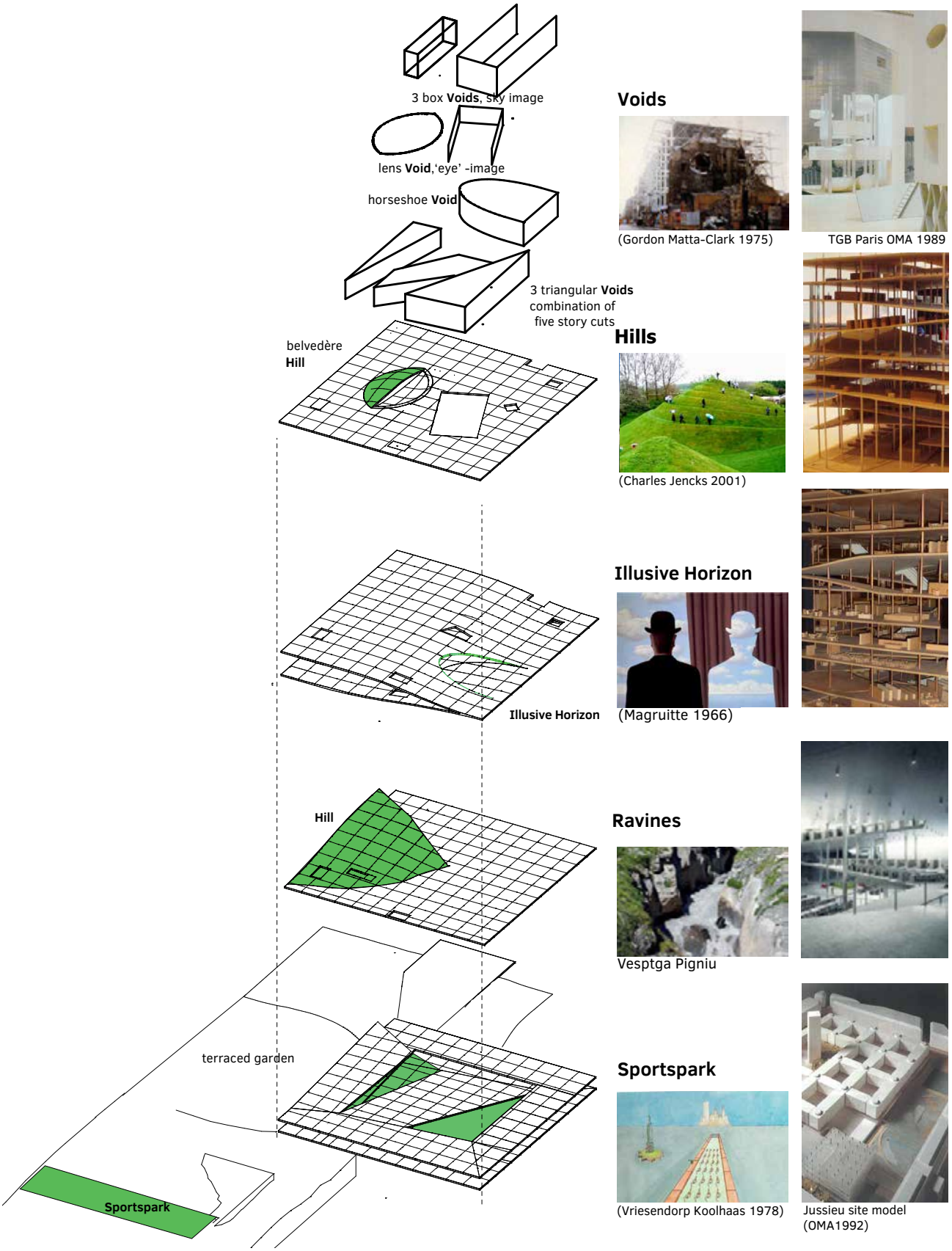
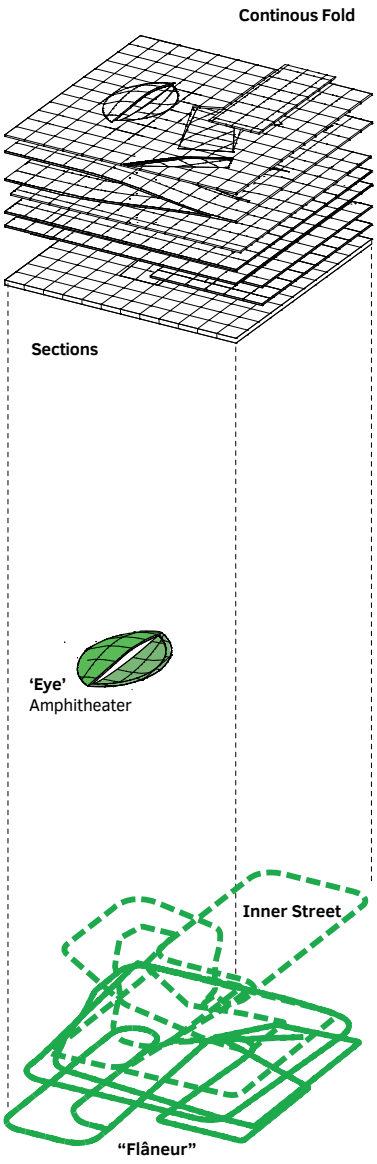
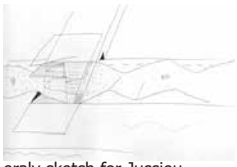


FIG. 4.5.3.4 Jussieu Libraries in Paris Image or Metaphorical Form (Drawing: author)

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Contious Fold

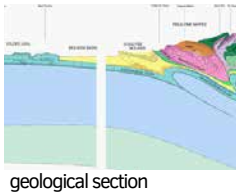


eraly sketch for Jussieu
(OMAR unnumered)

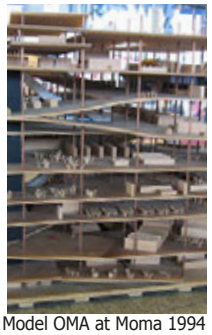


Diagram (OMA 1993)

Sections



geological section



Model OMA at Moma 1994

'Eye' Amphitheater



chien andalou (Buñuel 1929)



(AMO 2011)

Inner Street



(OMA 1995 p.1306)



"Flâneur"



(Burckhardt in Weisshaar 2013 p.95)



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The extremes evoked in the OMA collage of landscape scenes is reminiscent of the taste for surrealism very present ever since Rem Koolhaas's first projects in the 1970s - the paintings of Zoe Zenghelis and Madelon Vriesendorp in the book Delirious New York are evidence of this (Koolhaas 1978). It comes as no surprise that the metaphors used are also applied in a surrealist technique: OMA is shifting motives out of context like dream sequences with open or disguised associations to remnants and suppressed ideas in the unconscious. The allusions to political motives are strategically camouflaged but well placed in the context of French intellectual politics, alluding subliminally to May '68. These metaphors have an explosive potential but are discussed as bricolage. A second reading leaves no doubt that this is a 'left-wing' design important in the political climate of French architecture. This also explains why Jussieu would be abandoned quickly after the political left lost power.

The whole 'strategy of the void' (OMA 1995 p. 603) was transferred from the lost competition project for TGB in 1989. There already were comparisons made to the Centre Pompidou in Paris. The strategy of cutting holes into a building was actually developed as an art installation by Gordon Matta-Clark (1943-1978) during construction of that same Centre Pompidou. The artist cut and chiselled holes into a building that was designated to be demolished. Matta-Clarks voids were seen by some critics as a critique of the destructive operation of erasing whole neighbourhoods of low income homes with large projects (in this case of the conservative politician Georges Pompidou (1911-1974). OMA uses this idea and cuts and casts models like the positive and negative of sculptures (see ground form fig.4.5.1.17) several of these voids have a connotation that openly alludes to landscape.

One of the voids in horse shoe shape (catalog room at TGB, OMA 1995 p. 647) is cutting into the spatial formation of two converging planes that would form an illusive horizon and thus appear infinitely long - another landscape architectural design strategy derived actually from the scenographic painting tradition. The combination of the horse shoe void and the artificial horizon becomes a surreal perforated horizon.

Another void with complex surreal connotations is the 'eye' - also used at TGB, but there in the same horseshoe shape that appears like an eye on the facade. This eye is also a cut - a cut eye like in the famous scene of Buñuel and Dali's surrealist scandal film "un chien andalou" (1929). The eye in the city moves inside the building - as if to underline that the landscaped building is also a city turned inside out. The installation of an amphitheatre alludes to the half dome and theatre at the nearby Beaux-Arts amphitheatre by architect Félix Duban (1798-1870), where OMA exhibited the Jussieu project in 2011. This reference to an academic core space, with the metaphor of the eye looking at the city outward and inward is a key metaphor to understand the project: The 'eye' concentrates the allusions to urbanity, the density of ideas, people, and books in the architectural landscape.

Today, to design an urban landscape is commonplace. The expression of 'landscape urbanism' is used in an inflationary manner, as previously discussed (1.4.2.). But in 1992 none of this existed. Urban landscape is a metaphor as if invented by this project (Cornubert A1.1.1). The motor for this invention was the idea of an inner street or boulevard across the building. The idea to turn the street into a battlefield and a landscape derives from the May '68 revolt. The Jussieu design was "a fertile May '68 programming" according to Koolhaas (1993 Arch+ 117 p.22). Famous graffiti of that time (on another faculty building) reminds of this surreal idea that the revolt could transform the paved streets into a beach, as students were throwing paving stones onto police in street-fights and only sand was left, before the government ordered to glue in all the pavers under asphalt, and Paris Boulevards changed surface.

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So not only the flaneur would occupy the inner boulevard and peacefully browse through books. Koolhaas developed the democratisation and opening of the University as a political program metaphorically translated as a landscape into architecture. The practical program of the city of books with its inner boulevard was installing books on floors and making them accessible to the public and faculty members. But that metaphor was merely a vehicle for a social and political program, as I will explain in the next section.

4.5.4 Form of the Program

The term 'program' is used most ambiguously in the Jussieu design, compared to the other case studies analysed. For architects, program means the use of a building or garden. For our purposes, 'program' is translated similar to Paul Frankl's 1914 use of the rare and beautiful German word 'Zweckgesinnung'. 'Gesinnung' involves moral values or political convictions of a person and goes far beyond the merely technical definition of a functioning program used by modernist architects. Koolhaas said during the project that it was a

"terrible 'May-68-programming', to do ... (Jussieu), In this sense it is a very political project. Also because the existing Campus was an important centre of the Paris May. The project is in a certain sense a dialogue with the thinking of that era" (Kohlhaas in Arch+ 117 June 1993 p.22)[109]

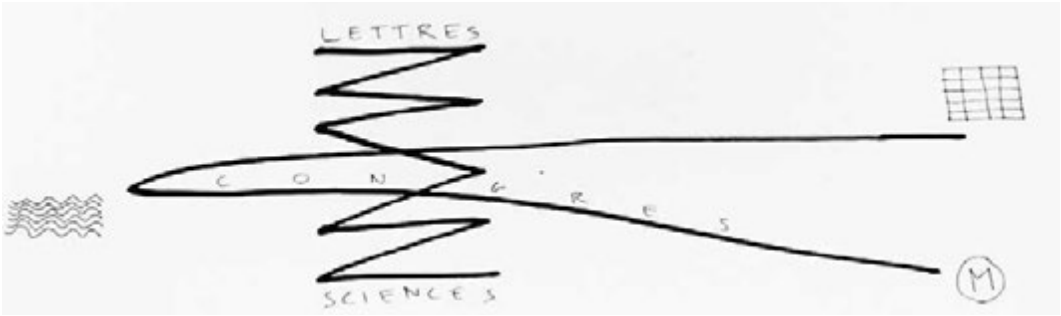


FIG. 4.5.4.1 Programming and conections to Seine (left) and Jussieu Metro station and existing Campus (right) (OMAR 2862)

The basic idea of programming Jussieu is to occupy the folded boulevard or continuous landscape inside the building with a program that would be distributed with great flexibility across the whole surface of the libraries. Some central services are placed in the two entry floors and the two libraries develop from there along the continuous path - Sciences downward and Humanities upward. Those areas which require the least light (the archives) are in the lowest part and those which require the most silence (individual workspaces) in the top part.

109 «... ich glaube, es ist einfach eine furchtbare ‹Mai-68-Programmierung›, so etwas zu tun. In diesem Sinne ist es ein sehr politisches Projekt. Nicht zuletzt auch deswegen, weil der bestehende Campus eines der wichtigsten Zentren des Pariser Mai gewesen ist. Das Projekt ist in gewisser Weise ein Dialog mit dem damaligen Denken» (Kohlhaas in Arch+ 117 June 1993 p.22, transl. by teh author)

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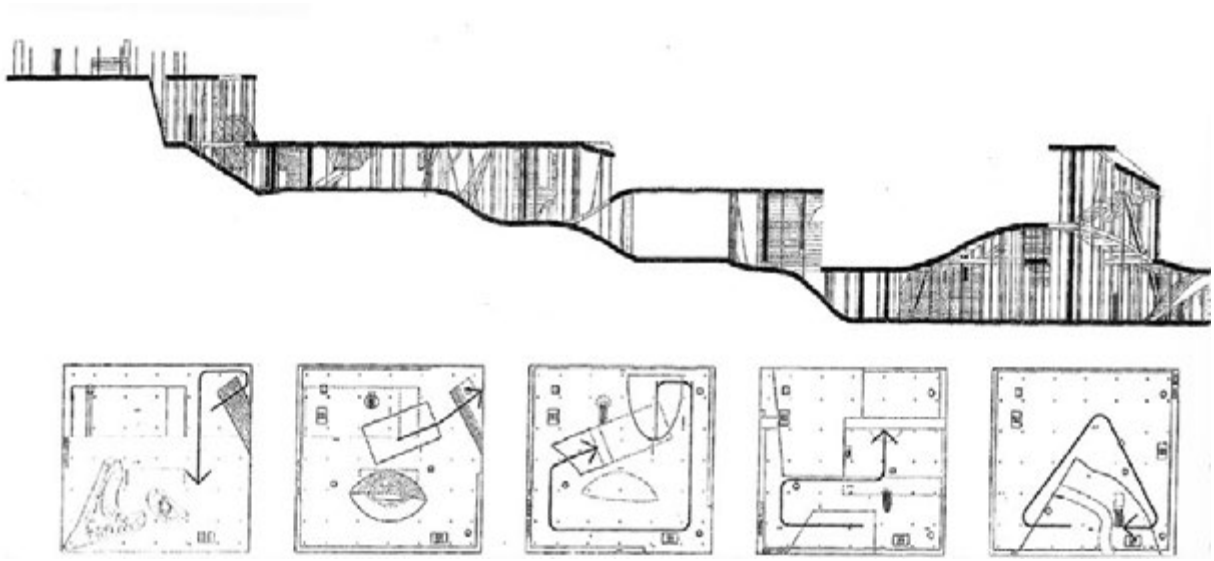


FIG. 4.5.4.2 Jussieu Libraries Devekpement of the Section upper levels heights exagerated (Drawing OMA 1992-93, AMO OMA 2011 p.286)

Again the design strategy chosen in the competition project to distribute the program across the surface is a collage technique: working tables and bookshelves are photocopied on 'sticky foil' and then glued onto the plans. Other photocopied patterns are also introduced for certain programs and then stuck onto the plans. A playful set of endless variation and rearrangements could be found in the Archives. Including photographs of mass protest, texts on Situationism, aerial photographs of a city, microscopic cell images and fragments of Giambattista Piranesi's (1720-78) Map of Rome (that would also play a role in the design of Peter Eisenman, ch. 6 and Interview A1.3.1.). Not only do the plans change throughout the process, but also the system is used to demonstrate flexibility of the idea of 'programming the surface'. It is almost impossible to display all the possibilities that where imagined by the architects for programming and reprogramming of the surfaces.

The University gaining the street is also a symbolic gesture and a programmatic political claim. In 1968 Rem Koolhaas was a reporter during the May student revolt in Paris for the 'Haagse Post' and in his own retrospect had "an ambivalent, at times critical position" towards the events (Koolhaas in Kuhnert e.a. 1994 p.16)[110]. 1968 was also about claiming the streets of Paris for revolution, that would spread with surprising activism from the university as an avant-garde throughout the society and the city, claiming urbanity for the public. Both aspects of surprise and urbanity have been incorporated in the situationist movement, to which Koolhaas was acquainted though his contacts in the Dutch Fluxus art movement (Kuhnert e.a. 1994 p.16). A typical Paris 1968 slogan embraces the whole amplitude of that important shift in the notion of public space. The transformation of streets into landscapes is the programmatic side of the slogan "sous les pavées la plage"[111].

110 "van '68 had ik een ambivalente, soms kritische houding" (Koolhaas in Kuhnert e.a. 1994 p.16, transl. by the author)

111 translates "Underneath the street is the beach." by project architect Christophe Cornubert (Interview A.1.1.) or more literally "under the streetstones lies the beach" by author

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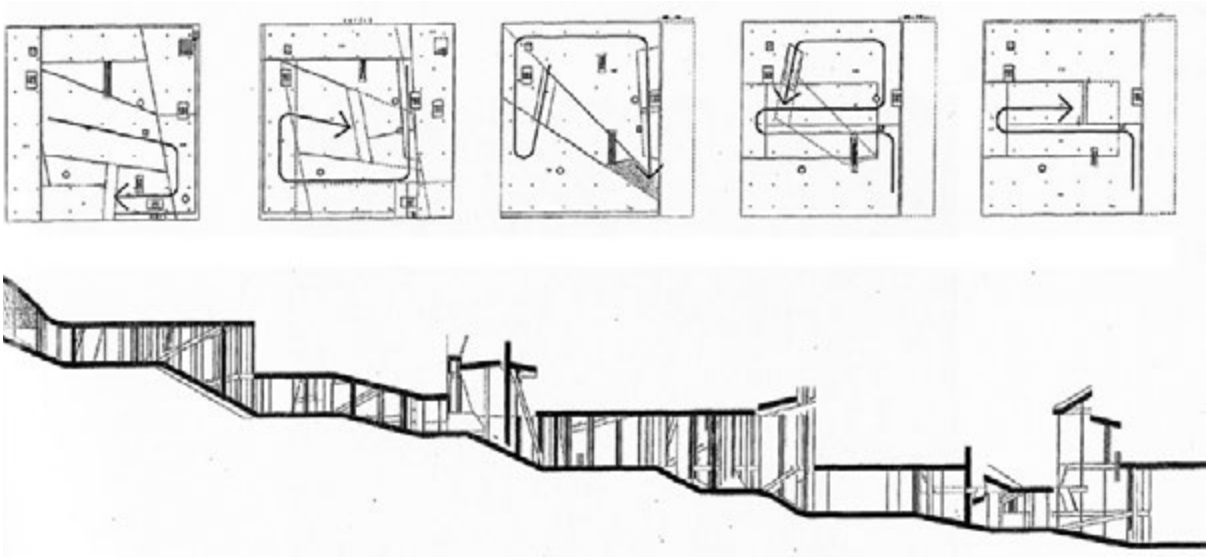


FIG. 4.5.4.3 Jussieu Libraries Devekpement of the Section lower levels heights exagerated (Drawing OMA 1992-93, AMO OMA 2011 p.287)

While this may seem a harmless slogan in retrospect it is much more charged if we relate it to the discussion of Le Corbusier's Plan Voisin for Paris (ch. 3.1.9.). With the Jussieu libraries, Koolhaas takes a very different position towards creating public space. Koolhaas said on his radically opposite proposal that OMA sees their "buildings as public buildings against the general trend of disappearance of public space" (in Kuhnert e.a. 1994 p.18)[112]. The reclaiming of the landscape that underlies the city planning is just a dramatisation of the same act of public movement. The Jussieu project opens a variety of uses without imposing a right way through its architecture. He compares usage of this architecture to the vegetation of a landscape.

"At the Jussieu library the most important thing was the differentiation between architecture and usage. We differentiate the space with the most simple means - with cutting and folding of ground floor levels while guaranteeing with a undefined floor plan and more than seven meter high spaces a completely free usage. The usage is like a second layer, that never dominates the spatial working, but it is rather comparable with the vegetation of a landscape. ..." (in Kuhnert e.a. 1994 p. 21)[113]

The actual form of the program of Jussieu almost disappears in these endless variations. This seems to me intended by the almost anarchistic freedom of usage provided in this design.

112 «Wij vatten onze projected op als openbare gebouwen, tegen de allgemene tendens van de verdwijnende openbare ruimte.» (Koolhaas in Kuhnert e.a. 1994 p.18, , transl. by the author)

113 «Bij de bibliotheken van Jussieu was het belangrijkste idee de scheiding tussen architectuur en gebruik. We differentiëren de ruimte met de meest simpele middelen -door het doorsnijden en dubbelklappen van de begane grond verdiepingen- waarbij de onbepaaldheid van de plattegrond en de meer dan zeven meter hoge ruimtes een volkomen vrij gebruik garanderen. Het gebruik is als een tweede laag, die de ruimtelijke werking nooit domineert, maar te vergelijken is met de vegetatie in een landschap. ...» (Koolhaas in Kuhnert e.a. 1994 p. 21, transl. by the author)



FIG. 4.5.4.4 "Under the pavement, the beach" annonymous slogan, Paris 1968



FIG. 4.5.4.5 Paris 1968 (OMA 1995 p.1306)

A major issue and discussion around this flexible programming is the practical usability of slopes. For book transportation, hand carts, electrically powered carts, and cable car systems were discussed. A photograph (Fig. 4.5.4.1) shows a demonstration of each option by Rem Koolhaas himself to librarians in the (also sloping) Rotterdam Kunsthal. Several options were discussed for reading areas and bookshelf deployment on the slopes as well. Additionally, the amount of sloping areas was reduced as the design developed in order to address some of these concerns.

The question of programming the oblique surfaces may have been the most difficult field of discussion between the librarians and architects - in the end it remained unsolved. The rather vague accusations are a symptom of a missing political will to install this library with such a revolutionary approach to programming. The inventive way of programming the building that was once the strongest point of this project (to win a socialist governed university) had turned into weakest (to lose a conservative governed bureaucracy). The project was too symbolic to survive the massive savings in education after the downturn of Mitterand ended Jack Lang's tenure. In that sense programming politically was the highest risk taken by the design - at once the highest gain and loss.

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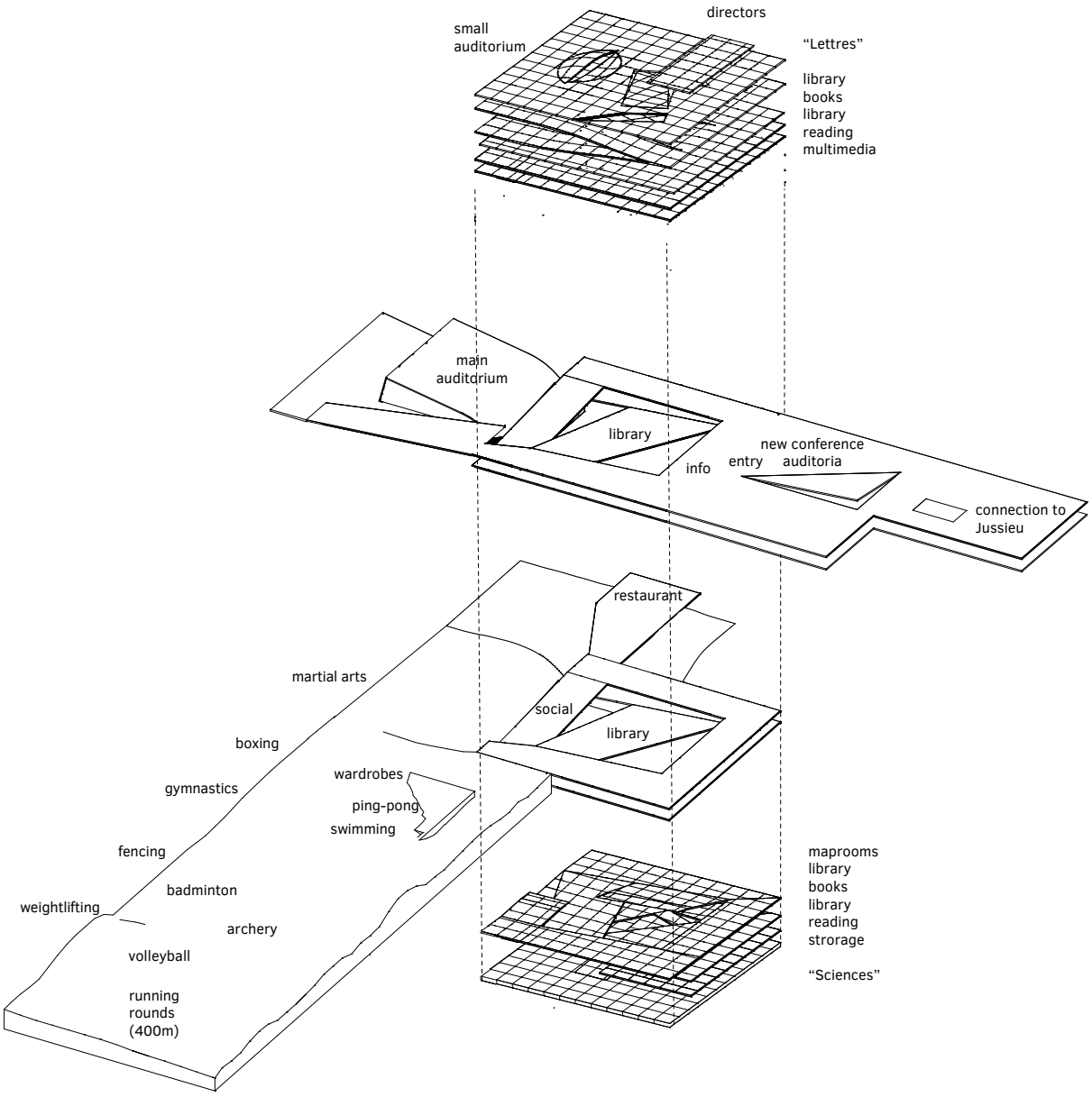


FIG. 4.5.4.6 Jussieu Programmatic Form (Drawing: author)

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4.5.5 The Composition

In a synoptic overview of the composition (Fig.4.5.5.) I can show how the integration of the various layers leads to an interplay of ground, space, metaphor and program. There is no preconceived order between these layers; their interaction is a guiding force.

The routing is dominant, such that movement up and down informs the landscape transformation of the stacked planes. As movement dominates in routing, everything is subordinate to the constant flow. Organisation of user circulation across the campus and through the libraries as well as the 'hard' program of the libraries itself is kept in a state of flux.

This flow is enhanced by a the versatility of the chosen systems. Surfaces and furnishings, but also facades and glazings are used as adaptive strategies - changed towards any situation in many different permutations of few basic principles. The returning composition principle of the Jussieu libraries is that of the collage - the sticking together of seemingly different things to make a whole out of discrete elements. The collage principle goes across all layers - a collage of ground forms, of spatial relations, of metaphors and of programs - each overlay the others and generate a density of elements and compositions.

The density is what creates an idea of urbanisation of the landscape - the counter proposal to the empty parvis is the overly loaded and concentrated continuous floor of the two libraries.

After having studied this composition in numerous drawings and other documents from the designers, and a series of my own hand, and after visiting other OMA buildings that were built before or after Jussieu, I have come to the conclusion that this project is a unique one - would it have been built it might have many imitators. But its composition is not easy to understand from outside - and can still not be explored from inside.

The VPRO building in Hilversum (MVRDV 1993-1997) might be one of its closest imitations, but it has so many differences and shortcomings, and such a different context that it is incomparable as a composition.

The difference that the project for Jussieu made to architecture as a discipline integrating landscape had to remain a virtual one. I hope that this study will contribute to building up the composition of Jussieu in the minds of researchers, critics, and students of architecture and landscape architecture - to make this virtual difference influence the reality of our living environment.

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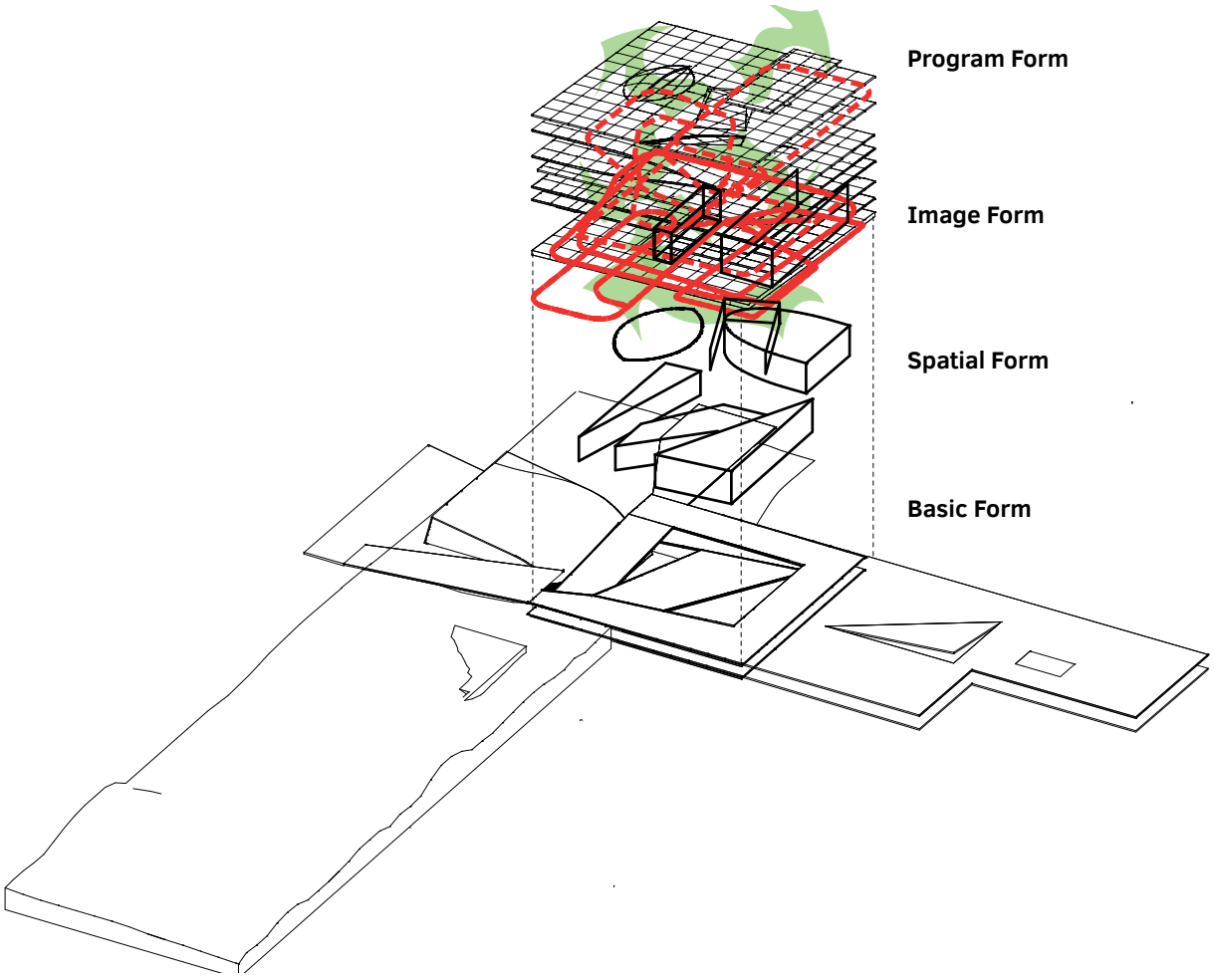


FIG. 4.5.5. Jussieu Composition of 4 Layers (Drawing: author)

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4.6 Specific Methods of Design Analysis for Jussieu

The specific methods for my analysis of the Jussieu project anticipates its possible appearance as a building. The two libraries at Jussieu were never built. I used contemporary computer imaging media, which are today much more common than in 1992, in order to demonstrate how a design might look as a building.

To simulate visual experience, I relied on computer generated imagery CGI. This process of GCI is best described as pro-construction[114]. Retrospective reconstruction can be used in reconstruction of past states of transforming landscape designs (i.e. Stourhead in Nijhuis 2011) or in simulation of archaeological findings without excavation (i.e. Virtual Archaeology at Stonehenge 2011).

CGI's photorealism introduces a novelty in regard to the Jussieu project for this thesis, as before the critical reception of the Jussieu project has been based mostly on the materials published between 1993 and 1995.

For the design of Jussieu, CGI was used at OMA for design and control of the form but not yet so widespread and available for representation or simulation of photography as we know it today. Around 1992 architects were only slowly discovering the tools of digital representation. Also in the interview, Christophe Cornubert recalls the excitement and disappointments about these first experiments. Probably the first use of CGI at OMA occurred in the competition phase on Jussieu around 1992. Drawings of the competition are based on orthogonal projections and perspectives of a computer model in so called wire frame (all lines remain visible as if the masses where transparent) or hidden line (the lines of foreground masses hide background lines). Wireframe superimposed floor plans where even simulated by hand (Interview Cornubert A1.1.1). A series of nine renderings that are in OMA Archives at NAi where never published (OMAR 2930) and if ever used worked over to invisibility in black and white collages (OMA 1992 panel 6).

The process of architectural design of the Jussieu project was abruptly stopped in a phase of preliminary design (section 4.4.). Some essential parts of the design process like materialisation of the surfaces, facade detailing, and structural detailing had to be inferred from references to loose sketches or propositions with fragmentary sources. Most of these indications are found in undated boxes at NAi (OMAR). As a result, it is not easy to place them in context or verify a single direction .

The pro-construction process is the outcome of a fully documented experiment with one crucial peer. During the two-step process of pro-construction I had two interviews to check the preliminary and final results with the former OMA project leader Christophe Cornubert (A1.1.1. and A.1.1.2) for Jussieu Paris. In the first discussion of the pro-construction with Cornubert in 2012 (A1.1.1.) he used the expression of 'dressing somebody else's children'. Later he also compared the Jussieu project to the Knossos reconstruction in concrete on Crete (1905-1930) by self-taught British archaeologist Sir Arthur John Evans (1851–1941). This is a controversial case (see Gere 2009) but certainly helped popularise Minoan culture. My pro-construction attempt might be polarising like Evans' reconstruction.

114 pro-construction is a specific method developed here. the prefix "pro" stands for replacing retrospect of re-construction by prognosis. (as explained in section 4.5.3.)

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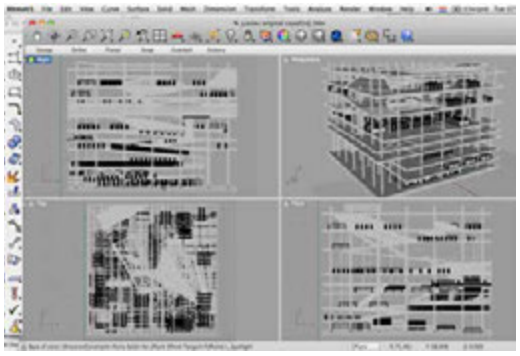


FIG. 4.6.1 Jussieu Rhino CAD Model (Screenshot: author)



FIG. 4.6.2 Jussieu Model 2012 (Photo: Paul Cournet AMO)

Another source for my pro-construction was the buildings that have been realised in the period just before or just after the Jussieu project by OMA. Visual references for our pro-construction come form Kunsthal Rotterdam 1988, Villa Dall'Ava near Paris 1991, Congrexpo Lille 1994, Educatorium Utrecht 1997, Dutch Embassy Berlin 1999 and Casa da Musica Porto 2005 and Seattle Central Library 2004. For several of the finishings and furniture choices of Seattle served as a reference, especially the furniture of Belgian designer Maarten van Severen (1956-2005) who worked closely with OMA on several other French projects.

The central part of this hypothetical look of the building was my reconstruction the facade that Jussieu would have. I pro-constructed the facade from the few available documents, but only a few indications are available. In S.M.L.XL. a double page photograph of a (formerly unknown) model shows a piece of facade (OMA 1995 p.1330 and Cornubert 1994 p.153) built by Christophe Cornubert (A1.1.2). This curtain and glass shingle motive does reappear in a sole sketch by Rem Koolhaas for schematic design in early 1993. Both that photograph and a sketch by Koolhaas show three layers in the facade. In the last of eight "steps" a three layered permeable facade is sketched of "non-reflective shingles (A). Against the sun: Chain-link mechanical curtains (B). Against glare: curtains of gauze/silk inside (C)" (Fig. 4.6.1.: Sketch Rem Koolhaas probably 1993, source: OMA AMO 2011 p.333). The sketch indicates that these elements would be assembled in a kind of ad hoc collage (where needed) and that the slabs remain dominant, as they where larger than the inner facade volume. The silk curtain is known form Villa Dall'Ava (OMA 1995 p.158) The chain link was used at Groningen Video Bus Stop (OMA 1995 p.196) but might have to be executed much stronger (at that time chain link conveyor belts where for example used at the TGB in Paris by architect Dominique Perrault - maybe not to OMA's knowledge). A similar facade was later developed by Cornubert for OMA's Educatorium Utrecht.

OMA's approach to detailing also includes incompleteness and a programmatic openness. Consequently the facade should look like an open window (Cornubert 1994). The architects proposed to use new low reflective and highly transparent shingle glass with less than 8% refraction. The result should not be a "ruinous glass-box or ... antiseptic ... French ... high tech facade" but have the "aura of the old-fashioned" (transl. from Cornubert 1994). This led to a kind of ad-hoc construction of sticking together shingles of glass. In the article and other descriptions OMA refers to "irregularly broken glass ... overlapping each other ... like in some sculptures of the artist Mario Merz" (Koolhaas in de Architect 1994-1 p.30). (Fig. 4.6.2. Mario Merz triple igloo, 1984 Musée d'Art Contemporain Montréal).

From the Interview I conclude that depending on each orientation and position a certain variation of glass would be used, each of which was carefully selected based on refraction, transparency and colour or in many cases a colourless appearance. Many new products where researched and probably the choice a combination of glass and its application would have been unique and not



FIG. 4.6.3 View A Jussieu Libraries. Pro-constructed view from sports garden and IMA (rendering author and WAX)

like anything seen before. In particular OMA intended to work with selectively reflective glass, depending on each view relation inward or outward, on the adjacent buildings and on the light situation. It is difficult to make a prognosis for each of the 'many-fold' decisions made with OMA's design approach that reacts differently to each situation. Certainly the Jussieu glass shell would have been unique.

In the competition design the Jussieu and IMA side facades would be in a special shingle type of construction while the facades towards the long bars on the Seine and Cuvier side would be a system of structural glazing - where bearing parts are also executed in glass in a frameless construction.

Another detail that would have been unique were the dark parts of the glass facade, represented as black surfaces on the isometric drawings. Cornubert (1994) describes them as "black coloured glass" that looks like "built-in shadows" from the outside and like mirrors that extend the space outward from the inside and would confront the visitor with his own double flying above the skyline of Paris. That particular dark glass would have the effect of removing boundaries and blurring the difference of outside and inside like in a dream. The black glass should express how the "confirmation and denial of materiality" is a "conscious contradiction" (Cornubert 1994).

My CGI-simulation of materials can not replace the long and certainly intense work that still would have been necessary to realise Jussieu technically. OMA projects of this phase where usually accompanied by a large investigation into available materials that oftentimes where very original and new in use for buildings. That design strategy of assemblage is very visible in projects like the Kunsthal or Educatorium. To my knowledge in 1997 material research at OMA was organised almost like an independent advisory department, then led by Gary Bates, who worked at OMA 1990 to 1998. But the Jussieu team had probably not reached that stage of materialisation in research. It is more probable (and implicit in my interview) that for Jussieu material research was done in the few months of design in Paris 1993, where Christophe Cornubert ended up as sole employee of OMA before he returned towards other challenges in the Rotterdam headquarters.

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FIG. 4.6.4 View C Jussieu Library Lettres Auditorium with View on Nôtre-Dame de Paris (rendering author and WAX)

The images shown in these pages are based on computer models reconstructed by OMA, by myself, Frank Schadewijk and Joost van Rossenberg in the 3d-CAD software packages Rhino, FormZ and Sketch-up. The CGI material and light simulations were rendered in Maya with V-Ray and enhanced with my own environment photographs collected on site in July 2012. Four Viewpoints have been chosen as they best illustrate the nature of the project and best accompany the descriptive walk though in the previous sections.

In 2014 I had a second interview was led with Christophe Cornubert with the raw renderings at hand via video conference (A.1.1.2.). In the second interview more details of the unfinished design could be revealed, but also it became clear that not all can be anticipated in the design.

In the following I will comment on the final versions of each rendering and a smaller preview of a preliminary version.

In View A (Fig. 4.6.3.) I simulate the urban setting and surrounding of the Jussieu building. An adaption of the façade colour of the dark glass was made in terms of reflection and tone. The whole of the exterior was rendered less glossy, ‘silver’ and ‘high-tech’ (Cornubert A.1.1.2) and we simulated ‘roughness’ (Cornubert A.1.1.2) especially in the finish of the concrete surfaces.

In View B (Fig. 4.6.5., next page) I show some of the relation to the outside especially with the view on the iconic cathedral Notre-Dame de Paris and other aspects of the inside-out relation. The part in the foreground where the ground plane dives down into the lower floors of the building was not rendered as Cornubert had imagined it. In the Interview he came up with a previously unpublished idea to make a stepped garden that would provide a view form the inside- to the outside-landscape. Cornubert mentioned that OMA had looked into the Winter Palace of Sanssouci in Potsdam as a green house or artificial landscape.

As suggested by Cornubert we used picture mapping technique (like in the mappings of View A) to reconstruct a garden like structure in this area, that would also become visible in View D.



FIG. 4.6.5 View B Jussieu Libraries with Views on Paris form roof of 7-9 Quai Saint-Bernard (rendering author and WAX)

In View C (Fig. 4.6.4., previous page) I had chosen a strange kind of 'mirror finish' (Cornubert) for the columns that did not appeal to the designer, and we needed to check on the scale of the model (or more probably the figures we placed next to it). The building's floor heights where unusually high, which might even trick a viewer when looking into the CAD models. Cornubert asked me to make it look 'almost as a ruin, something between a parking garage and a ruin' (Cornubert A.1.1.2) which might explain why the final renderings are less flattering than the preliminary ones.

Also it became clear that lighting and other detailing was not meant to be homogeneous, but rather was supposed to change throughout the building - leading us to propose more differences in the detailing of our interior views. We generally added less detail in the renderings, leaving more to the imagination of the viewer. Some details that where used in both interior views (C and D) seemed more plausible as a pro-construction in one than the other.

In View D (Fig. 4.6.6., next page) again this variation of surfaces by level was requested by the project architect to get a "stronger sense of layering" (Cornubert A.1.1.2) and even radically different lightning per floor. Also the interiors in terms of usage where imagined much more "urban" as a kind of public space, filled with crowds of students that would move in between lectures or even just protest in Paris "May '68" (Cornubert A.1.1.2) fashion.

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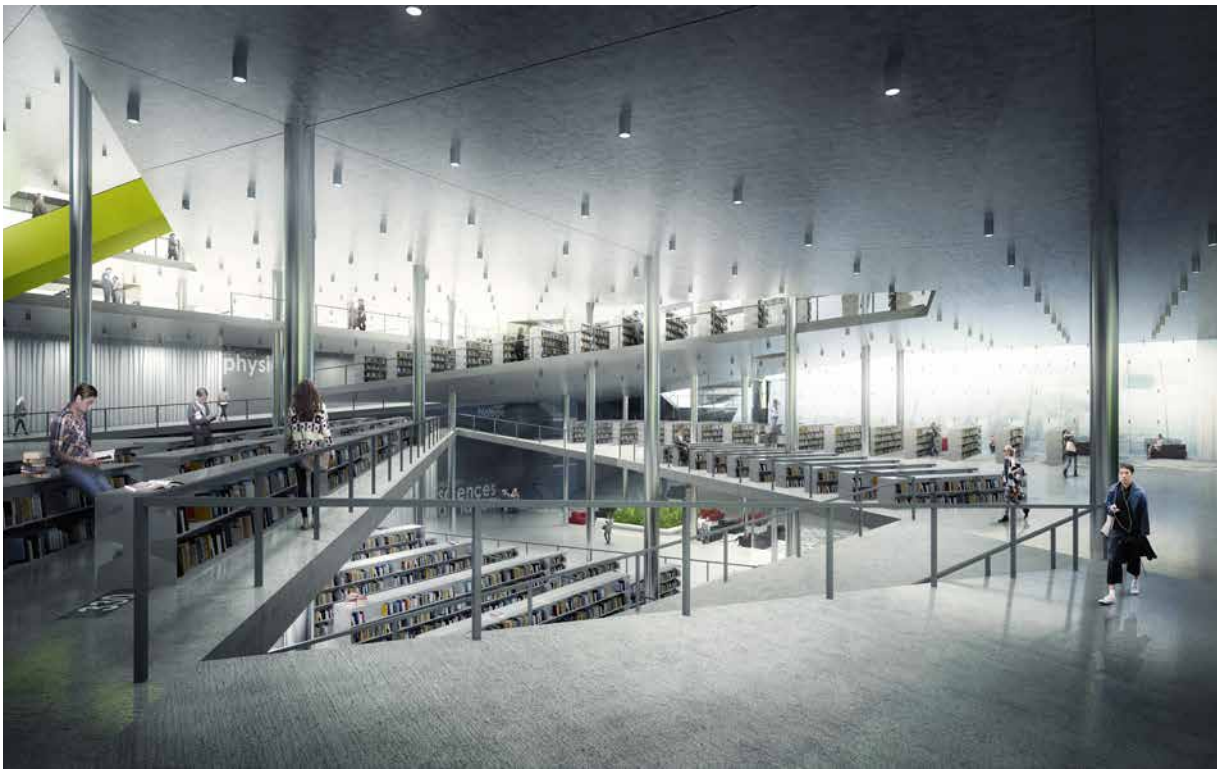


FIG. 4.6.6 View D Jussieu Library Sciences with view on site for terraced garden court (rendering author and WAX)

After this 2nd interview we revised our first 4 renderings to those that are placed in this chapter. As a conclusion to our experiment I can state that the pro-construction triggered an insightful discussion about the building and revealed some very specific thoughts and imaginations about its appearance that were not legible from the project materials nor imaginable from other projects of OMA. The particular Jussieu project can therefore rightfully claim to be for the first time presented in its most complete state since it was imagined and presented for a competition more than 25 years ago. The visual appearance could now lead me to more clearly understand how the building would have been understood as a landscape, had it been built - and thus how it might have changed the course of architectural history.



FIG. 4.6.7 View B Jussieu Libraries with Views on Paris form roof of 7–9 Quai Saint-Bernard (rendering author and WAX)

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4.7 Landscape Architectural Attitudes at Jussieu

How do the analytical methods' revelations of landscape design strategies in the two libraries at Jussieu relate to the attitudes in landscape architectural design as I developed them from Sebastien Marot's definitions in chapter 2.3?

Anamnesis influences the design almost in the medical sense of the word. This stems from a reaction, in relation to the Jussieu site, to the uprising and dismantling of the Paris universities in May 1968 and its long aftermath.

The Jussieu project by OMA is a spatial 'cure' to the spatial 'diseases' of the misled Albert project. The diagnosis of the diseases addresses different realities: a physical reality of a complex that is very hard to use; a political reality of a loss of the university as an urban public space; and a strategic reality of the loss of street space from anarchic students by the state order.

The anamnesis of landscape simulates a cure to the diagnosed disease. In this sense, OMA's 'paranoid critical method' (Koolhaas 1978) addresses these overlaid problems that are identified within the complexity of the Jussieu site with an intervention and collage (or rather de-collage): From anamnesis follows the dismantling of existing and adding of new layers of form to create a space of radical intervention into the context.

Process here is also spatially related to the plan of Albert. The separation of a huge, monumental public space from both the Paris streets and the university's own buildings establishes a spatial doctrine of three discrete layers: Paris (a dangerous and chaotic city), the parvis (a clean and empty public space), and the grille Albert (a dysfunctional teaching machine). The idea of a landscape arises as a strategy when the process of intermingling, interconnection and the densification of these discrete layers generates a complex landscape that re-unites all three: A continuous public space occupied by university programs introduces a missing Paris boulevard into the heart of the formerly separated campus.

The connection to history is a first step into a process of transformation that synthesises the past (that has become almost impossible to use) into a possible future. In architectural form these processes of transformation are simulated in the ground form of the building as in the insertion of voids. The landscape process is divided into a geological formation of the landscape (by the OMA project) and a urbanisation of that landscape (initially an OMA plan but meant as a flexible usage of the library as a city of books). At the time of the Jussieu project's conception as a new type of library, it was apparent that the digital revolution would fundamentally alter the way we deal with books. The French took a lead in digital online communication with "Minitel" (available throughout France in 1982) that was a predecessor of the WWW (the first Web browser was released outside CERN in 1991). Both would step by step change the availability of text in the most radical transformation since the invention of movable type book printing by Johannes Gutenberg (1400–68) (Vulgata Bible of 1455). Taking into account the enormous speed of development in computer technologies, the designers left open the possibilities for future processes to take place. In France 1989 the use of Minitel, at the time the most popular digital information system via phone lines, was widespread. In the same year 1989 in Geneva, Tim Berners-Lee, (*1955) proposed the World Wide Web and designed its first software at CERN (Berners-Lee 1999) which is today indispensable and has crucially changed all aspects of our life.

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TABLE 4.7 Resume Two Libraries at Jussieu Paris

Landscape Design Strategies in Jussieu Libraries Paris			
4-layer design analysis (Steenbergen & Reh 2003)			
Ground form	**Spatial form**	**Image form**	**Program form**
Connect artificial topography to parvis. Continuous plan folded and stacked. Additionally: Ravine inside, Terrace to lower floors	Routing spiraling up and down in montage. Incidental but conscious view relations to urban context. City as backdrop. At design stage still in development. Spatial system of cuts in spiraling space	Main landscape image of multiple folded slab, complex geological section. Landscape Imagery Elements: Amphitheater/Grotto, hill(s), slopes in various forms. Roofgarden and terrace cascade (not worked out), sports-park (removed form project). Key metaphor of an urban landscape collage	Programming like urbanising a landscape flexibly. Urban as the building as city, the inner street folded is connecting square and landscape in a interior dense city.
Landscape attitudes (Marot 1999)			
Anamnesis	**Process**	**Sequencing**	**Context**
Relation to exiting Jussieu Campus. A 'cure' to it's spatial 'diseases'.	Simulated geological formation of a landscape and it's urbanisation. Design process as transformation of the site. Libraries are not an object of design but a field of strategic action.	Routing is guide to form-finding instead of just consequence of design. Spatial sequence informs the building. Complex montage with cinema-like density.	Concentration of contextual interventions in one space. Connecting the campus back to the city via a building that is hidden in that campus: an 'urban landscape' projected into the building.

The Jussieu project proves exemplary in the way a design process of a building relates to the potential transformation process to its environment, even with its complex context and program. Like a landscape architect, the architects find themselves acting in the midst of the changing environment they helped create. In such a way the two libraries are no longer just an object of design but a field of strategic action.

The spatial sequencing obviously was used for the routing across and through the building and for arranging spatial features (views, voids, shifts of direction) and programs. The dominance of the routing gives it the role of a guide to the building design (a way towards the form) instead of just being the consequence of the design (a way through the form). In the way the spatial sequence informs the building it strongly implements a landscape design strategy. This development of a space out of the routing is similar to OMA's Kunsthal design, but more exhaustively used here. Both designs are a complex manipulative montage with cinema-like density.

How OMA deals with context is different from that of a mere reaction. The densification of spaces inside the Jussieu libraries, the compacting and overlaying of different structures turns the campus into a new structure, concentrating contextual interventions on one new place: the spot of the Jussieu Libraries. Especially in its initial design, the force of Jussieu would have been how this building, while actually hidden inside the vast campus, would have connected the whole site back to the city. The design plays with the whole of Paris as a context in a mostly hidden spot inside a (still today) fenced-off public building. This overruling of the separation from context comes from a strong dialectical opposition. The unique creative solution to this dilemma is a unique invention: an 'urban landscape' in a building. This dealing with context is the core achievement of the Jussieu design. It was an invention particular to this spot in the world - but also a crucial invention in architectural history.

4.8 Landscape Design Strategies at Jussieu

As an intermediate conclusion, I recapitulate our main research question in a general critique of this first case.

In what way do landscape design strategies (as the would have been applied in Jussieu) change how we understand and create architecture? (Q 1.1.1.)

Over the course of this section, I will go through four subsidiary questions.

How did the architects of Jussieu apply landscape strategies in architecture? What were their motives to do so and what do they accomplish? (Q 1.1.3.)

The Jussieu project engages in dissolving constraints of architecture through landscape concepts with a goal to create a novel spatial concept. This freedom of spatial use, a variety of playful adjustments to the library program, is related to what Mark Wigley calls 'extreme hospitality' (Wigley in Stamps e.a. 2016 p. 38) in regard to the architecture Constant Nieuwenhuys proposed in New Babylon.

The potential of the Jussieu project for a fundamentally novel approach to architecture simultaneously shows its limitations, not so much in its practical application, but in opening up architectural methodology to the freedom of spatial use through landscape.

In the face of global ambitions of the '68 movement, the political undertones of the Jussieu exercise are modest in comparison. Jussieu makes a pointed statement about a moment, but does not propose a real revolution. That said, its Utopian stance aligns well with a leftist perspective. Its abolishment as soon as the socialist government lost power on the cultural and educational fronts comes as little surprise.

Despite the unmistakably progressive character of the Jussieu design, I believe OMA did not merely envision to change architecture fundamentally. Rather, they tried it practically and within the provided project limits. Jussieu is more Utopian, more radical than many other OMA projects designed before it or built after it. Recently, Koolhaas acknowledged that since the 1960s "Utopia and architecture have totally grown apart" (Koolhaas in Stamps e.a. 2016 p. 64)[115]. Exploring in Jussieu the extreme of continuous space modulated as a landscape remains an exercise simply within a building.

Jussieu is a Utopian operation limited, and even hindered, by a real program and budget for an existing institution. Koolhaas always considered himself an architect and consequently OMA's work is not fundamentally anti-architecture. Koolhaas' 'paranoid critical method' mentality, self critical or not, is essential to OMA's designs - even when challenging building practice and conventional use of materials, the solutions are meant to be practical. Jussieu was intended to be built from the delivered designs and further developed with this goal.

115 translated from Dutch original quote by the author

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FIG. 4.8.1 Constant Nieuwenhuis, Betty van Garrel and Rem Koolhaas 1966.



FIG. 4.8.2 Ludique trap Constant 1969. (Gemeentemuseum Den Haag 2016 Photo: author)



FIG. 4.8.3 Ode à l'odéon Constant 1969 (Gemeentemuseum Den Haag Photo: author)

Which landscape elements are applied to architecture, which concepts of landscape are applied in architecture, and how is their formal composition developed? (Q. 1.1.4.)

To understand Jussieu as a landscape I have separated its constituent formal layers and explained their composition as well as the landscape attitudes. However, like any landscape, the experience of the built project would be the ultimate way to understand it as such. Each representation risks falsifying the original message.

The composition consists of collage technique and interweaving of all four layers: spatialisation of the ground; the metaphor influencing space; the program fundamentally reinterpreted through ground; and space and image tricks. The separation into four layers of this amalgam of landscape sometimes seems limited in its scope compared to the complexity of composing Jussieu fully of cross-references among the four.

How did the architects of Jussieu understand the idea of landscape and its design strategies for application in architecture? (Q 1.1.5.)

The previous section about the landscape attitudes summarised the understanding and application of landscape in architecture. Mainly the new attitudes toward the anamnesis, process, and spatial sequencing culminate in a manipulation and activation of the context: the immediate one of the Jussieu campus, the larger one of Paris and the macroscopic cultural context of unresolved tension between the French state and its university.

For architecture in general, this crucial work of OMA indeed takes two steps at once. At first, the designers introduce a landscape ground form, space, and metaphors as an architectural project for a formerly pure architectural type, the library. In the second step they urbanise this landscape, and read the ground form as a boulevard; occupy it as an urban public space; introduce visual relations to the city and urban metaphors; and program it in an urban plan of zoning programs filled with repetitive structures. Landscape methods here are used as a doorway into the traditionally closed institution of a University Library into an open public space. This becomes particularly visible in the analysis of the form of expression of the program layer as well as with the expressed intentions of the designers' idea of a social magic carpet or a building "against the general trend of disappearance of public space" (Koolhaas in Kuhnert e.a. 1994 p.18)[116]. I would see this way of

116 «Wij vatten onze projected op als openbare gebouwen, tegen de allgemene tendens van de verdwijnende openbare ruimte.» (Koolhaas in Kuhnert e.a. 1994 p.18, , transl. by the author)

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treating program as a landscape as the formal architectural expression of the political and social implications of landscape architectural design. Contrary to colleagues who sometimes miss that social dimension in the analytical toolbox of Steenbergen & Reh (i.e. van der Velde 2018) I would locate it at Jussieu in the composition of program-form, and its integration into ground-form, spatial-form and metaphorical form. In other words, the political and social implications are not peripheral to the project or my analysis of it. The essence of the Jussieu design with landscape strategies is to impose a new public openness into the desolate and overly controlled Jussieu campus: a spatial condenser breaks open visible and invisible boundaries, and in turn transforms the cut-off campus into a landscape again.

Cornubert states that this design was 'landscape urbanism', avant la lettre (interview A1.1.): an early amalgam of a novel approach to the built environment across the divide of landscape and urban space, and across the disciplinary divide of architecture and landscape architecture. Since Jussieu remains a concept, this idealised retrospective however misses a certain reality check, therefore my last subsidiary question:

What kind of landscape design strategies are successfully applied to the design of the Jussieu case of architecture? (Q. 1.1.6.)

Two particularities did not allow this design to pan out like it should have as a built project. On the one hand, it is an unfinished design where ideas are not materialised and thus an architectural concept rather than an architectural design. Completion of the design would have involved thousands of decisions up to a finished building and would have ideally served as a filter and concentration of ideas into the essential message. On the other, the landscape inside the two Libraries was never made publicly accessible. Like any landscape, only the experience of it produces the actual appreciation, and in my view, this building would have commanded a sensational appreciation.

The final assessment of what kind of landscape design strategies would have been successfully applied remains limited to the critique of the unfinished plan, including the evocation of it with a simulation in my pro-construction.

However fragmentary it may be as an unbuilt design, I think the message is clear: At the Jussieu libraries, landscape design strategies enrich architecture to reach a new level of urbanity in a public building. A set of proprietary formal tools invented for the project changed the means of architectural space. This change occurs within a dense urban context, which before seemed reserved for anything but landscape. The change is still hidden partially in drawings and models, and the memories of designers and the traces of their thinking. Given the nature of such records, only other designers may have understood what the potential of this project was. In my further studies I could observe particles of 'Jussieu ideas' floating around in nearly every project on my long list of almost 100 projects, including the next two cases studied (ch. 5 and 6). Built or unbuilt, the two Libraries at Jussieu are unmistakably a crucial work of architecture.

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In what way would landscape design strategies (as they would have been applied in Jussieu) change how we understand and create Architecture? (Q 1.1.1.)

To the main question above, I have a threefold answer derived from Jussieu.

The first relates to the human experiential environment – our living space. Jussieu projected a liberated public space inside a building as an explorable landscape of a giant continuous five hectares of floor space. Leaving many parts undefinable in its use, the programming strategy went beyond the conventions of its time and program.

Second, Jussieu takes a novel approach to freedom of space, leaving as much undefined as possible, which was unconventional within the architectural field at this time. As an artificial landscape it is relatively limited, roughly the size of a small park, by several landscape means exploring the technically and architecturally most realisable level of latitude.

Third, in exploring such latitude, and as a proposal to integrate a landscape into architecture, the Jussieu project went as far into landscape as an architect could go then. Conversely, OMA may have gone too far beyond the limits set at that time for the possible workings of a building, contributing to its unrealised status.

The actual landscape experience evoked by the architectural design was never provided by the building Jussieu. Although I provided imagery and simulated parts of a design development that never happened, the limitations of this case are immanent in the fact it does not exist and live as a real building. It is more like a living ghost or theoretical ancestor of the few key cases studied here, which limits both enthusiasm and critique to a concept.



FIG. 5.0 Rolex Learning Centre at EPFL, Lausanne SANAA 2004-2010 (Photo: Ariel Huber)

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5 Rolex Learning Centre at EPFL, Lausanne

SANAA - Kazuyo Sejima and Ryue Nishizawa

2004-2010

The Rolex Learning Centre has been overly announced, published and praised as 'landscape' as architecture. Completed in 2010, it is the largest scale international building of Japanese Architects Kazuyo Sejima and Ryue Nishizawa (SANAA), and it quickly becomes clear the designer's explicit aim was to solve a complex programmatic and spatial request with an artificial landscape.

The commitment of the building to the creation of landscape explains the choice of the project for this study (5.1.). The context of the project in the EPFL campus of Lausanne and its insertion in the lake Geneva landscape deserve some explanation as well as the specific need for it and how that was answered by the design (5.2.). The impression from the field-trip will be described in the next section (5.3.). The challenging form led to a relatively long planning and building process in which quite unusual techniques and structural design were used for concrete reinforcements, formwork and even pouring at high local building standards (5.4.). My 4 layer analysis can be executed in a pure and complete manner (5.5.). The specific analytical method used for Rolex Learning Centre is a visual space analysis of this project with a 3D isovist software tool, a method I will introduce in the respective section (5.6).

My exploration of the landscape architectural attitudes will also stress the important role of these spatial aspects among landscape architectural approaches (5.7.). My critique will engage the total picture to understand this creation of landscape as architecture and its extension of our conceptual understanding of landscape strategies (5.8.).

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5.1 Choice of the Learning Centre

Four main reasons made me choose this project to be analysed with landscape methods.

- Firstly, at the Learning Centre the predominant architectural shape is an undulating slab that forms the roof and main inner space and is designed intentionally to represent and function like a landscape. Strangely this spatial functioning is not discussed before in this conceptual context in existing literature on landscape and architecture, including the more recent ones (Allen McQuade p.408-433, see more in chapter 5.2).

- Secondly, this project has been repeatedly called a landscape by the architects themselves (Nishizawa 2010). It is an example - like Jussieu - of propagation of the landscape concept as a theory by designers themselves - which can be studied here on a realised building to test my hypothesis. That landscape metaphor that extends to both the form and the design process will illuminate many facets of the critical analysis.

- Thirdly, the building of this particular landscape has evolved into a technical advance of structural systems. In this sense it is a show-case, a case showing applicability of novel structural and formwork design techniques that a landscape concept requires in a building. The tectonics part of architecture - the actual building process of the designed landscape - is unique and valid as its own investigation (chapter 5.4.)

- Lastly, it is a built primer in its consequent elaboration of landscape design strategies in architecture in such an explicit manner. The great impression this space provides makes one wonder how Jussieu would have dazzled people two decades before, if it had been realised. In a way the EPFL building may be a source for explaining an experience that Jussieu never was able to provide.

The Learning Centre is significant to understand landscape strategies in architecture because the architects explicitly introduce landscape concepts and refine their spatial composition and building technique. Similar to Jussieu, the architects activate landscape as public space, but they position themselves less explicitly in a dialectical opposition to the existing campus. They do not develop a whole collage but rather reduce the landscape issue to a condensed gesture. Treating the one form of the undulating slab with a whole set of landscape formal operations, they develop a multitude of landscape expressions in a continuous flow rather than in a sequenced collage. The Lausanne case is more experimental, it neither propagates its own dogmas nor denies others. It deals with public space in a more pragmatic or even hedonistic way. The intellectual curiosity of the designers on the spatial effects of their own composition strongly recalls park designs that often need to be worked on ‘in the field’. Its refinement and poetic reduction become a key to the question of applicability of landscape concepts in architecture.

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5.2 Context of EPFL

The Ecole Polytechnique Federale Lausanne (EPFL) is Switzerland's French speaking national polytechnic university founded in 1969. Its German speaking counterpart, the ETH Zurich was founded in 1855 after the model of the national French grandes écoles in Paris. Only a few higher education institutions in Switzerland are national since education was traditionally divided federally until the 1848 federal constitution.

Like many Universities, the EPFL campus moved to the periphery of the city after the rapid expansion of cities and growth of student numbers in the late 20th century - four km east in Ecublens. According to a Masterplan of 1971 by Architect Jakob Zweifel (1921-2010) the polytechnic was extended step by step from 1972 to 1982 (Schlappner 1996, Zschokke & Hanak 2003). The site is placed along a provincial route between a railroad track to the north and a country road to the south that cuts the site off from the lake. Zweifel's plan orders functional elements with a clear separation of traffic levels on the ground and a system of elevated plazas above. The strong volumetric presence is based on prominent north-south bars that visually connect the site from the green hinterland in the north to the lake and mountain view in the south. As opposed to the closed orthogonal bars of the contemporary Jussieu campus inside Paris (chapter 4.2), the Lausanne campus opens up to the landscape in the wider surroundings. In the 1970s, the polytechnic construction was initially comprised of a modular steel facade system reflecting structuralist manners, but later adopted a more Post-Modern influence with colonnades along a new north-south passage. Next to EPFL, the University of Lausanne is placed; financed by the canton of Vaud and not the federation.

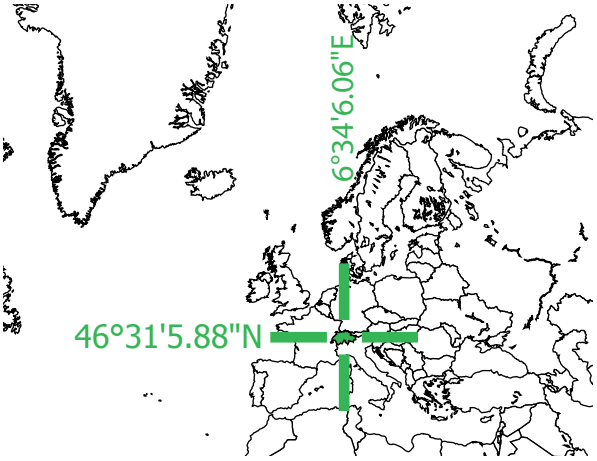


FIG. 5.2.1 Global Position Lausanne, Switzerland

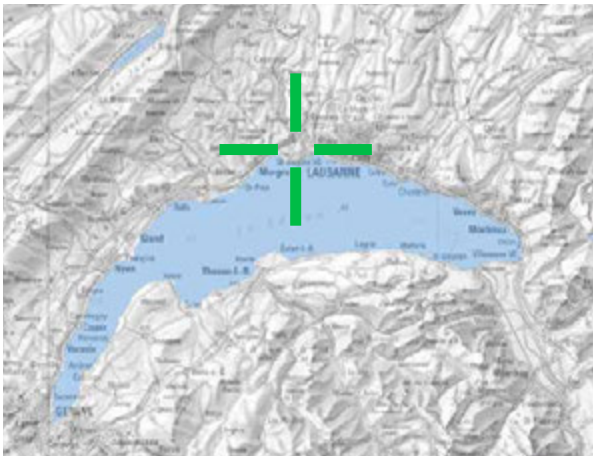


FIG. 5.2.2 EPFL in Lausanne Region Scale: 1.250'000

A problem occurring from its peripheral situation is that the campus lacks life, especially in the late working hours of many students and scientists. To bring more urban life to the campus, a congress centre, library hotel, and lodgings were to be added according to an internal planning procedure of EPFL in 2003 (see also Aymonin 2007). In 2004, the EPFL launched an exclusive competition which eventually settled on 12 architects, many outside of Switzerland, chosen from a pool of 182 applicants from 23 countries (ETH Rat 2004 p. 20). Besides the winning team of SANAA, other teams that were invited included Abalos & Herreros, du Besset-Lyon, Diller Scofidio & Renfro, Zaha Hadid, Herzog & de Meuron, Xaveer De Geyter, Jean Nouvel, Mecanoo, OMA, Valerio Olgiati and Livio Vacchini (Bisbrouck 2006).

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FIG. 5.2.3 The EPFL Campus at Lake Geneva (EPFL Photo: Alain Herzog)

Note that five of these architect teams had been competing 12 years earlier on the Jussieu competition (Du Besset-Lyon, Nouvel, HdM , OMA and De Geyter, who had worked at OMA on the winning scheme for Jussieu, see chapter 4.2.).

With the given site in the competition, EPFL formulated an ambitious set of programmatic requirements that would usher in the future of learning. The programmatic aspect was loaded with much more than functional requirements: the building 'must be significant', needed to 'impose itself in the environment like a signal in the landscape', was to 'become a hive of activity' and 'magnify the school, adding to the reputation of its academic curricula, emphasising the school's radiance at national and international levels' (program quoted from Bisbrouck 2006). Many results of the competition took that quite literally and developed different types of imposing sculptural volumes in crystalline- (Hadid, de Geyter), tilted- (DS+R, HdM), or arch-shapes (OMA).

The EPFL Learning Centre's main task is to bridge the gap that disconnects the EPFL and its neighbour, Univeristé de Lausanne UNIL, from the city. It should reestablish connections between students and the city and bridge between the academic world and society. Put in traditional terms, the program predominantly consists of a library, restaurants, a conference centre, meeting and exhibition spaces, and work places for scientists but none of these look nearly how one would expect from their title. The English term 'Learning Centre' would describe a new building type for a digitised library integrated into university teaching. Since Lausanne, it would become an accepted term even in the French Republic's administration (Jouguellet 2009). EPFL's search for new building types is connected to the digital revolution (as anticipated also at the Jussieu project, see chapter 4.7.). The shifts in media had a huge impact on the daily life of research and education.

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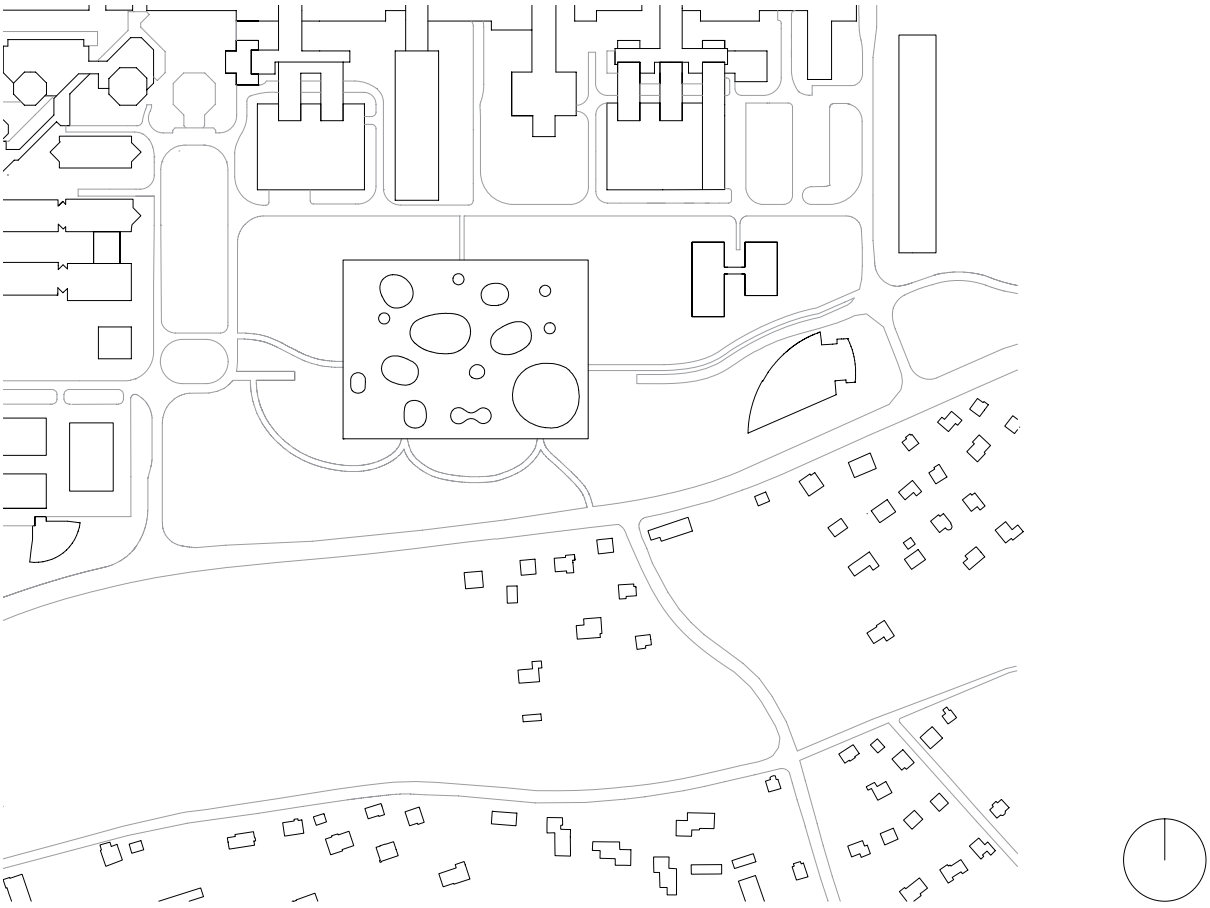


FIG. 5.2.4 Site Plan of Rolex Learning Centre 1:5'000

As a physical built context, much of the university dematerialises into virtual databases and on-line exchange of thoughts. Nevertheless, university buildings still refer to a typology of the Greek philosopher's school.

5.3 Impression from the Field-Trip and Design

According to architect Ryue Nishizawa, the EPFL Learning Center in Lausanne at Lake Geneva is 'a dramatic space, that words can hardly describe' (Nishizawa 2005 p.11).

Even to start our description upon entry is difficult with this building, although the Learning Center is clearly limited by a vast rectangular shape. One does not enter the rectangle at the edges but through the center. Once inside, nothing guides the visitor in conventional ways except for the signs on its curved glass walls. Those walls inside are exterior walls around clearings in the middle of the building. As nothing is forcing the visitor on a certain path, the report of a walk-through would still be very subjective. One cannot avoid describing this building only by its space. No intellectual framework other than the pure creation of space for people is the working ethos of SANAA – as they have made evident here.

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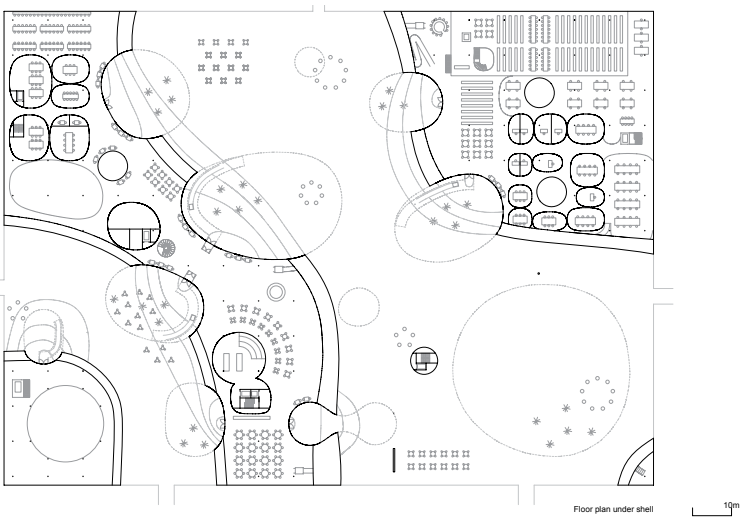


FIG. 5.3.1 Learning Centre Floorplan under shell 1:1'000 (SANAA 2010)

The Learning Centre consists of only one single large public floor above ground. This giant continuous space can be described as an abstracted landscape. More precisely, standing in the building feels like being inside an architect's model of a landscape. The undulating slab of that single floor does not always touch the equally large basement floor. It lifts up from the ground at different zones, providing entries for slipping in at every edge of the basic rectangular form. Inside the rectangle, a series of holes not only provide masses of light to the inner space but also act as axis points around which the entry paths are woven through the holes between the ground and the undulating slab. The building wraps around the approaching visitor. When I enter the inner landscape I feel like falling into it from outer space; walking on the modest gray carpet is at first strange, like walking on the moon.

The continuous plane is not indifferent. It adapts to programs with seating here and a platform there. Ramps in the shape of serpentine roads and rack railways for wheelchairs are abstract quotes of the alpine world, moments that the hilly city of Lausanne and the nearby Alps are quite well known for. The strength of the architectural language lies in the connections it makes through only a few elements. The holes are one essential part in communicating the space that divides and connects at once. The spatial dynamic of uphill and downhill inner spaces and the views with bits of natural landscape framed by this artificial world connect the visitor with his surroundings. I can not help but compare the building to the mountainous scenery outside. More than a walled garden, this is reminiscent of the English landscape garden using effects and scenery found in nature to trigger that thrilling and edgy experience of the sublime landscape. While the separation between building and nature is made very clear by materials, they are intensely connected by the spatial composition.

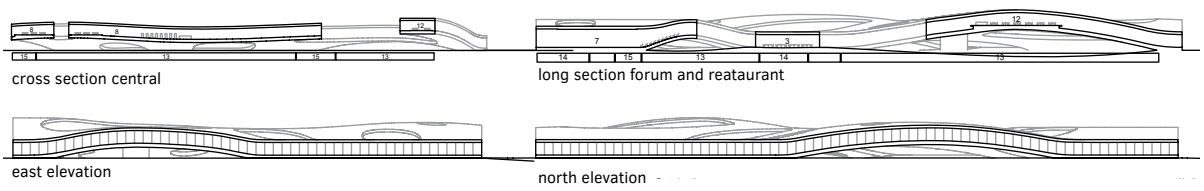


FIG. 5.3.3 Learning Centre sections and elevations 1:1'000 (SANAA 2010)

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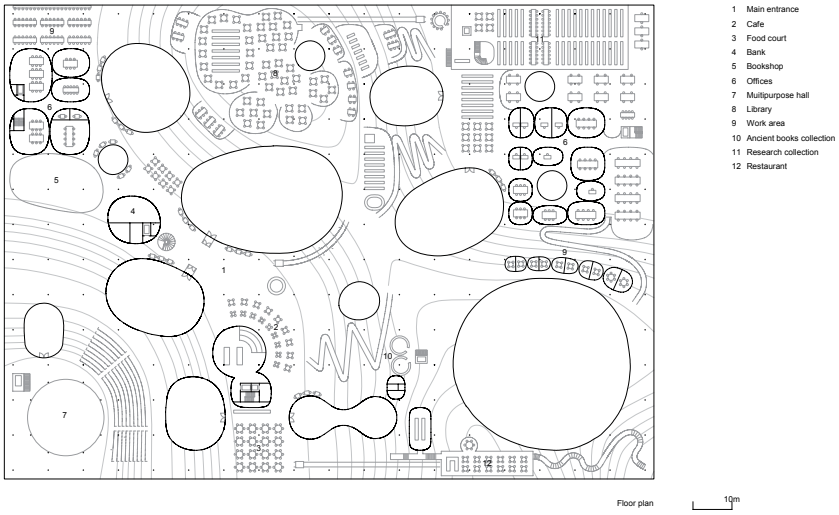


FIG. 5.3.2 Learning Centre Floorplan 1:1'000 (SANAA 2010)

In their work for the Learning Centre architects Kazuyo Sejima and Ryue Nishizawa experiment with modern architecture as a composition of space, program, and nature, reflecting on the human condition. They implement transparent connections between inner and outer space. SANAA's modernism is not about formal language but about trying to break apart conventions and bring space and composition into direct relation with the human experience. SANAA keep expanding their formal repertoire; this building is the furthest they have gone in experimenting with free formed shapes, but because the goal of creating space is never out of sight, they master this craft carefully. A parallel to the Baroque architectural tradition of creating space by modelling light, voids, enclosures, and vaults can be found here – like the modern, the Baroque is only referenced in its spatial qualities, free of ornate decoration.

In the architects' design process, a simple problem triggered a leap in the design. They quickly realised that they did not want to stack levels – one continuous floor should connect all the different uses in the flow. Connections between spaces were more important than their division. But the simple wish to have a view from the restaurant to the lake would mean that it had to be upstairs unless you skip the stairs and use the whole building to get there instead. So while wrangling with placing shifts and splits and limited views between adjacent spaces of different heights, the architects started to lift that one continuous floor plan locally. The discovery of the horizon as a space divider convinced the designers and made them develop all the public spaces into one single continuous undulating plane – a landscape making architectural space.

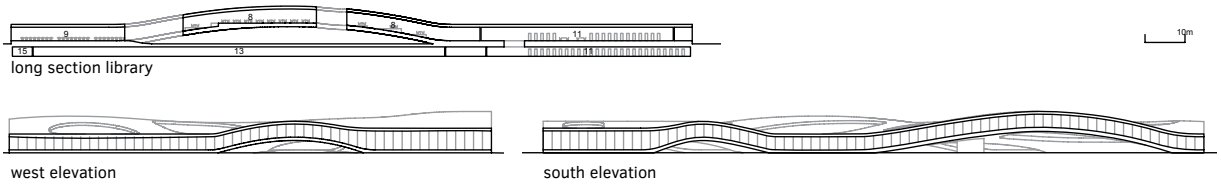


FIG. 5.3.4 Learning Centre sections and elevations 1:1'000 (SANAA 2010)

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FIG. 5.4.1 Learning Centre from East, at opening 2010 (Photo: Ariel Huber)

5.4 Building the Rolex Learning Center

As an explicit built landscape this project also reveals some particular technical challenges to building it. The undulating concrete slab was a particular challenge in its structural design, requiring even thicker insulation on the cold underside. One principal misunderstanding between the architects and engineers was the shell form of this building, which is not effectively a shell structure. A reinforced concrete shell can be impressively slim with a ratio span/thickness of 250 to 500, meaning that 20 cm slabs can carry across 50m if they are designed and calculated in their structurally ideal shape (Santini 2008). The great works of Felix Candela for example would follow a design process of formal optimisation. In the case of the Learning Centre, the shape had to be determined by spatial, visual, and functional aspects, making it impossible to find such a structurally ideal form (Santini 2008). The engineering firms Bollinger Grohman Frankfurt and Walther Mory Maier Basle were to translate the idea formulated by SANAA of light and slender shell-like slabs into a build-able solution.

An additional handicap was that usable surfaces in buildings (floors) allow much less deformation than surfaces on roofs or on bridges. The airy white plastic sheet of the architects' competition model turned into massive concrete ceilings. This is not about surface shaping but gros oeuvres, big works – the whole slab is 40-80cm thick with up to 470kg of reinforcement steel per cubic meter of concrete. This is almost 5 times more steel than the Salginatobel bridge built in 1930 and

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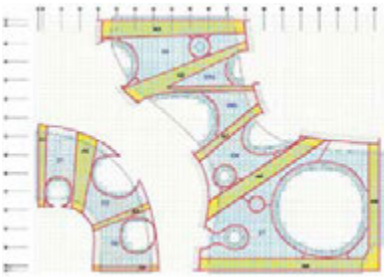


FIG. 5.4.2 yellow 11 arches with reinforcemnet in red formwork in blue (Grohmann 2008)

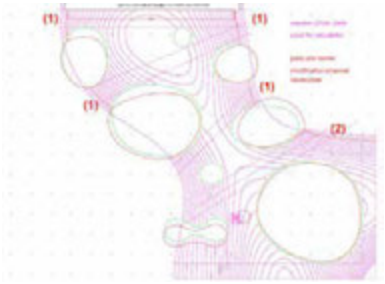


FIG. 5.4.3 modification changing openinges from green to red (Grohmann 2008)



FIG. 5.4.4 construction of the slab for larger hill in 2008 (Grohmann 2008)

designed by the concrete pioneer Robert Maillard (1872-1940). With a span of 94m, the bridge would use 103kg per cubic meter of concrete (Micelli 2009). At the north side the Learning Centre spans 80m and the arch is only 4.85m high. This is half as steep as bridge engineers would see as a feasible minimum. The structure here has to bear 78000 kN or 8000 tons of weight, 200 loaded double trucks hanging on a few meter wide zone. The solution proposed took a whole year of pure structural design study not counting the extra demands for steel layout and formwork design (Gromann 2008). The engineers proposal is a hybrid system of 11 arches hidden inside the two shells, four in the smaller and nine in the larger hill. These arches do not span between two rocks like Maillard's bridge, but lay on top of a parking garage and a curved wall that needed to be passed under by cars on many levels. To fix the landings, all of the massive concrete landing zones are connected with horizontal cables at ground level in the roof of the underground parking garage. These connections also criss-cross between arches in a kind of a zigzag system.

Several modifications had do be made to the shape in a negotiation process between architects and engineers. In this process, the architects insisted on certain heights and emphasised visual relations especially from the elevated inner spaces - they wanted views across the roof which should remain parallel to the floor. They also rejected resolving the lower level structure with columns, forcing impressive free spans comparable to larger sports halls. The modifications are steeper bows, avoidance of concave bumps, approaching symmetric parabolas along the eleven bowlines and moving the openings to have wide enough stress zones with the cables. To minimise risks in this new way of building, construction started with the smaller and steeper hill and addressed the large one after. The negotiated shape had to then be put in place with 1331 different pieces of formwork that had been designed by a specialised company (Scheurer 2010 p.200-203). In a three day non-stop operation in July 2008, 4300 m3 of concrete were to be poured including more than 20 truckloads per hour with 250 workers involved (Mallet 2008).

Additionally, the high ambition of the client to reach the Swiss energy label "Minergie®" that is based on a minimum of energy to be consumed per m2 required extra efforts. The ratio envelope surface to heated floor surface is very important to reach this standard and was far from optimal here. The study of natural ventilation and heat changes as another example would require thirteen consecutive simulation models to determine the distribution of openings in the facades (Jaboyedoff 2009 p.24).

A mixed structure of wood and steel was used for the roof to reduce heat deformation, weight, and cost of the structure. In the flat areas, the primary structure (IPE400) is filled with steel beams (IPE300), but in the curved areas on to the 9m square column grid are filled with a total of 986 laminated wood secondary beams, or five per field. (Grimault 2008 p.18).



FIG. 5.4.5 Into the large opening (Photo: Ariel Huber)



FIG. 5.4.6 Rasing between clearings (Photo: Ariel Huber)

After the competition win, the realisation phase of the project was relatively long (with almost six years in total from competition to opening) and encountered some challenging technical and financial hurdles, with a total delay of two years to the initial planning. Initially praised for its modesty by the parliament's financial commission, it eventually turned into an expensive object of technological prestige. The cost of the original proposal at 40M CHF in the competition stage jumped to 90M CHF with SANAA's preliminary project design in 2005, and finally to 110M CHF (70M EUR), of which 50M–52M were privately funded by various companies including watchmaking company 'Rolex' that purchased the name (cost according to archicentral.com 2009, ETH Rat 2004 p.20, ETH Rat 2008 p19, EPFL Media Dossier 2010, Aebischer NZZ am Sonntag 2010).

5.5 The 4 Layers of the Landscape Architectural Composition

5.5.1 Ground Form

The topography of the EPFL Campus is relatively flat by Swiss standards, especially compared to the city of Lausanne 4km to the east. In a 1sq-km area or roughly 500m distance to the Learning Centre the terrain varies in height by a maximum of only 2m - probably a motive to choose this area for the quickly expanding campus in the 1970s.

The ground form relates to the landscape of this site of the Learning Centre is a southern extension of the campus towards Lake Geneva at 400m above sea level or 28m above the lake. The site is strongly dominated by the surrounding landscape. To the south, the whole panorama is occupied by Lake Geneva, which is only 500m away. 13km across the Lake on the French side are the Baths of Evian. Behind the French shore and toward the east end of the lake, an impressive panorama of the Alps arises. The highest mountain in Europe, the Mont Blanc, at 4810m above sea level in France, is only 80km away to the south (at 163 degrees). On the opposite side of the Alps is the the Jura chain with Mont Jorat (975m above sea level) 10km to the northeast of the site.

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FIG. 5.5.1.1 Through large opening to SE corner (Photo: Ariel Huber)



FIG. 5.5.1.2 Towards road and lake (Photo: Ariel Huber)

The flatness of the site of EPFL campus is in contrast with to the steep mountain scenery but also to the topography of the city of Lausanne itself. There, the centre is at 475m above sea level, or 100m higher on the lake side neighbourhood of Ouchy. Urban transportation in Lausanne therefore makes use of mountain railways (see on funiculars section 5.6.3.).

The predominant reaction of architecture in the 1971 EPFL masterplan by Architect Jakob Zweifel (1921 - 2010) to the landscape is to open the corridors between the long stretched buildings towards the alpine panorama (see Schlappner 1996, Zschokke & Hanak 2003). They are either north-south oriented in the area north of the building site or east-west oriented on the western wing. They are three or four stories high (15-20m), which still gives them a rather modest earthbound proportion. Most of the buildings are connected by a system of elevated walkways one level above the streets. I interpret the Zweifel Masterplan as a relatively successful example of a reaction to the landscape context in comparison to the Jussieu campus of Albert (see 4.2.). The Rolex Learning Centre is still different from the predominant Zweifel masterplan in its reaction to the site - but SANAA's intervention is less agitated than OMA's and leaves space for the existing buildings of the campus and their existing visual relations across the site.

To understand the ground form I follow a description of the architects (SANAA guided tour 2010). On the wide plane of the site, two hills are laid out. The hills fulfil the simple requirement for overview onto the campus in the rear and, more importantly, a view across nearby obstacles to the lake and alpine panorama behind it. As the two hills are not massive, but a curved concrete slab, they can form entries to sneak in below. This cut is provided by a rectangular shape, precisely northeast and southwest oriented like the templum of a roman city. The rectangular system used at Learning Centre is at EPFL already an outside given of the Zweifel masterplan. The development of the site relationships is like a reversed urbanisation: looking at the development of a city like Florence, we see a structure first abstracted from the landscape by establishing the templum. In Roman times, this was defined as an outer border of the rational orderly world inside from the natural wilderness outside. Growing across that border, Florence will later be integrated into the topographical realities of the Arno valley, developing a growing aesthetic integration with that landscape (Steenbergen and Reh 1990 p45, 2003 p47). At the Rolex Learning Center, that process of antique and medieval urban development is reversed. The given of the cardo and decumanus by a rigid masterplan of 1971 is stopped in the 2004 design by a templum as a border with rational order outside and artificial wilderness inside. That shape itself subordinates the building to the existing order. The orderly world remains outside, while the inner landscape is reconnecting spatially and metaphorically to a wider surrounding space beyond the campus towards the surrounding nature and city.

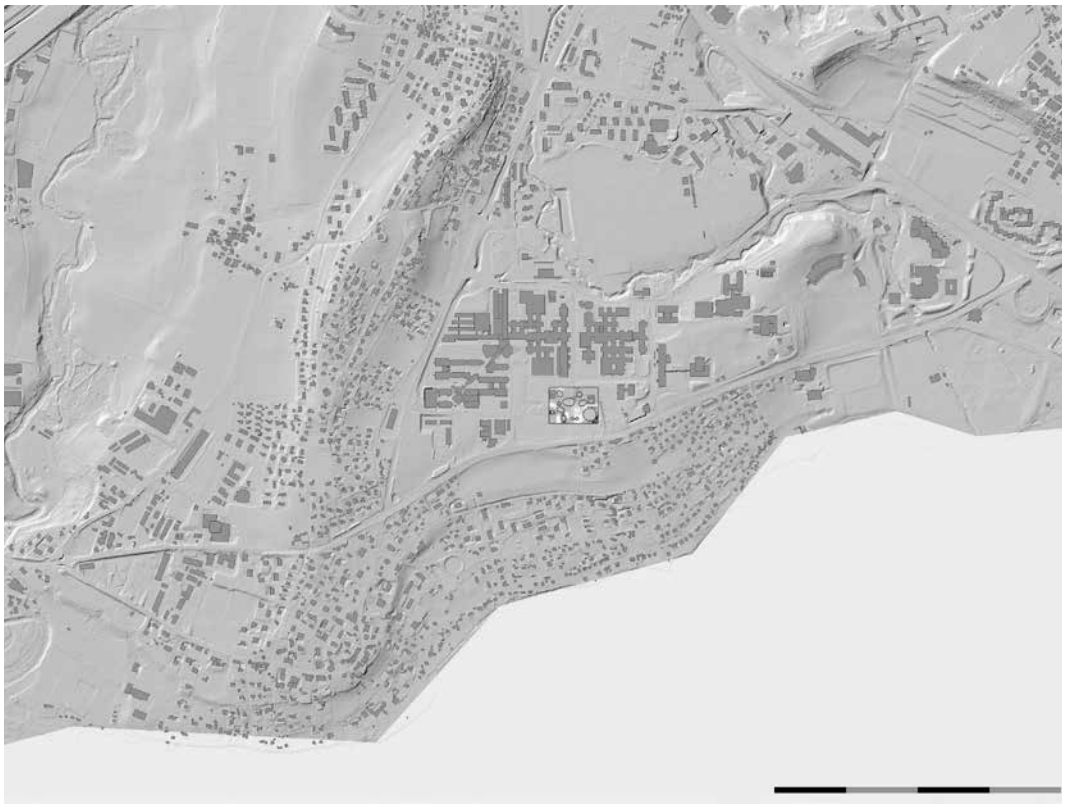


FIG. 5.5.1.3 Relief of the site of EPFL in Ecublens with buildings 1:10'000 (source www.geoplanet.vd.ch rendered by the author)

The rectangular shape is the outcome of different alternatives, including flower-like complex amorphous shapes (architect's sketch during interview no.2, A2.4.). The rectangle takes the main direction of the site, but it sits right across the main axis towards the metro on the north entry and also across several other paths that cross the site. Lifting up the slab, the passage under the building is free even at times the University remains closed. The widely opened and undulating space inside connects visually to the outside with a series of spatial inventions that I will discuss under spatial form.

To continue the discussion of the design in its ground form, two other important manipulations must be regarded. First to mind are the elliptical holes which are fourteen in total. According to their distribution on the hills (the edge of the hills or next to them), the spatial quality of each hole has different consequences. Three of them are in flat areas merely to provide light as hidden gardens or inner courtyards. Three other holes are fully elevated, providing light to both the upper undulating slab and the space below the shell as well as some visual relationships, which I will also discuss as spatial form (in 5.5.2.). The remaining eight holes that sit on the edge are touching the ground with one side elevated. They cut through from one topological surface to the other. These holes connect the space of the flat ground under the shell with the undulating continuous slab on top of the shell. The holes are the main openings for access, even if they are in an unusual place; rarely will one find a built surface in which one would have to look above for the main entry. In the image form I will discuss how the lower space can be seen as a grotto (see 5.5.3.). Still, the holes here are part of a more general manipulation of the ground form within the reversed relation of the inner topography and the outer orderly and flat world. The primary function is bringing in light, as the building expanse would be much too large if otherwise uninterrupted. Building regulations under other Swiss codes (like for example the Zürich PBG) would not allow buildings for work or living deeper than 24m, in order to provide sufficient light for inhabitants. But the side effect is a paradoxical relation of spaces, an interweaving of two topologically different planes and a

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FIG. 5.5.1.4 Relief of Lausanne with buildings 1:10'000 (source www.geoplanet.vd.ch rendered by the author)

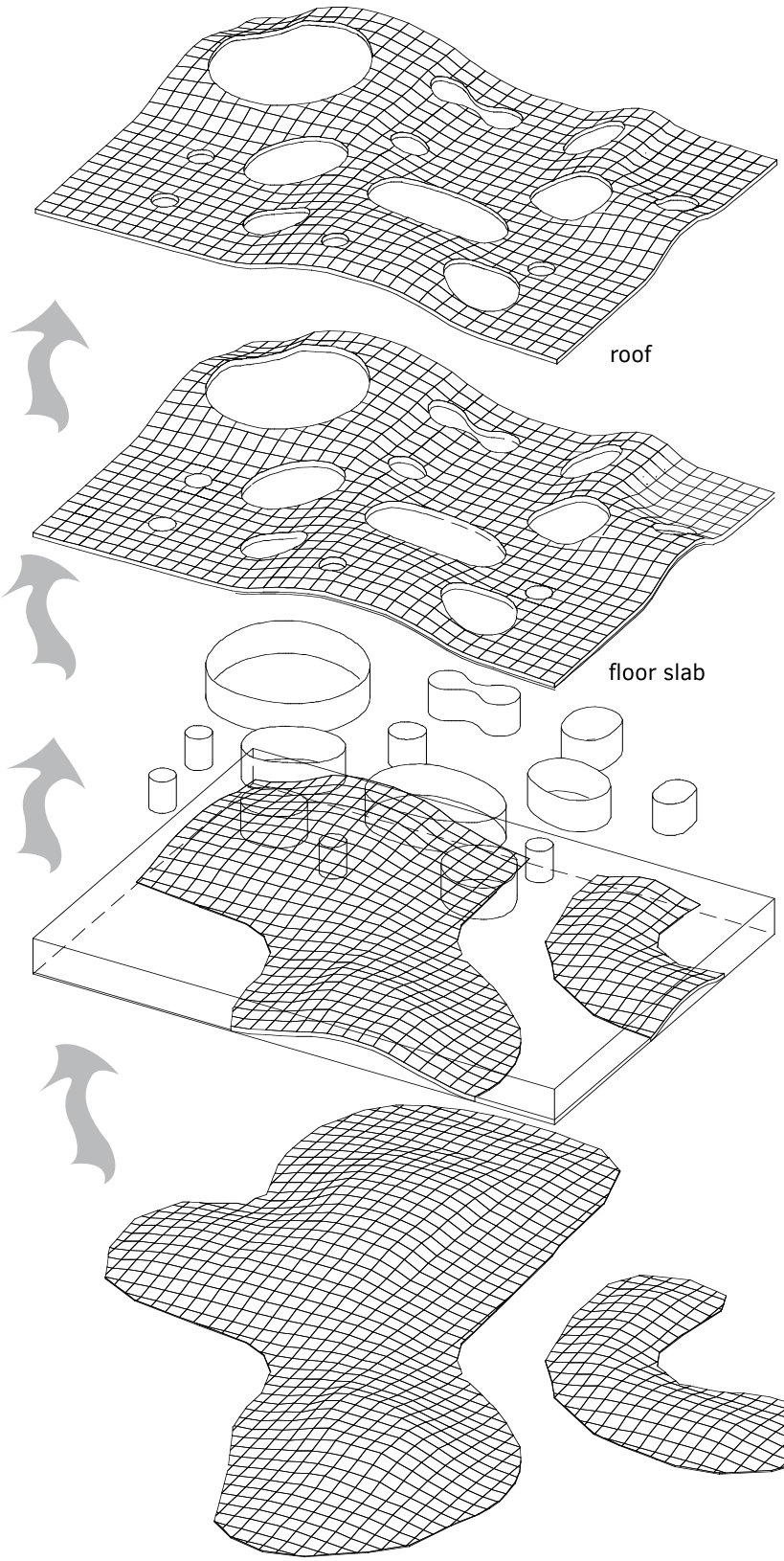
complex manipulation of the topography in favour of the creation of spatial illusions. This kind and sophistication of landscape manipulation is of the order of design strategies that are the result of a landscape process (ch. 2.2.3).

Under spatial form I will show more spatial features that are unique to the manipulated artificial ground. But in this area I also observe a series of allusions to creating a park like landscape. The result is the deliberate introduction of an unusual movement pattern and manipulations of inside and outside views.

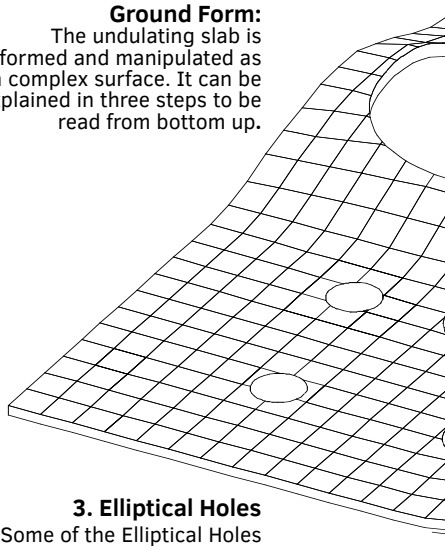


FIG. 5.5.1.5 Roman Florence (1) with extensions and fortifications of 1173, 1258, 1333 1544 (Steenbergen Reh 2003)

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Ground Form:
The undulating slab is informed and manipulated as a complex surface. It can be explained in three steps to be read from bottom up.



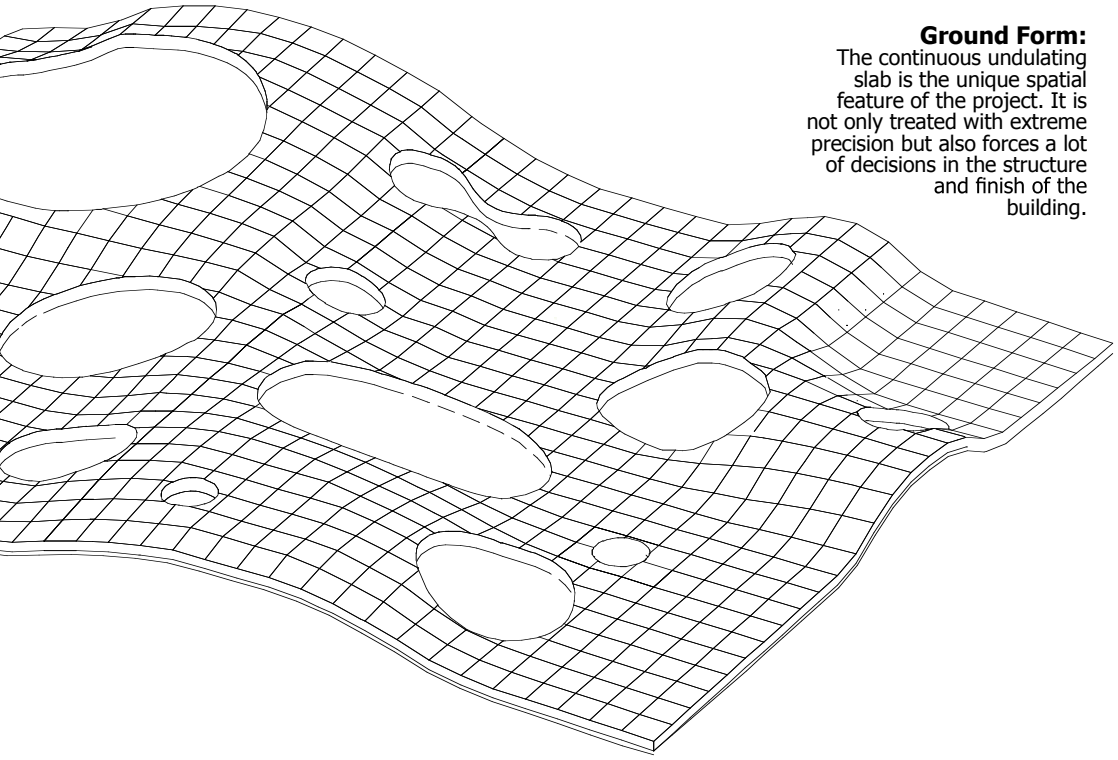
3. Elliptical Holes
Some of the Elliptical Holes intersect with the elevated areas of the slab e.g. the two hills. This provides access to the upper surfaces of the undulating slab.

2. Rectangular Cut
A rectangular shape, oriented to the cardo and decumanus of the campus, cuts the two hills open on three sides. Since they are hollow shells, the cuts provide five entries under the slab: two entries to the smaller hill and three to the higher one.

1. Two Hills
Two hills arise on the site. They provide an elevation high enough to view the campus on the north and to provide a view to the Lac Leman and the western Alps in the south.

FIG. 5.5.1.6 **read from bottom to top** Rolex Learning Centre at EPFL, Lausanne (Drawing: author)
Ground Form

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Ground Form:
The continuous undulating slab is the unique spatial feature of the project. It is not only treated with extreme precision but also forces a lot of decisions in the structure and finish of the building.

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FIG. 5.5.1.7 View from South into large opening under VIP restaurant (Photo Ariel Huber)

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5.5.2 Spatial Form

Two spatial systems interweave at the Learning Centre: the lower continuous large space with two passages and the undulating space between the double shells that cover the lower one. These two systems interconnect through those eight holes that touch the base. Not all of these connections are used as entries - and it is not fully clear which entries are closed on purpose by the architects, and which are regulated by the users. In spite of this, two main entries can be defined as the central access points and three or four can be defined for direct access to the library, forum, and restaurant respectively. The access points are thus free and open and can easily be conceived for flexible usage in the future. The particularity in the spatial form is that we have a system of one and a half times the footprint of continuous spaces connected at one single level. Unlike Jussieu the stacking of floors is reduced at the Learning Center in favour of maximum extension which I relate to an anti-hierarchical impulse of the architects, depicting an ideal space of academic exchange and scientific encounter at the University.

The architects stated that people do not move and meet on straight lines but on curved ones (inauguration speech 15.2.2010). Circulation paths are of particular importance for understanding this architecture. The rectangular box is approached from four sides mostly in an orthogonal direction frontal to the flat facade. Even access points across are bent by the outside path system so that one always enters the templum either from the cardo or decumanus direction. Once under the shell, any orthogonal order is given up. The main access points are to be found if one follows the light. They are not placed axially, but still in the central field of view. Views subtly steer the entrant towards the doors that are always to be found across from one of the openings. The access routes curve slightly into the light, and on the undulating slab, the spatial system is even more forced onto curved routes due to the slopes that oftentimes would not allow straight connections. Curving is forced also by the placing of furnishings and other objects in a dispersed field, without straight hierarchy.

I found an open and anti-hierarchical circulation system that favours freedom. The curved path and absence of hierarchy also propagate a dynamic view of the outer and inner landscape connecting various sights and views. Even the blind walk on curved paths along a guidance system of white flexible plastic lines (fig. 5.5.2.1.).

Much emphasis was placed on vistas or visual relationships to and from the building towards the EPFL, the UNI Lausanne, the Lake, and the Alpine Panorama. The connected spaces are inviting to the outside through the big gate-like openings under the shell, but also connect to each side of the campus with reduction and open transparency. Besides the views across the facade enhanced by raising the floor up to 7m, the views across the holes play a crucial role. As a structural engineer pointed out, the architects would insist throughout the exhausting structural design process that the hills were high enough and the slopes steep enough in order to see across the openings onto the roof (Grohmann 2008). This explains for example the position of the biggest hole in the southeast; through this hole is the important view to the Alps of the canton de Vaud, the alpes vaudoises. Also, the undulating of the roof plane is connected to this for other reasons I will show in the next paragraph. Especially at three elevated points - the library belvedere, central belvedere, and foyer belvedere (named by the author) - the visitor finds himself surrounded by a variety of views through inner landscapes, roof landscapes, and the exterior landscape. These vistas and panoramas are carefully designed and taken care of throughout the design and building process. Architecture based on such a rich variety of views is particularly rare. Its spatial system is connecting the inner landscape to the surroundings, extending the illusion of a seemingly endless space. In that sense, SANAA's holes enhance the illusion of limitless space through a disguised border. In this regard the effect is similar to the ha-has of the English landscape garden, where an edge hidden below the viewing field would give the visitor of an estate the illusion that the estate extended into the pasture with grazing cattle up to the horizon.

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Spatial Form:
Circulation Paths

drawings on this page by the author

Spatial Form:
Connected Spaces

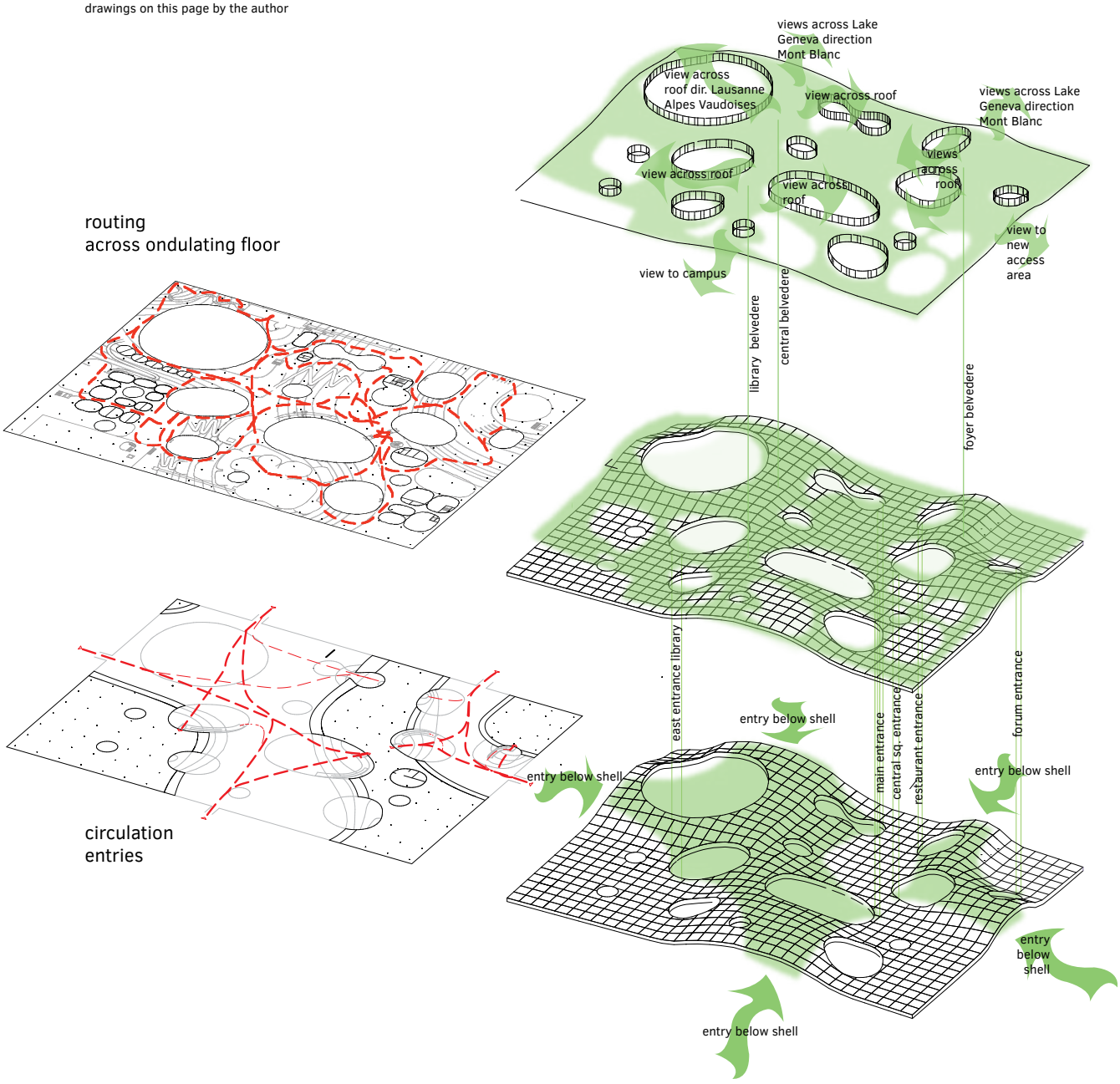
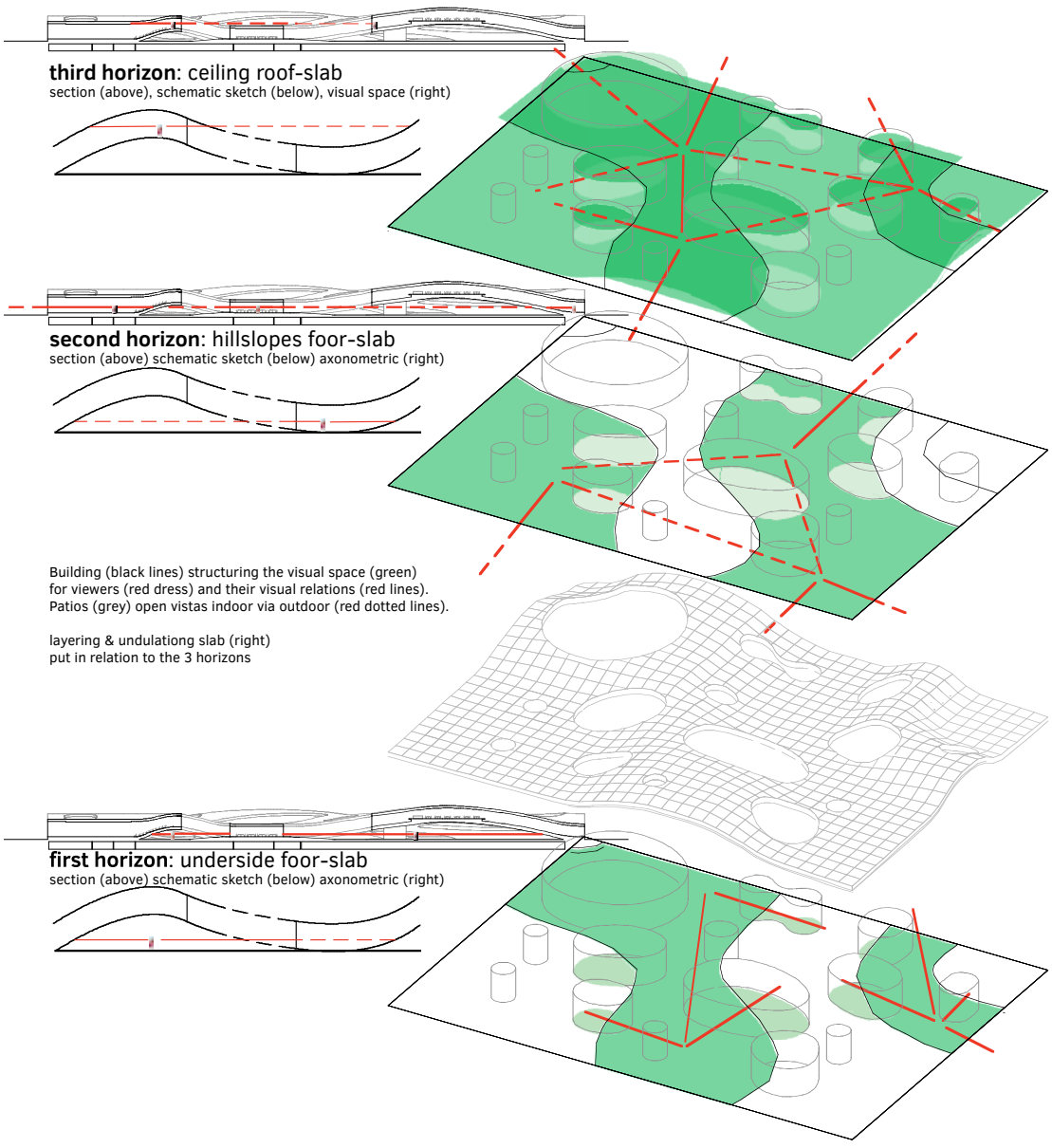


FIG. 5.5.2.1 **read from bottom to top** Rolex Learning Centre at EPFL, Lausanne (Drawing: author)
Spatial Form

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third horizon: ceiling roof-slab
section (above), schematic sketch (below), visual space (right)

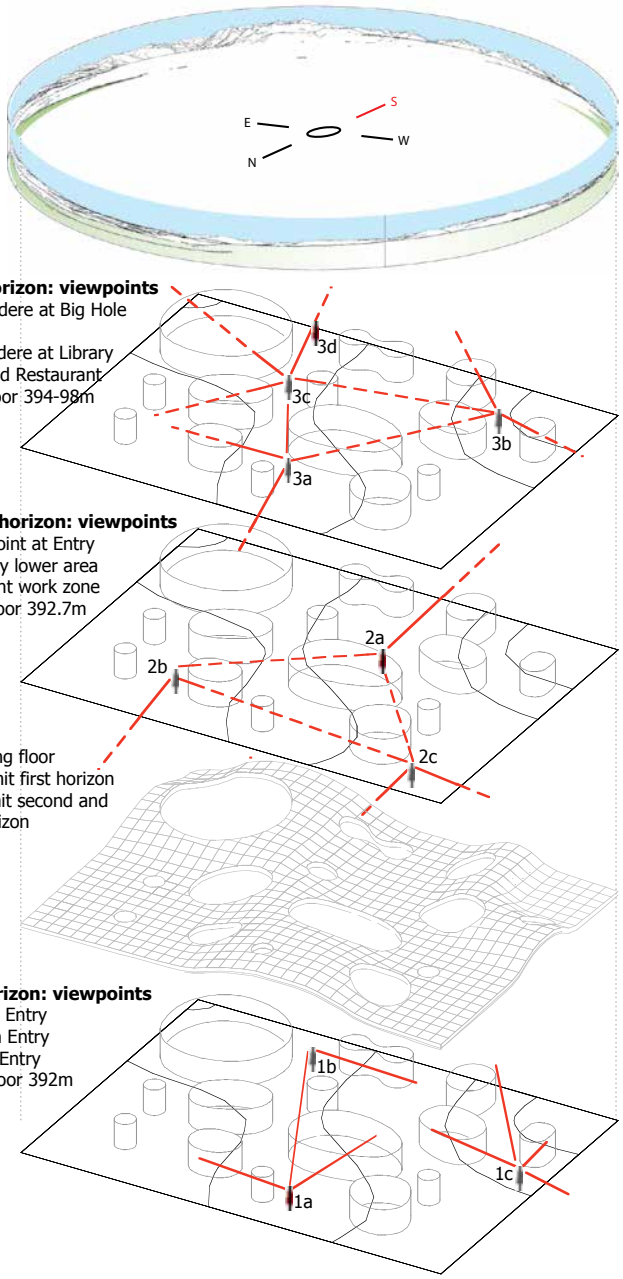
second horizon: hillslopes foor-slab
section (above) schematic sketch (below) axonometric (right)

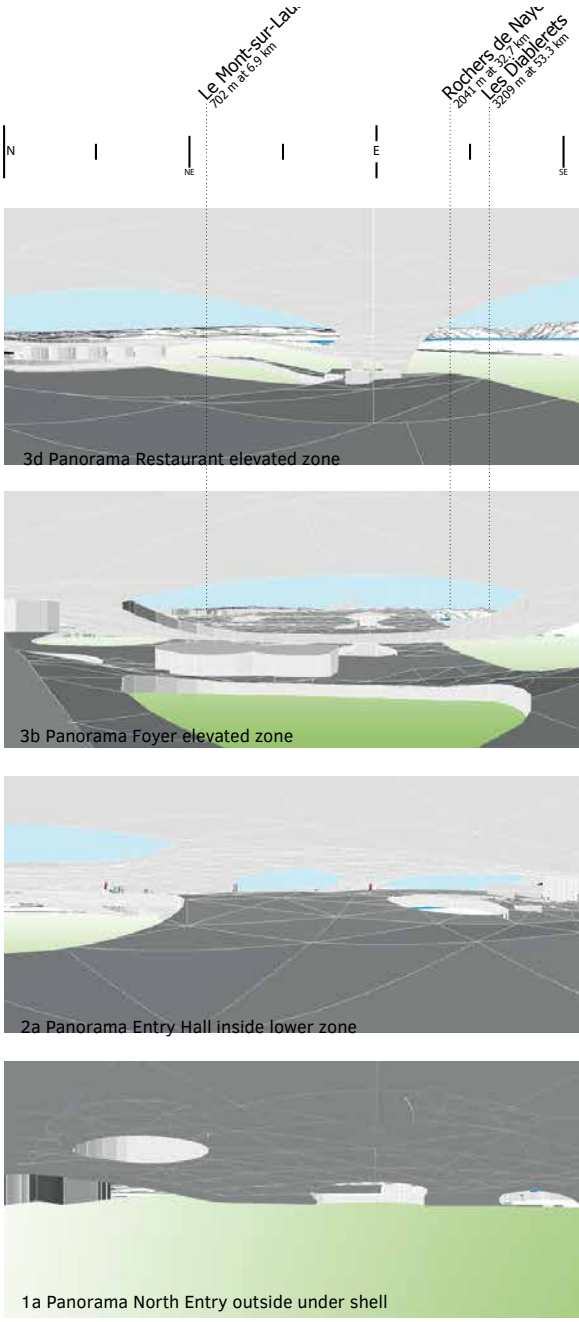
Building (black lines) structuring the visual space (green)
for viewers (red dress) and their visual relations (red lines).
Patios (grey) open vistas indoor via outdoor (red dotted lines).

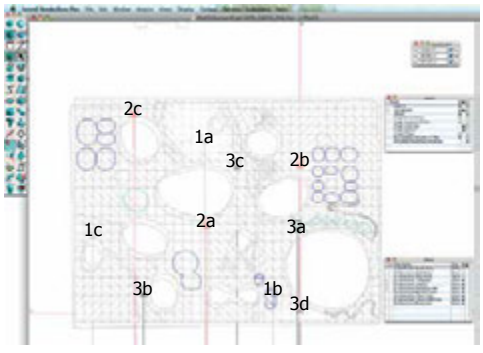
layering & undulationg slab (right)
put in relation to the 3 horizons

first horizon: underside foor-slab
section (above) schematic sketch (below) axonometric (right)

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above right: Panoramic Perspectives CAD / GIS

relation roof (light gray), undulating slab (gray)
site topography (green to white) lake (blue)
visual realtions to mountian skyline (to light blue)
GIS (digirama swisstopo) CAD & montage author

left: CAD model plan view (screenshot by author)

right: visible surface form Learning Centre (black)
GIS Visability map Swiss Grid 533248/152209/405
Digital Height Model 1:25'000 (source swisstopo)

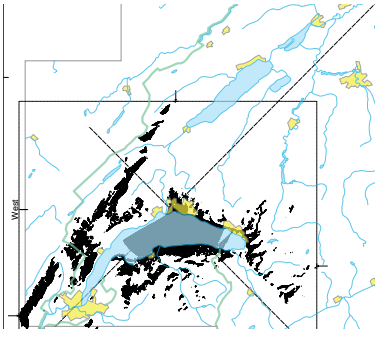
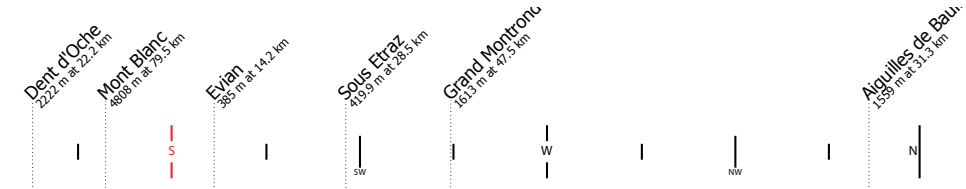
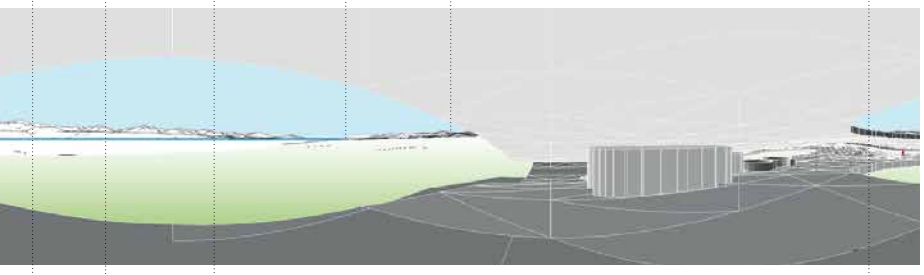


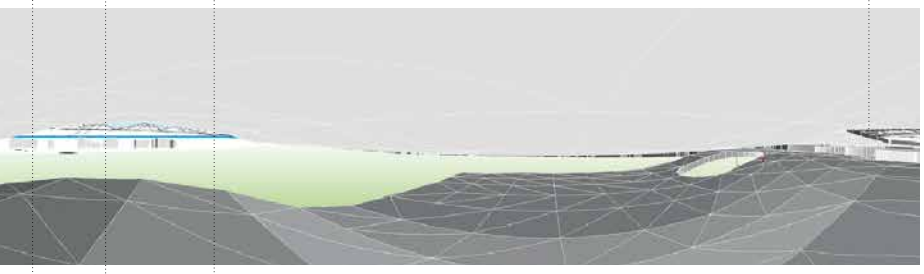
FIG. 5.5.2.2 **read from bottom to top** Rolex Learning Centre at EPFL, Lausanne the three different horizons as experienced through level (Drawing: author)
Spatial Form

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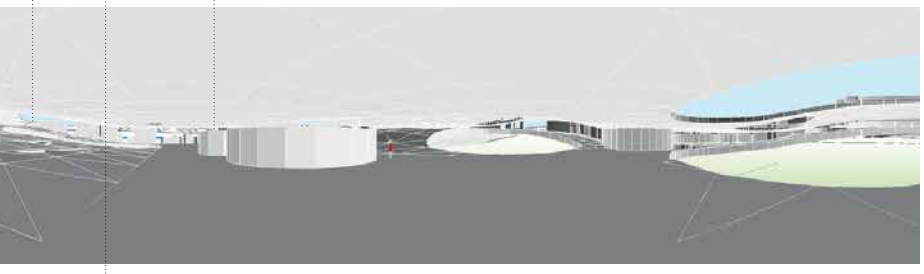




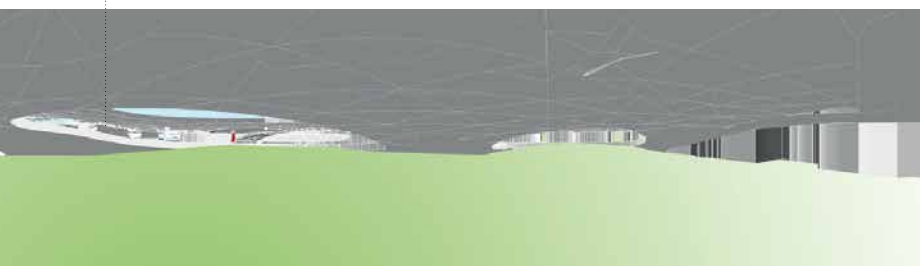

Restaurant




Foyer




Entry Hall inside




North Entry

photo above: Ariel Huber, further above: author



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The spatial play between continuity and framing of the landscape through the manipulation of the horizon is another design feature of the spatial form specific to this design strategy. In my spatial form analysis I could define three different inner horizons in addition to the existing external one. Each of these manipulated horizons is connected to a system of spatial relationships (fig. 5.5.2.2 to 5). The first horizon is related to the ground level (+0m) and is constrained above by the upper shell distorting itself before it even enters the building. The second horizon is related to approximately 60% of the surface inside that is flat and slightly above ground (+0.75m). It is more conventionally limited and shaped through hills, although this manner of treating space is only conventional for parks, never for buildings. This horizon plays a very important role for the spatial system since it allows for separation into three functional zones: the foyer, the central entry and restaurants, and the main area of library and other scientific program. The second horizon replaces walls as a spatial separator. The quality of a hill as space divider was used to create a degree of privacy through topography (Interview Nishizawa A2.1.3.).

The third horizon causes another particularity of this design. One would expect that the freedom of such a designed landscape would best be experienced in a big hall under a continuous flat roof. But the architects insisted on having the roof undulating with the floor slab, almost parallel at one height, except for the higher area of the auditorium. This limits the views from the hills (approx +7m) at some areas in an upward direction (much like the first horizon), but it also allows the views onto and across the roof that were explained before through multiple openings. The openings play a crucial role in establishing a complex system of visual relationships. It is often surprising how the openings are placed as if space was allocated to enhance the variety of inner visual relationships. In the first horizon, one could survey all the entrances from a point approximately 10 meters after passing each gate-like entry (red lines in first horizon fig. 5.5.2.2). In the inner space again, some major areas are connected by a system of interiors, as well as important exterior views that are already provided at ground level (red lines in second horizon, dotted if they cross outdoor space). Again the crucial role of the holes is evident, even more so for the internal visual relationships of the third horizon. From the hills, viewers on the previously defined three belvedere areas would see each other enjoying the panorama across a complex system of holes and crossing landscapes of the roof. These numerous horizontal viewing relationships compliment the downhill vistas that are tangent to the main routes to form a complex spatial system that equals the rich complexity of the spatial systems of vistas in the English landscape garden. An important distinction to visual landscape systems like the Woodland Gardens at Castle Howard (fig. 5.5.2.6) still has to be made: in the Learning Centre, the visual relationships are seldom related to landmarks or monuments, but more like in a natural landscape only to (artificial) topographical features of the designed landscape. Therefore the system is also less distinct and hard to pin down on exact locations - but nevertheless clear in its appearance. Again, the desire for freedom seems to be dominant across the establishment of hierarchy.

5.5.3 Image or Metaphorical Form

It is in this perspective of creating greater freedom that the metaphorical structure or image form of the Learning Centre project should be understood (drawings fig. 5.5.3.1-2). Different than the architects at OMA, SANAA would avoid a direct metaphorical language in their architecture - they are advocates of abstraction. If I asked them for landscape references, the architects did not want to be specific (Interview Nishizawa A1.2.3.). The following metaphors are my own working propositions as the author of this thesis and not necessarily supported by the architects. As mentioned in spatial form (ch. 5.5.2.) the images are not part of a system of fixed reference points. Rather, they are spread like sheep in an Arcadian field, which is also a specific design attitude, called field condition (Allen 2000).

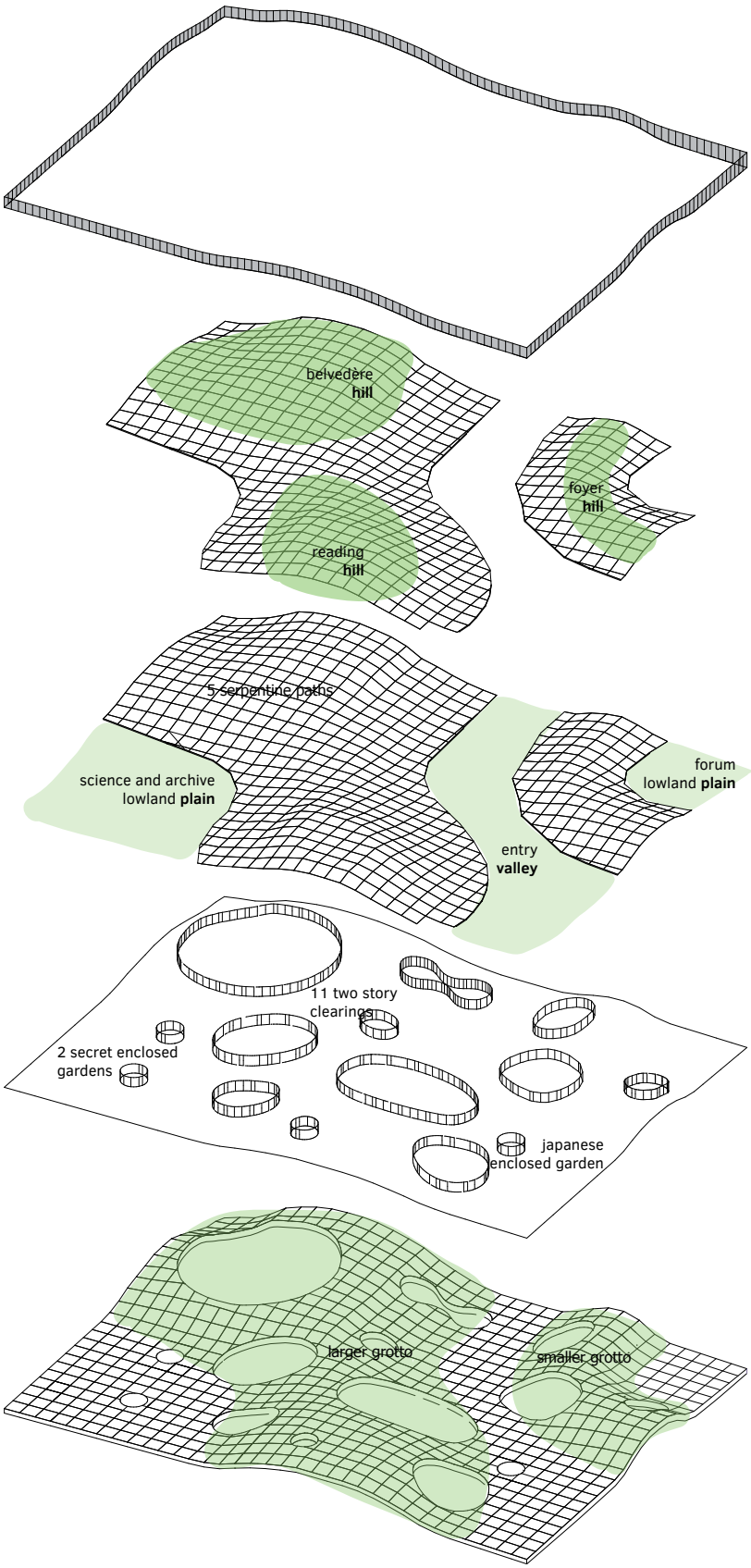
Mostly it is the materialisation and detailing decisions of the architects that - however reduced in their language - remind me, as any visitor, of their chosen theme of landscape. Again very different from other designers, they use abstract imagined landscape features as working references. For this analysis, the images were separated into two groups: The first group consist of images that refer to elements of natural landscapes like we would also find in a park as a representation of nature in an artistic manner. The second group is not images in the strict sense of Steenbergen and Reh (2003 or 2008) since they do not refer to nature but to elements of cultural landscapes or even of infrastructure or the built environment. Nevertheless, all are beyond the conventional metaphorical vocabulary of Western architecture and chosen by the architects to support their general concept of a built landscape. I will summarise both groups in this same chapter but treat them separately.

The first element, referring to nature, are the hills. They are not only a basic and spatial form but also cherished and treated as imagery. The same idea applies to the expressive exposure of the undulating slab in the facades; it looks like geological sections of a feature we recognise from OMA's Jussieu design which has rarely been seen, and never before at such an excessive scale of 166 meters in length (more than 500 meters of facade around four sides) with only one basic idea acting as the driver.

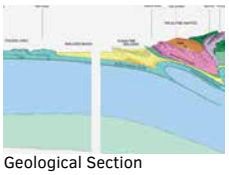
The treatment of the ceilings under the shells in raw concrete, together with the gravel surfaces and the dramatic lighting schemes, make the two passages and access zones seem like a grotto. The openings could also be described as clearings in a forest, especially after a few solitary trees with scarce foliage were removed to simplify the structural design of the south terrain. Their design according to lighting and cutting into the endlessly deep space could allow for this metaphor to take root.

A metaphor related to cultural landscapes is found in the different kinds of terraces. The round and stepped areas in the library are reminiscent of rice terraces in Asia, while the straight and simple moments comprising the restaurant terrace call to mind a renaissance garden at Palazzo Picolomini in Pienza (Bernardo Rossellino 1459) or the Villa Medici in Fiesole (Michelozzo 1458 - 1462; Steenbergen Reh 2003 p.32-41). At the Learning Centre terracing is used as a classical and straightforward approach to solving functional problems of slopes (compare to OMA's issues with book-shelves on sloped floors at Jussieu in ch. 4.4.). The same engineering or 'hands-on landscape' approach is visible in the handicapped ramps that are placed like serpentine roads. They are a playful allusion to the Alpine streets, a Swiss contribution to a mass culture idea of landscape as in the film Goldfinger (1964). Another way of mise-en-scene in the landscape manner is the placement of the info-point as a central actor; the position enhances a panoptic surveillance for the porter. The placing of rows of chairs like in a Greek amphitheatre, using the artificial hill slope (instead of a natural one) is another feature often found in landscape parks.

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Sections



Geological Section



View form South East

Hills





Valleys



West 8 Expoparc Yverdon



Clearings



Clearing Iwan Schischkin 1896



Lightfall. photos: author

Grottos



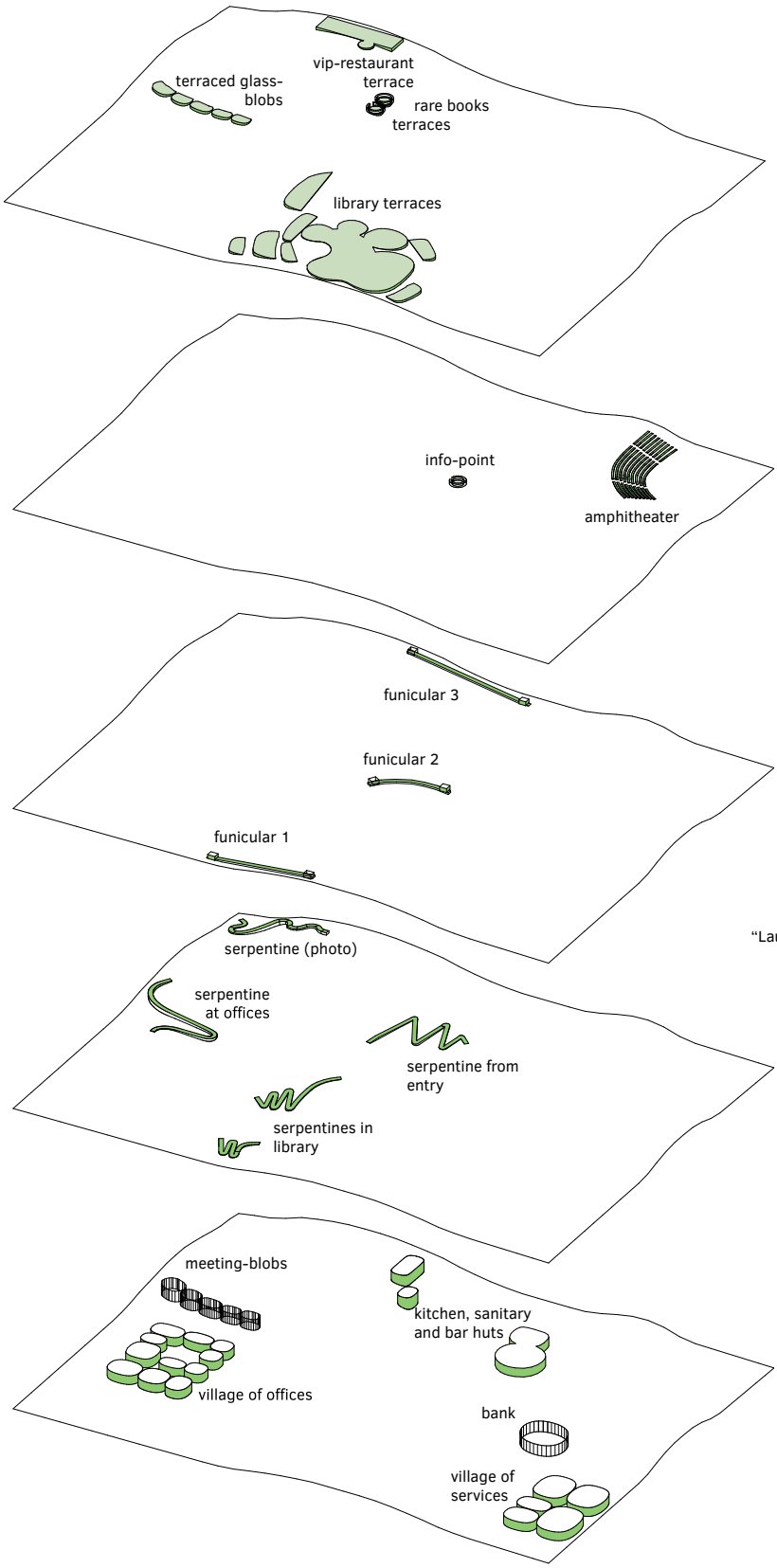
Painshill enjoyengland.com



Entry photo: Ariel Huber

FIG. 5.5.3.1 Rolex Learning Centre at EPFL, Lausanne **Natural landscape forms** (left) and **anthtopogenic Landscape** forms (right) (Drawings: author)
Image or Metaphorical Form

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Terraces



Rice fiel in Hyogo, Japan



Terraces in Library

Theater



Delphi photo: Leonid Tsvetkov



Forum Rolex

Funiculars



"Lausanne - La Gare du Funiculaire" ca. 1882 source funimag.com



Funiculaire phot:M. Azéma

Serpentines



Furka Pass street (Goldfinger)



Serpentine Path

Villages





Village of Offices

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FIG. 5.5.3.3 Slope raising to smaller foyer hill, view towards Lake Geneva across fences at opening 2010 (Photo Ariel Huber)

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The complex topography leads to treating non-public programs as a kind of miniature urbanism. The groups of offices are not placed in large contained areas or massive buildings inside the structure, but as clusters of tiny one or maximum two room huts. These could be seen as villages placed into valleys almost in an urbanisation of the designed landscape. Note the similarity to OMA's understanding of Jussieu as a city of books in a landscape. The pastoral landscape garden also knows such allusions to the villages as part of the picturesque.

The technical treatment of the landscape elements can be understood as the architects' comment on the many modern engineering works in the landscape of which both Japan and Switzerland have a wide range of examples. Sejima and Nijshizawa pointed out that Lausanne has "many beautiful examples about how to deal with the topography" (Nijshizawa Interview No.1 A2.1.2) and how they "went a lot of times" (Sejima idem). The city of Lausanne's relationship with the topography inspired them. This counts for the medieval and baroque city structure up to contemporary architecture. Bernard Tschumi's Flon transferium (1988-2001) dramatically articulates the verticality as public urban space. Also the three cable car elevators at the Learning Center remind a tourist attraction in Lausanne: the urban transport from lake (below, Ouchy), through station (centre, Gare), to city (above, Flon) is on similarly steep track cable cars.

As a large scheme, the composition of elements is not a hierarchically structured spatial enactment but rather a wide open field. The balance of elements and the use of the floor plan is laid out like an abstract painting. Besides functional requirements, the emphasis of the architects is on developing a proper equilibrium and sufficient space for the continuity of movement. Also it seems, as imagery is not important to their design attitude, it is not only disguising any obvious metaphorical allusion, but the composition hides certain spaces, allowing for the wider landscape to be foregrounded and the smaller elements to be reduced or set back.

5.5.4 Form of the Program

The last in our four layer analysis will be the program form. Here I can again show a very specific landscape approach to the issue of programming a large building of mixed uses. If it was important to the architects not to establish hierarchies, this approach will certainly be most affected in the distribution of program. This initial idea of non-hierarchical ordering on one floor is a programmatic one in the first place. It is the general attitude of the architect towards the spatial program as formulated in the brief and his specific answer is creating a continuous landscape as opposed to a building of staked floors (Interview SANAA A1.2.4.). So the functional zoning is not expressed with building up borders between zones. The emphasis is on exchange. The topography is used for allocating programs like they would be spread in a city according to various topographical fractures. With softened shapes and fluent transitions, the designs simulate organic growth. The functional groups are organised in valleys and on hills, like urban neighbourhoods of a large city, spread out or settled onto the topography according to rules of vicinity, accessibility, and views. These considerations are augmented with orientation advantages for light sensitive books to the north and light seeking restaurant-goers to the south.

If we again start from outside, the first group of programs are the two outdoor spaces under the slab. They connect to the central entry zone with a reception area and system of open hallways that first connect to the spaces we called public events on the south side. Two restaurants and a bar including the one with the required panoramic view on top of the larger hill are directly reached from here. A foyer takes the smaller hill in a classical disposition as an in-between buffer and noise protection zone for the auditorium, with a backside that could be used for foyer exhibitions.

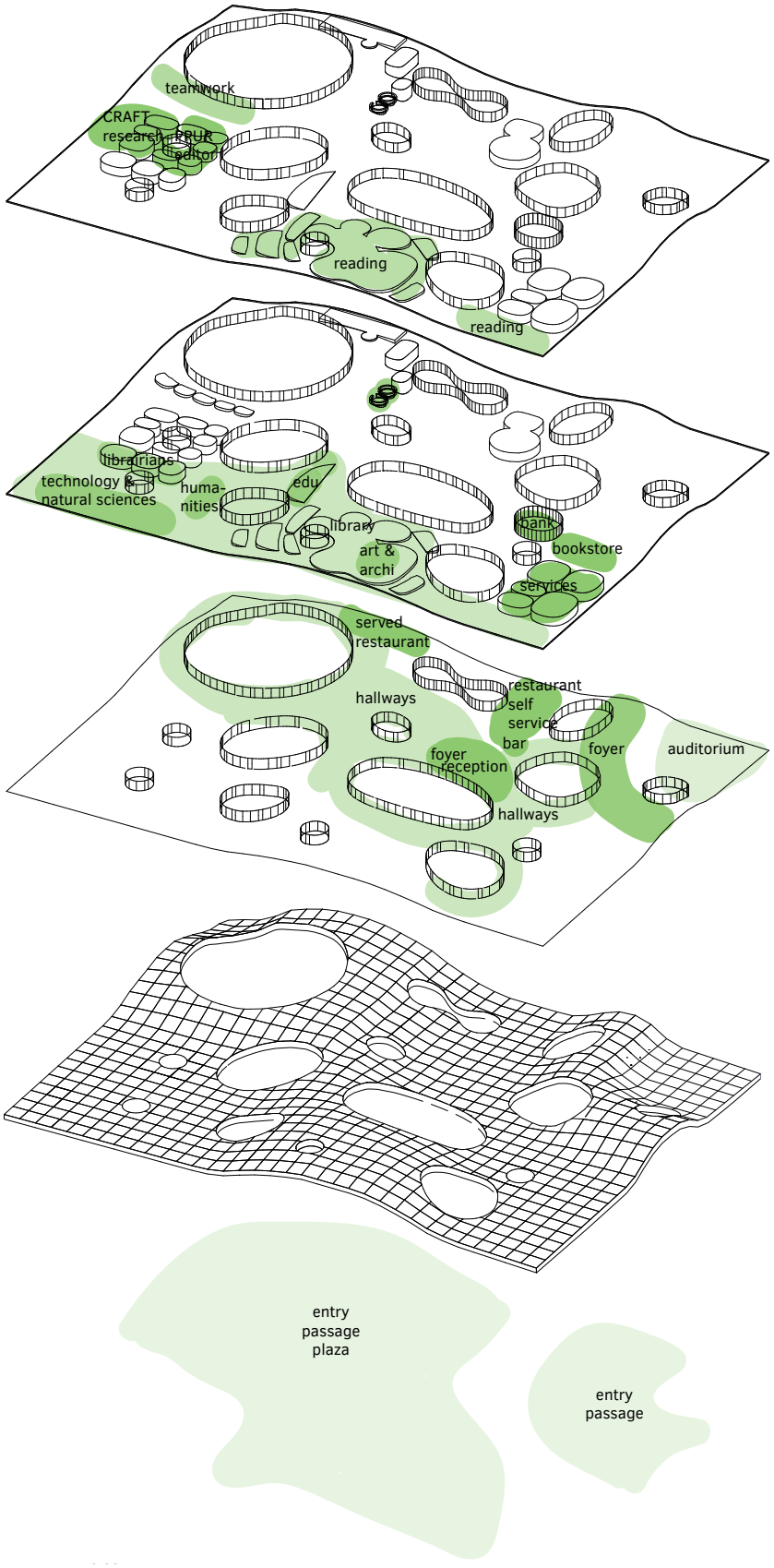
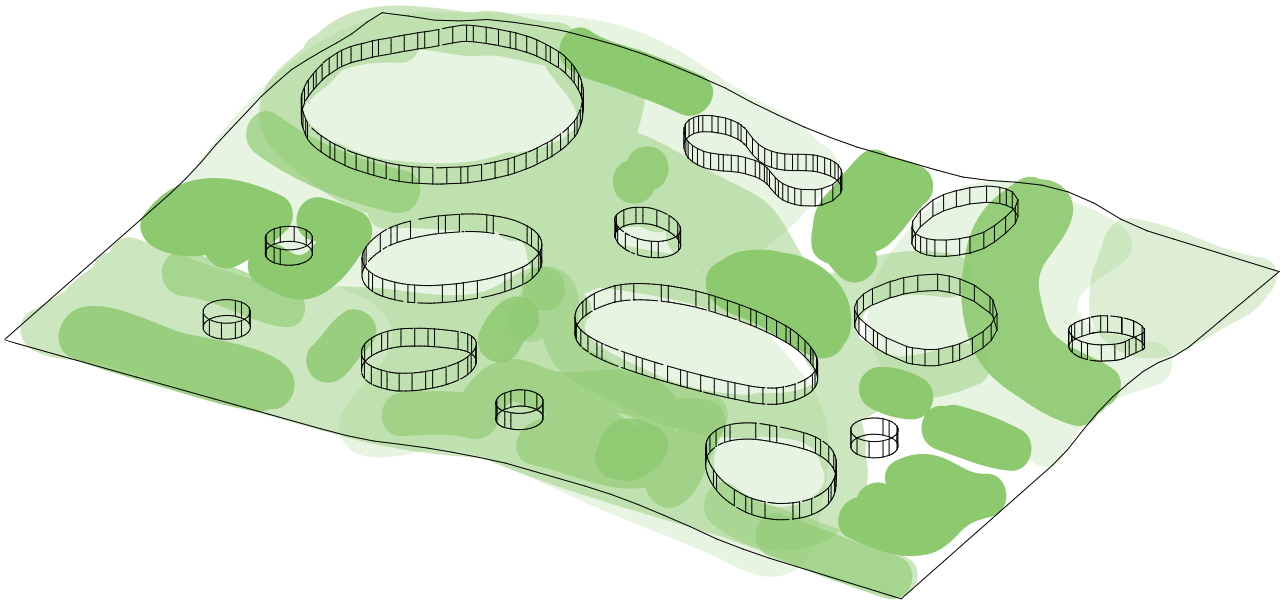


FIG. 5.5.4 Rolex Learning Centre at EPFL, Lausanne (Drawings: author)
Form of the Program

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In the central valley back to the north, a series of services is placed behind some working desks on a quiet north facade. Across the larger hill eastwards one would reach the library with a reception desk on top of the hill and a back office behind. More offices are found there for the university publishers and one research institute for teaching with new media (CRAFT) that is related to the general program of the future of learning. All of these described zonings are meant to loop into each other. Chance encounters, and fruitful exchange in the freest possible way with the least necessary hierarchy is the main programmatic idea that led the architects to design this building as a landscape – in their vision the equal to uttermost openness and freedom of choice.

5.5.5 The Composition

To summarise the composition of Learning Centre and its distinction into layers, I connected them in one drawing (fig. 5.5.5.1). Juxtaposing these layers, we can find two extremes in one design: on the one hand, the design is light, playful, it has humour and irony, and at many points it's simply funny. Especially image elements scattered across the hills and valleys make this almost seem like a huge scientist's playground. SANAA also indicated they would love to see children use the building and were to go on with a school design (Interviews SANAA No1 and No2 in A1.2.) as their next project. Science could be seen as a cultivated kind of game: the readiness of EPFL to play is part of their innovation approach. They wish to be a global player in the world of top technical universities. The EPFL supports multi-million dollar high tech gaming like the winning America's cup sailboat design of Alinghi. Play is certainly a facet not to be underestimated in the university culture of institutes that want to reach for a top position in technology development. It is gaming for example that established the biggest leaps in the mass culture of computers. Landscape could be seen here as the architects' proposal for the scientists' favourite playground – if you would agree that this can be playful, it can also become a positive cultural attitude.

Another and different conclusive observation about this composition of landscape layers is a great will for abstraction and clarity in means of expression. Of all three projects (and many others in the appendix) the Learning Centre most intensely plays with landscape methods as design strategies but is also the most abstract in its formal references. It not only feels surreal like walking on the moon, it could be seen like the architect's model of a landscape more than the gardener's replica of nature. This is definitely a landscape but the landscape is built of concrete, steel, glass, white paint, shiny surfaces, and light grey carpet. As the last pieces of nature are stones outside, the architects do not seem too disappointed that previously planned trees where not planted in the end (Informal Interview Yamada in A1.2.1.). So even if this architecture has a voluntary landscape composition, it comes without any greenery, without any direct influences or unobstructed references perhaps outside of the white painted surfaces.

However complete and sophisticated the landscape vocabulary in this composition, there are no one-to-one copies. Everything is not merely used as an analogy but used in a translation into design strategies, which is gratifying for my research. A Landscape analytical method flipped into a design strategy is to reverse the ground form of a building within its larger context, flipping landscape inside the templum. In spatial form the rich vocabulary of spatial and viewing relations of landscape is adopted and used in sophisticated manners. Images are not displayed or copied but used as engineering or theatrical strategies to solve functional problems and disguise anything that would disturb the primacy of the landscape experience of space. Program is not organised by walls or floors but spread across a landscape to enhance continuity.

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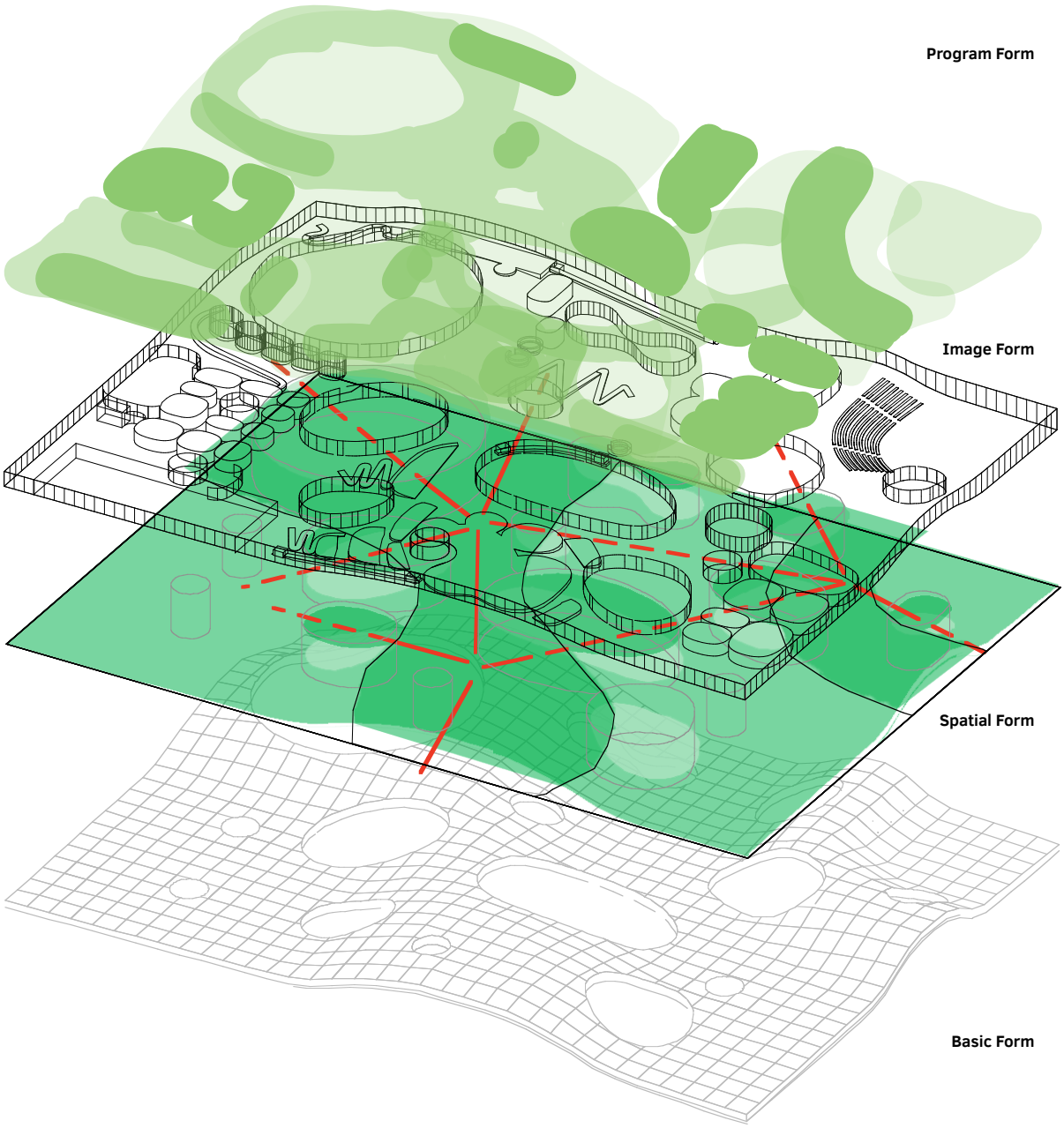


FIG. 5.5.5 Rolex Learning Centre at EPFL, Lausanne (Drawings: author)
The Composition

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5.6 Specific Methods of Design Analysis for Learning Centre

The importance of spatial and viewing relations for the Learning Centre's architecture has not exhaustively been documented in my previous analysis of spatial form. The combination of geospatial data and architectural models has led me to new insights during this analysis. I brought up the hypothesis that mathematical analysis of my spatial data would also allow insights into the qualities of the space and create a new application for landscape related research methods into architecture.

During the research process therefore I came to collaborate with two colleagues at TU Delft that had developed specific software for isovist field analysis, which is analysis of measurable effects in visual space. In this section I apply isovist-based measures on my own three-dimensional modelling to evaluate the Learning Centre.

An isovist field represents the view a person has from a given point in an urban, landscape or architectural space. In our disciplines of environmental design it is used for orientation or way finding in the urban fabric, for understanding visual impact of landscape features or (less peacefully) to know the shooting range of a visually guided weapon in military science (Benedikt 1979). Before Computer Generated Imagery CGI became available for architectural research, such analysis was drawn and built manually: Minkowski-models of space-time phenomena (like movement or growth) allow one to visualise time and space in a physical model. Such models were cut out of cardboard or transparent plastics. They are named after Hermann Minkowski (1864–1909) who formulated space-time mathematics as a common mathematical structure to explain his former disciple Albert Einstein's theory of special relativity (Minkowski 1909 and 1910, Einstein 1905, et.al. 1925).

For this case we chose a novel isovist application developed by two colleagues in the department of Urbanism (Bilsen & Stolk, 2007). Our method was described in our common paper for the Geospatial Summit Delft of which the following abbreviated description is derived (Stolk, Jauslin, Bilsen 2014).

Isovist analysis is applied in research on urban forms (i.e. Stolk 2015), regions (i.e. Lynch 1976) and landscapes. Surprisingly it is very rarely used in architectural space. To create space, architects still seem to rely on intuition rather than on numerical analysis. Furthermore, isovists are often two-dimensional and do not involve the more complex relations of three-dimensional space in architecture. Nowadays 2D isovist analyses are used for design purposes in landscape architecture and urban planning carried out i.e. with the Depthmap software in SpaceSyntax or in the Geographical Information System ArcGIS (Nes 2011). We could however seldom find applications in architecture with the sole exception of an analysis of Frank Lloyd Wright's house Fallingwater by Peponis and Bellal (2010).

In their study of Fallingwater[117] Peponis and Bellal (2010) use isovists with Depthmap on the inside of the building. Beyond (open-) plan study, they cross levels taking into account (relatively

117 For Wright's concept of modern "natutal architecture" at Fallingwater see my section 3.1.7. in this thesis.

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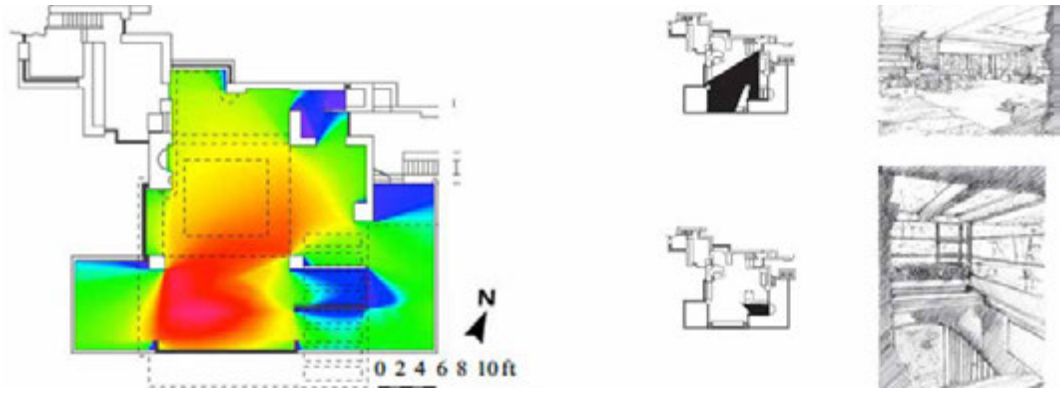


FIG. 5.6.1 Isovist analysis of Fallingwater by Peponis & Bellal (2010, p.7,11)

controlled) views across stairways. However, their visual space analysis remains only at the interior, concluding with a behavioural focus on usage of the interior space and plan (fig. 5.6.1). They are not addressing the crucial continuity of inner space at Fallingwater into the outside landscape, nor Wright's design development based on the unique landscape feature of the Bear-River falls. So even if this house is a case closed to my field of research, Peponis and Bellal leave inside-out view relations as a gap in isovist research.

The novel software called Aisophist was developed especially for 3D isovist analysis at TU Delft by Van Bilsen (Stolk, Bilsen 2012, Nijhuis, Lammeren, Hoeven 2011). The particularity of Aisophist is that it uses three dimensions and describes the view shed as a volume (fig. 5.6.3 3D-Isovist) instead of a surface (fig.5.6.2 right, 2D-Isovist, Stolk 2015 p.306)

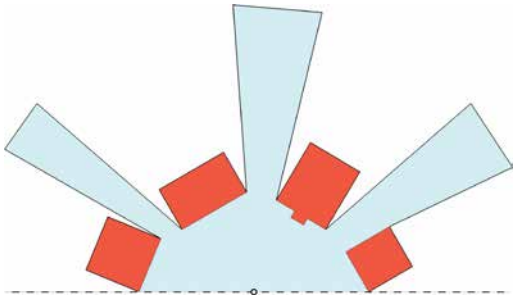


FIG. 5.6.2 2D-Isovist plan

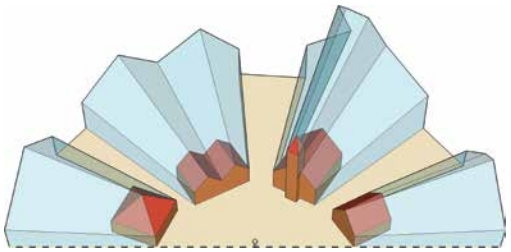


FIG. 5.6.3 3D-Isovist perspective (both: Stolk 2015 p.306)

Since their introduction by Benedikt (1979), isovists have been an active field of research on landscape qualities or systematic urban research of axial relationships in Space Syntax (Hillier and Hanson, 1984). We felt however that existing analytical methods are too far from real human visual experience. The aim of our specific new analytical isovist field method we consequently developed for the landscape method analysis of the Learning Centre. It applied the current state-of-the-art isovist calculations to a curved building shaped as a landscape, and allowed us to numerically support the design analysis of the spatial form.

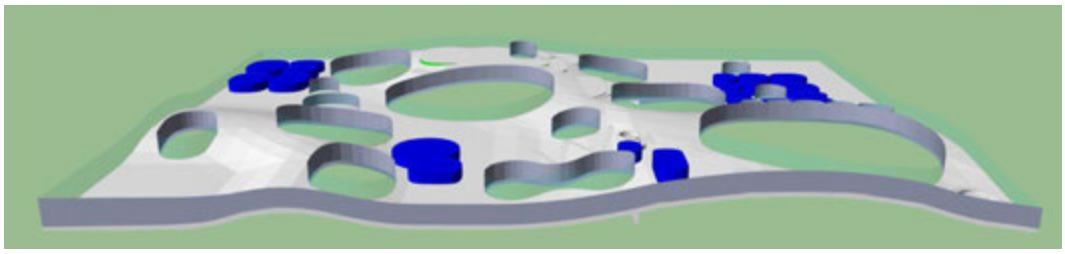


FIG. 5.6.4 My FormZ 3D-CAD model of the Rolex centre as used for the isovist analysis without the roof. (CAD-modeling: author)

The Leaning Centre has a curved floor and a lot of glass. The building geometry poses a severe technical challenge to our proposed analysis methodology and interpretation of the results. Transparent materials represent a technical complication in computer isovist analysis which was not yet been addressed in the literature. This problem had to be technically overcome (as further discussed in Stolk, Jauslin, Van Bilsen 2014) .

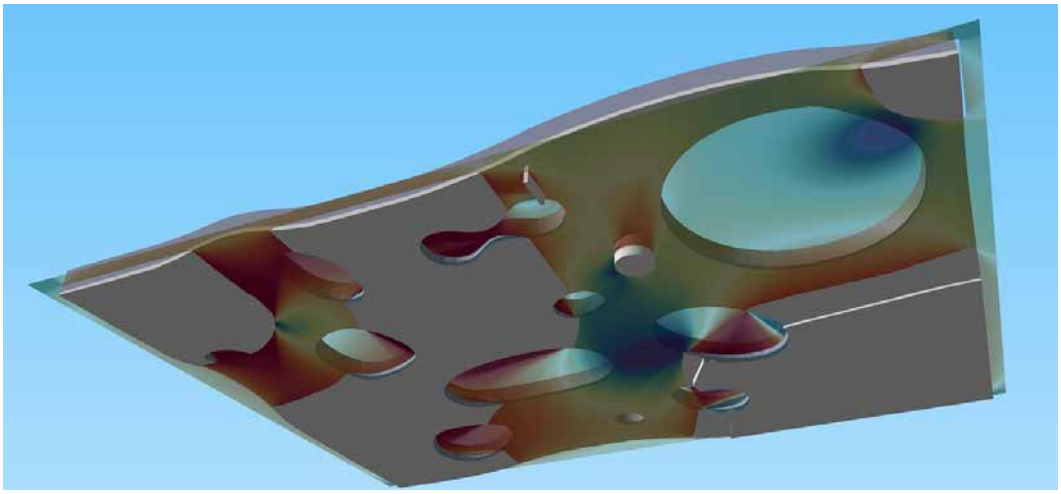


FIG. 5.6.5 Result of our isovist analysis (drift), together with my model, looking from below
(Data and visual: author and Arthur van Bilsen)

The analysis results cover isovists in two planes of 579,100 and 677,764 vantage points, each 1.75m above the (curved) floor, and with 390,150 lines of sight. resulting in a total of 490 billion lines-of-sight. It took about 15 hours of computer calculation. [118]

One of the my main claims developed in my analysis for the spatial form (section 5.5.2) involves complex sight lines and the thesis of three horizons. With my colleagues we looked specifically at a 2D isovist measure called diameter. The diameter is the length of the largest stick through the observer's position in the isovist. It tells us on which positions in the Learning Centre observers can have the longest lines of sight in both directions.

Fig. 5.6.6. The 2D isovist measures diameter from the interior space. We indicated three perpendicular view directions, indicated by white lines with black endpoints.

118 On Intel Core 2 Duo CPU E6550, 2.33 GHz, 32 bit OS, 2 Gigabytes of RAM, and 2 Nvidia Geforce 8800 GTX graphics cards in Sll mode with 1.5 Gigabyte of memory between them.

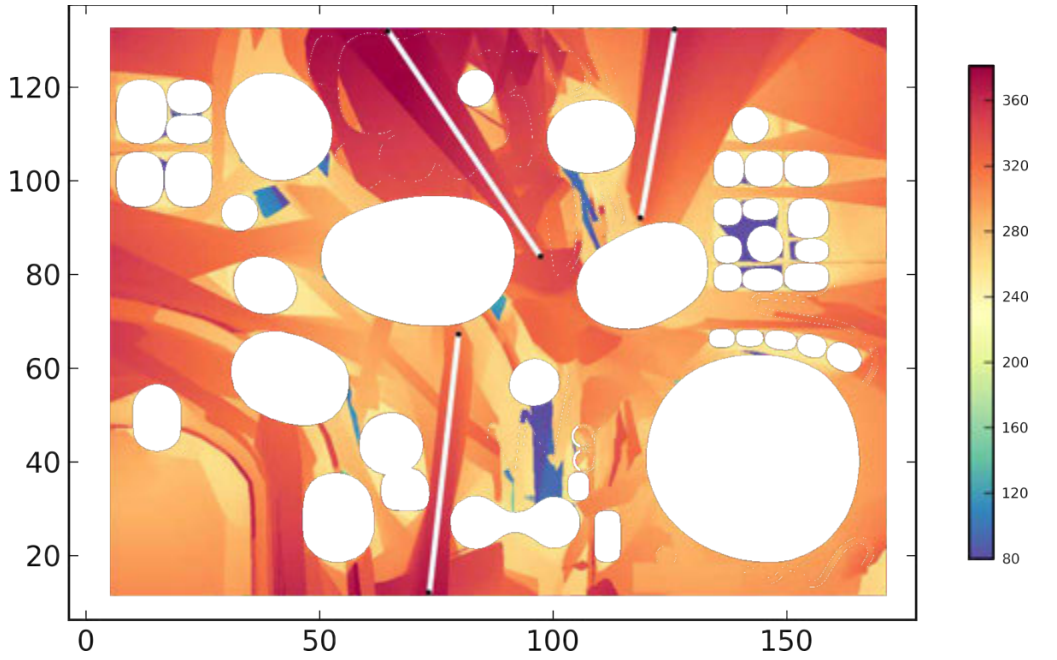


FIG. 5.6.6 The 2D isovist measures diameter from the interior space. We indicated three perpendicular view directions, indicated by white lines with black endpoints.(Data and graph: author and Arthur van Bilsen)

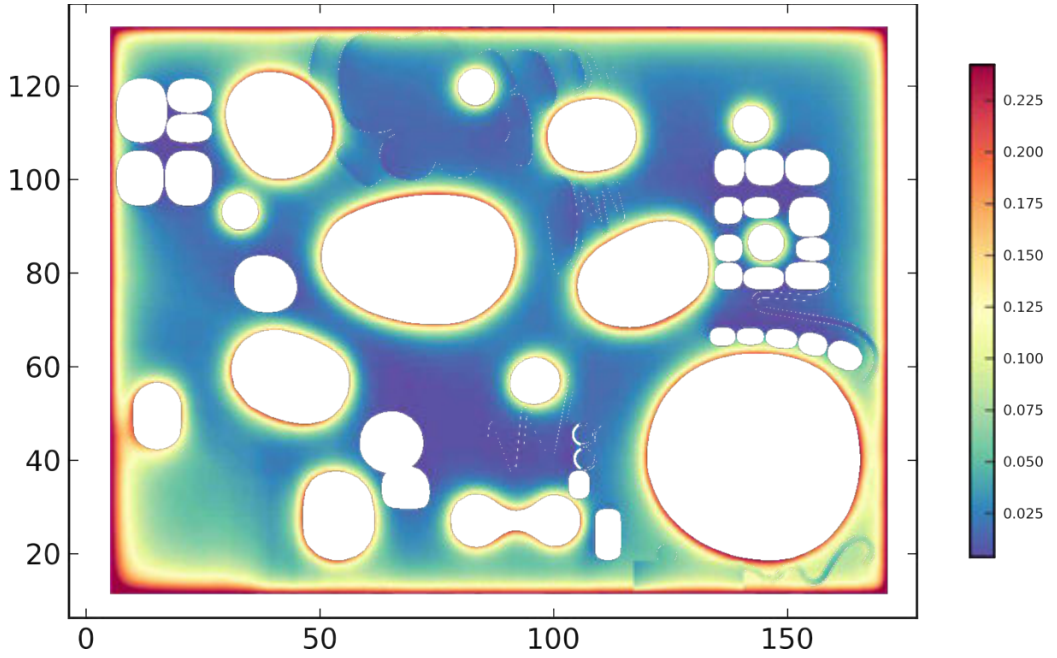


FIG. 5.6.7 The isovist measures sky, from the interior space. The red and yellow areas, receive relatively more natural lighting. (Data and graph: author and Arthur van Bilsen)

In my panoramic collage at chapter 5.5.2. I have demonstrated how the architectural landscape provides for a varied scenography of channelled and panoramic views that interweave the building with its campus, the city at 3km distance, Lake Geneva and several peaks of the alps, including Mont Blanc, 79.5 km south on the French side of Lake Geneva. The Isovist analysis of the outer view relations puts that into a plan relation.

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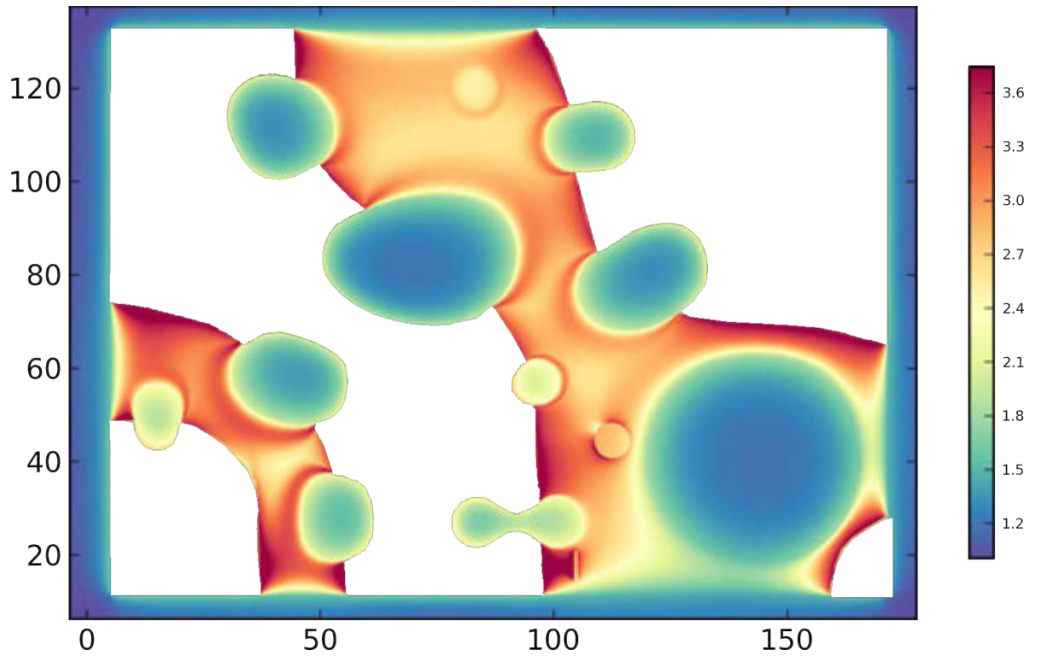


FIG. 5.6.8 The isovist measures relative standard deviation from the exterior space.
(Data and graph: author and Arthur van Bilsen)

From the isovist field sky (fig. 5.6.7.) we can show how that outer wall made of glass provides a large amount of natural light. Looking around, one experiences the wavy floor as hills. From which one can look outside unobtrusively to the horizon. The field also shows lighter rounded areas (bounded by glass) where the sky can be seen. That may remind the observer of open spots or ponds in an elsewhere darker forest. The lower left area receives the most sky light, and this corresponds to its functional design as an atrium.

In the building process description (section 5.4.) I explained how much effort was put into the design and structural engineering of a particular visual relation from the inner elevated areas through these round openings across lower roofs towards the surrounding landscape (Grohmann 2008) that we called clearings.

For the lower ground, dividing the standard deviation by the average yields a measure (STAV-30) marks open spaces (blue bubbles on Fig. 5.6.8.) as well as walls (red). The blue bubbles are the holes we called ‘clearings’ in the metaphorical form analysis. They would show up here not only on the edges but in the centre of the building. They include an entry - which is in the centre of the building - a particularity of the design of the Learning Centre. The blue areas show many gathering spaces in the open of the ground floor, that are in the midst of the building - a sequence of open spaces that qualifies the two caves under the hills as a unique feature in this building. The complex pattern in our diagram inside, as opposed to the simplicity at the border of the building shows how the encounter of ‘outdoor’ and ‘indoor’ space is spatially much more diverse inside the plan than on its edges.

The Rolex centre, with its curved floor and ceiling, its complicated shape and inside-outside interaction, posed a severe challenge for isovist analysis and interpretation. Nevertheless we showed that 3D isovist measures can rigorously be applied to architectural spaces, while at the same time we highlight the challenges of 3D isovists.

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The great variety of landscape strategies that have been used in designing this building can better be understood through the specialised analysis with isovist. For my thesis I can derive from this specific analysis, that landscape in architecture could enlarge architectural design with the use of more advanced methods of numerical analysis of spatial qualities. Up to now architects often leave such numerical modelling to specialists (i.e. in daylight simulations, acoustic simulations or shadowing studies). The main field of visual space interaction and its design is however still managed mainly by model building and perspective drawing, like since the renaissance, even if at increasing speed through computer modelling. If we would integrate spatial analytical tools like Aisovist into our daily understanding of space in architecture – and into the daily practice of computer software – a new spatial understanding of the built space as a visual environment would trigger more landscape experiences – and in this, a wider quality of space in architecture. With the above application of isovist analysis to the Learning Centre I point out a direction of possible knowledge transfer from landscape and planning analytical methods to architectural design strategies, that so far have not been used.

5.7 Landscape Architectural Attitudes at the Learning Centre

Just how much do SANAA use the design attitudes of landscape architecture? (Marot 1999, ch.2.3). Their relation to the anamnesis of the site is certainly intense, although approached clearly and intuitively from the view of an urbanist that does not delve into geological or even lengthy historical research. Although incorporation and reinterpretation of the existing context, be it built or natural, occurs in kind, SANAA's approach to history is rather one of creating a story than one of reacting to it. It's almost a work of science fiction creating a surreal landscape rather than an actual reaction to the existing landscape. The autonomous figure only relates with a few elements to the site. Compared to the far outreaching historical relations of our other two cases, theirs is rather light and playful - avoiding even at times exact relations in preference of an autonomous statement.

The process attitude can be seen in the creation of an 'anti-object'. Even if the Learning Centre's artificial landscape is distinct and intentionally designed, it is also a complex relational system. The design process that led to Learning Centre seems rather intuitive but with disciplined control, in a kind of formal mystification, we find a functional synthesis. Natural processes, as we would expect them in landscape architecture, are not involved in this purely formal design except maybe for the treatment of natural lightning during the day in the depth of the building. I would like to describe the attitude toward landscape process at the Learning Centre mostly as a transformation of the whole campus through implementation of a new activating core: the new insert acts as a sort of urban pacemaker with relations across both campuses and into the city and the surrounding landscape: The architects were curious as to how people would actually use their design (Interview No2 A1.2.). They seem to be triggering a certain process of institutional transformation by creating a new learning environment. This experimental composition with a new mixture of ingredients seems to refer to the transformation processes as we find them in landscape designs - like a park can transform or structure an urban tissue this building acts on its (not very vegetated) campus environment.

The spatial sequencing of course is a key attitude in this design. In circulation, continuous space, and the sophisticated treatment of horizons and views, this building achieves a previously unknown richness of an almost baroque density. The reduction of formal elements other than those details that describe the space enhances this attitude. A subtle but clear influence of the visitor flows to the forms gives a clear direction for the architectural detail language to support the predominance of space and movement. Routings and views are intensely used - but all of it is less directional than in the Jussieu project. At least in the initial set up (that was maybe too challenging) many alternative routings for each part and destination remind really of an urban park setting for a great variety of programs. I have particularly enjoyed this freedom in spatial experience - and the sophisticated composition of ascents, descents, strolls, and passages along a great variety of changing views. I think the spatial richness stemming from this freedom of movement is stronger here than any other building I visited, except maybe if the Jussieu libraries had been built.

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The contextual relation of the new building in campus and surroundings is ambiguous: the composition is at once very autonomous but also very contextual. The architects regard the outer context as a means of orientation, carefully monitoring transparency. On a misty day it is not easy to orient oneself in the absence of these hierarchies. No conventional “turn left or right” kind of instructions apply. Through the inclusion of these contextual relations into the inside of the building contextuality is in such a way enhanced. The creation of a contextual system beyond the horizon of the building - rather than a solitary object - is what makes the Learning Centre a key piece to future urban development of the whole campus. The manipulation of the horizon in the building is rarely so strongly related to context than here.

TABLE 5.7 Resume Rolex Learning Centre Lausanne

Landscape Design Strategies at the Learning Centre Lausanne			
4-layer design analysis (Steenbergen & Reh 2003)			
Ground form	**Spatial form**	**Image form**	**Program form**
Continuous floor topography elevating to panoramic level, providing openings underneath. Also readable as two merged hills	Routing flows around undulation. Strong multi axial viewing system, reacts to form, consciously manipulated horizons,steered views in a landscape park style. Spatial principle of undulating hills.	Main image of single folded slab, simple geological section. Landscape imagery elements are: grotto, slopes, hills, terraces, amphitheater, huts, clearings, serpentines, funicular, small inner gardens. Key metaphor of minimalistic and surreal abstraction of a landscape	Programming strategy of colonising a landscape statically. The building re-framing an inner city in the open campus, contains a park as an interior landscape, like a reverted frame.
Landscape attitudes (Marot 1999)			
Anamnesis	**Process**	**Sequencing**	**Context**
Science Fictional and almost avoiding historic relations in favor of autonomous statement	Spatial and institutional transformation of campus through implementation of activating core.	Sophisticated sequencing of paths and views with several horizons. Less directional than Jussieu but with many alternative routes. Composition of ascents, descents, strolls and passages along variety of views.	Ambiguously both autonomous and contextual. Manipulation of horizon reaches beyond limits of the building.

5.8 Landscape Design Strategies at the Learning Centre

In explaining the Learning Centre, SANAA’s architects oftentimes referred to landscape and used the term as a guideline throughout its realisation. The Lausanne case is a key example of landscape as a concept in architectural design. It contributes to the amplitude, variety and reach of landscape strategies in architectural design. It would be very difficult to describe this building with different means than those relating to landscape design. As already stated in the composition analysis, landscape ideas have been translated here into design strategies rather than only quoted visual analogies.

How does SANAA apply landscape design strategies in architecture at Lausanne? What are their motives and goals to do so and what do they accomplish? (Q. 1.1.3.)

The main motive for SANAA in my opinion was to provide a single uniting space for all university members in a non-hierarchical way. To reach this goal the ground form and spatial form where manipulated, landscape metaphors introduced and programming of the space was set free from structural constraints. In the application of landscape strategies in the design they had to further develop the visual impact of grading with large scale physical models. New construction methods in particular for computer manufacturing concrete formwork and a complex reinforcement structure had to be developed to make a seemingly simple idea build-able. This included the use of complex topographical models and new digital tools developed for the formwork. The design resulted in a complex logistic construction sequence, as for example the continuous concrete pour of the large hill in only three days. In terms of building measure control, the limits between measuring natural morphologies and artificial topographies also become fluent in a technical sense.

Here again we see a social program as in the Jussieu project, though compared to the rough looks and the high expectations yielded by the Utopian and critical Jussieu project for two Paris Universities, SANAA delivers the perfection and polish of a well crafted and still more moderately novel project for EPFL Lausanne. A certain conformism that works well in the Japanese and Swiss social context is at play here – a Swiss Federal University in the 21st century is far from the socialist revolutionary context of Paris in May 1968 that was evoked at Jussieu. The architectural perfectionism of SANAA lacks that rebelliousness; on the contrary, the Learning Centre required the sponsorship of a luxury brand and a kind of consensus that is sympathetic to the architects' design in order to make this real.

I would like to elaborate my argument further than the documentation of an application of landscape as a design guideline into our own theory of landscape design strategies. I am more keen on showing their interrelation in a spatial composition than leaving each as sole elements. Landscape design strategies – this might be the most important intermediate conclusion from this case – will not be subdivided into particles nor statistically proven.

Which landscape elements are applied to architecture at the Learning Centre, what concepts of landscape are applied in architecture, and how is their formal composition developed? (Q. 1.1.4.)

In my four layer analysis I found a number of composition elements that contribute to spatial experience, unexpected and rarely known from works of architecture before this one. By means of inversion of the ground form the architects do not put a building into a landscape but bring the landscape inside of the rectangle of the building perimeter. In consequence, the spatial composition of inside outside relations is used to structure the building itself more like a park than like a house. The materialisation and single solutions use a whole vocabulary of metaphorical analogies to landscapes. The programming is consequently more a zoning in that continuous landscape, like on an urban plan than a division into rooms with the usage of a conventional floorplan.

The whole composition in all its elements prioritises the spatial experience, which I see as the core concept of landscape applied in this architecture. While using the four layer model in understanding this architectural composition I showed how the manipulation of the basic form and the spatial relationships influenced the three dimensional perceptive space. I also showed how landscape imagery appeared to be divided into natural and cultural references. If landscape is nature or culture is sometimes not differentiated by architects. I then found how a landscape approach could be an approach to program in a completely different manner than architects are generally used to

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FIG. 5.8.1 Worn railing at barrier to books ...

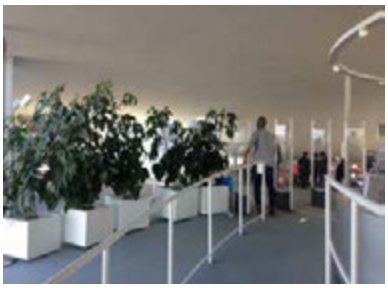


FIG. 5.8.2 ... library user slipping trough ...



FIG. 5.8.3 ... barrier of flower-pots.
(Photos: Matthew Skjonsberg)

dealing with: letting the program emerge from a manipulation of space rather then letting the space be manipulated by the program. All of these findings may not have been so clear if I did not follow the chosen analysis in the 4-layer model. It extracted useful methods, the first to be summarised under the term of landscape design strategies.

How does SANAA understand the idea of landscape and its design strategies for application in the Learning Centre's architecture? (Q. 1.1.5.)

I mentioned in the attitudes that SANAA established with the Learning Centre a contextual system beyond the horizon of the building. It is not a solitary object but strongly connected to a wider development strategy. The application of landscape design indoors serves a metamorphosis of spatial and intellectual context of the University.

If landscape strategies ought to be useful for architectural design, and not just about defining a new layer for art history or a limited space for "dumb theory" (Allen 2000 see ch. 1.4.) we will have to cherish their lively and dynamic character of constant metamorphosis.

The Learning Centre project, reflecting the future of science, is based on the dominance of experiential qualities. As evoked before, looking at landscape strategies is a holistic approach to architecture (ch. 3.1.4). Consequently I propose to understand this architecture as a whole experience rather then trying to cut it into slices with an experiment that is opposed to its nature.

What kind of landscape strategies are successfully applied to the design of these different cases of architecture? (Q. 1.1.6.)

I observed two peculiar types of reactions in the first weeks (which Ariel Huber or I were not allowed to photograph): students would use only flat spaces for working - especially to plug their laptops in at the tables. They would also move the available sitting bags towards the facade or a column to lean on that, looking for any vertical limit that the architects where so keen to avoid. On the official photo shoot before opening, the project manager carefully saw to it that these coloured sitting bags were arranged like sheep grazing in the pasture.

Also the other observation raises questions about the practicability of freedom. One of my first questions I asked to a librarian (on the December 2009 visit) was how they would ensure books from being stolen. The official plan then was to use an electronic system that would automatically charge a book taken onto the account of the one who removed it. However such virtual limitlessness did not seem to work as of April 2010. Instead, the librarians had to build up a wall of square (sic!) flowerpots left and right of the electronic control gates to force visitors through their checkpoint. They would cross the landscape in an ugly way. A visitor compared this to the Berlin wall, probably

referring to the ignorance of its spatial impact. The client's greenery absurdly cuts through the continuous landscape (fig. 5.8.1). Despite the flower-pot-wall, users regularly slip along bars to avoid the control panels or take alternative routes (fig. 5.8.2), which can be seen in the strong abrasion of the white paint (fig. 5.8.3).

Fig. 5.8.1-3. Improvised border building around the EPFL Library in March 2017- Photographs by Matthew Skjonsberg

Like many other innovative buildings, it is not always predictable in planning how experimental architecture will succeed. The Lausanne campus building and its usage are something to be watched further in the future to learn more about the possibilities and limits of application of landscape design strategies.

Still the second case here leads to an intermediate conclusion of my main question.

In what way do landscape design strategies change how we understand and create architecture? (Question 1.1.1.).

The architects' aim of creating a "landscape for people" (Nishizawa 2008 in El Croquis 139 p.31) is not a goal in itself but a means to an end; to create a human environment in relation to nature would be a goal for their landscape strategy. Like the architects I would like to keep walking though the Learning Centre before concluding, we ought to keep our thoughts in motion.

The analysis of the Learning Centre is surely an important part of my discovery of landscape design strategies for architectural design. Landscape develops here as the aesthetic mediator between nature and human. With the Learning Centre SANAA display their craft in organising a building space as a landscape. Aesthetically and intuitively the Learning Centre provides a unique spatial experience and in surprising and delightful ways connects the building and the environment in a skilfully arranged landscape composition. SANAA have broken down programmatic separation and provided for a continuous space on one level. All structures smoothly envelop human space while giving immediate access to surroundings, using no (or less) walls and defining space more to be explored - than separated.

The project serves a client's program but experiments with it or defines its own need. Certainly architects could engage in a more fundamental reflection about what we need and how we could achieve that. They may not be able to do it when competing for clients and their prestige projects.

With the Learning Centre SANAA remained playful but also precise in their design. Aesthetically and intuitively the Learning Centre provides a unique spatial experience and in surprising ways connects the building and the environment in an arranged landscape composition.

The conscious use of spatial means, the mastery of craft that we encounter at SANAA's works points in a direction where future architects may find solutions. Being conscious of the goals and needs of a human dwelling - living, working, and learning - prospering in an environment should be more of our concern. Making a liveable and lovable environment by transforming spatial conditions - such could be a fertile way to engage with landscape for architects.



FIG. 6.0 City of Culture of Galicia Santiago in de Compostela 1999-2015 (Photo: Ariel Huber)

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6 City of Culture of Galicia in Santiago de Compostela

Peter Eisenman Architects

1999-2015 construction halted

The choice of City of Culture of Galicia in Santiago de Compostela will be explained from its validity as a singular case (6.1.). I will explain the context of this project also in the religious world of the pilgrimage to Santiago de Compostela (6.2.). My impression from the two field-trips in 2014 will precede the analysis (6.3.) and again building this large and ambitious project posed a specific challenge to the merits of a few technical considerations (6.4.).

As my documentation will show, this project is designed in a process of layering - not very different form our own analytical model in principle. However, our own layer model of ground form, spatial form, metaphorical form and programmatic form will alter the reading of the project (6.5.). Exactly these analogies between design architectonic process and landscape architectural analysis seem to be worth a specific method of design analysis. I will try to show composition strategies of shifting and shuffling of layers, altering and transforming of scales, stratification and even the inversion of layers as a specific method of this design (6.6.). Composition analysis should show that the specific landscape attitudes in this project are related to the idea of the palimpsest - multi-layered writing or 'artificial excavation' as Eisenman calls it in my interview (6.7., A1.31.).

One can therefore find many entries in landscape architectonic attitudes but also a surprisingly contrasting position of the author's denial of landscape influences in favour of what he calls the 'excess of reason' to understand this complex design (6.8.).

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"... you (James Corner) are trying to make a dialectic out of this (Laurie Olin's 'pragmatism' and Eisenman's 'philosophy dialogue'). Jacques (Derrida, Philosopher , 1930–2004) taught me a great lesson when I worked with him. He said, "You know Peter, architects need not be good philosophers." I'm a really bad philosopher and architecture is bad philosophy. Okay, it's probably also bad theory. When I say a discipline is made up of problems, I'm not talking about solving problems, I'm proposing to open those problems to inspection, whereas Laurie says that he is interested in problem solving. You can sit here and say that, but you can't build a building just on air, or theory."

Peter Eisenman (*1932) [119]

6.1 Choice of City of Culture for Architecture with Landscape Methods

The City of Culture takes another particular position in the field of my three case studies. Its choice for analysis has quite a different set of reasons than the two previous ones.

- First, the project, building a city on a hilltop with a shape, formal language, and materiality of a barren rock formation, is an architectural landscape in itself. Anyone looking at it would wonder why this evident landscape form was chosen for this large cultural centre and how its architecture was created.

- Second, in 2008, it was one of the largest building construction sites in Europe, attracting controversy and debate over its prolonged construction (as explained in 6.4). Such a major construction project at such a peripheral location in itself raises the question of the usefulness of such architecture. Does it generate landscape as an excuse or as a solution to the question of such bigness?

- Third, the project has been raising fierce discussions among critics and architects, because of its form and appearance. Anyone visiting this place could ask, what good is a mountain that one cannot climb? At City of Culture we can question if in general such apparent landscape form does have any use in architecture.

- Fourth, the City of Culture offers a different kind of complexity. It is not the complexity of entanglement and critique of context that is a career-long subject of the architect Rem Koolhaas, in apparent relation to Jussieu. It is not the experiential density of landscape phenomenon reduced to the maximal simplicity like we can unravel in Rolex Learning Centre. City of Culture has a complexity from within architecture, one founded on architecture, that turns around architecture itself. Peter Eisenman's architecture drags the subjects of place, genius loci, and cultural and historical context into creative process as opposed to counterpointing them. The contextual strategy (as it will

119 Answer in Informal Discussion at University of Pennsylvania Institute of Contemporary Art 20.9.2006. In response to an audience question about the place of theory in Landscape Architect Laurie Olin and Architect Peter Eisenman's cooperation by Landscape Architect James Corner. (Porter 2006, p.94)

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be explained in interviews A.1.3.) was to create not a symbol put onto Galicia, but a new part of Galicia itself. The design imitates a process of growth (and even decline) as complex as that of the establishment of a cultural landscape (and its erosion) on the grounds of nature.

- Lastly, the position of Peter Eisenman in architecture theory after 1980 poses a singular impact. Rarely anyone gets around the man who 'killed' modernism in architecture (Lynn 2006 p.178) and 'like no other since Alberti and Piranesi in architecture spread an intellectual, personal and creative chaos.' (Lynn 2006 p.177).

At any approach since 2008 Eisenman does deny to be interested in nature, and (he sees no difference) in landscape, especially if asked in relation to City of Culture. Asked about the importance of landscape as a counterpart to modern urbanity he says to be scared alone in the countryside: "I'm anti-nature ... don't ask me about ... nature. I don't care about nature. ... . If you like nature, be a landscape architect! ... I love landscape architects" (Eisenman 2010, in Response to Matthew Skjonsberg at Berlage Lecture 23.3.2010). With such a statement Eisenman explicitly stresses the same "divide" of the disciplines others question in reference to his work (see Balmori Sanders 2011 p.68).

Eisenman's relationship to nature in architecture is explicit: "Nature is never used as a reference in my work". (Eisenman 2010 in Interview Gomez-Martin p.4). Similarly his answers to my interview deny a relation to nature (Eisenman 2014 in Appendix 3.1.). He admits though to be interested in the "fabrication of nature" (Eisenman 2010 Berlage Lecture op. cit.) and refers to the design process of City of Culture creating an "unnatural nature" (Eisenman 2006 in Belogolovsky 2016 p.25). However distinct the foundations of architecture may be in his theory, and however clearly they may be separate from nature, Eisenman obviously undervalues landscape. His statements do not differentiate between gardens, landscapes or nature - which is something I ought to do with this thesis however (as explained in chapter 2.2.). This differentiation will be crucial to our following analysis and put the project of City of Culture into a new perspective. , and cultural and historical context into creative process as opposed to counterpointing them. The contextual strategy (as it will be explained in interviews A.1.3.) was to create not a symbol put onto Galicia, but a new part of Galicia itself. The design imitates a process of growth (and even decline) as complex as that of the establishment of a cultural landscape (and its erosion) on the grounds of nature.

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6.2 Context of Santiago de Compostela

The ancient city of Santiago de Compostela is the third most important place of Christian pilgrimage in the World after Jerusalem and Rome. According to the legend, the body of the apostle James the Greater came to the shores of Galicia after his beheading in the year 42 by Herod Agrippa, Roman King of Judea. Saint James (in Spanish ‘Santiago’) is the patron saint to the Christian nation of Spain that he had evangelised. During the Moorish rule of Iberia from 711-1492, Cordoba was the dominant centre of power of the kingdom of Al’Anaduz.

In the early 9th century, a falling star guided the eremite Pelayo to the forgotten grave of Saint James and Bishop Teodormino of Iria declared the spot to be the grave of one of the apostles. The addition de Compostela, which stands for campus stellae (Latin place of the stars), relates to this mythical event. The Moors had fought the establishment of such an important place of Christian worship in Al’Anadluz as blasphemy to Islam. Legend has it that Saint James appeared to the Asturians on a white horse in the Battle of Clavijo in 844 to defend this sanctuary..

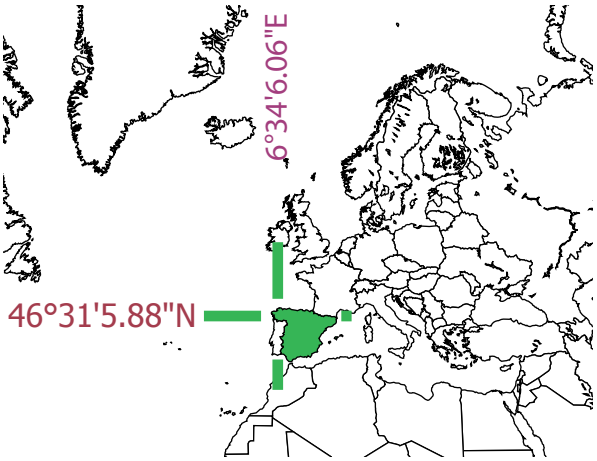


FIG. 6.2.1 Global Position Santiago de Compostela, Spain



FIG. 6.2.2 City of Culture of Galicia in Region Scale: 1.250'000

The Bishop Godescalc of Puy in the French Auvergne initiated the tradition of pilgrimage as early as 950. Through its extraordinary position Santiago was one of the strongholds and symbolic places in the long history of Christian recovery (in Spanish: reconquista) of the peninsula by Christian kings form North to South and the establishment of this kingdom as a nation state. The reconquista and Christianisation of Spain would only be complete 1492 under Isabella and Ferdinand. Thus throughout the middle ages Santiago was an important anchor point of faith and politics of that time.

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FIG. 6.2.3 City of Culture of Galicia, View towards Santiago (right) in direction of Atlantic coast (Photo: author)

Today 180'000 Pilgrims per year travel to Santiago and receive the official document 'compostela'. The 'compostela' has been initiated as a proof of liberation while the pilgrimage was used as punishment. But now it is mostly a trophy. In official hostels across the Saint James trail all across northern Spain pilgrims still collect stamps and to date the document is issued only if the pilgrims prove that they have travelled at least 100km on foot or 200km on bike. Many accounts of personal enlightenment or relief from modern life make the trail attractive even to non-religious people. Modern transportation with coaches, highspeed trains, and low budget airlines also fills the place with less sporty tourists. As a result, the medieval city of less than 100.000 inhabitants attracts many more tourists each year.

To discharge the old town from mass tourism and increase the connection with local culture triggered the initiative to start an enormous project of building a secular cultural centre as a counterpart. With a prestige project combining local culture and internationally acclaimed architecture, the government hoped to attract visitors and to interest them in Galician culture, similar to the "Bilbao Effect" (Rybczynski 2002) of Frank Gehry's Guggenheim Museum (1991-1997) in that location.

The Galician project is connected to a key figure of modern Spanish and Galician history: Manuel Fraga Iribarne (1922-2012). Fraga had served under the Franco Regime since 1951. As a minister of Information and Tourism (since 1962) he initiated the promotion of Spain and later received a powerful position in democratic Spain. Galician Manuel Fraga was a leader of the PP when the first conservative President Aznar was elected in 1996. Fraga was probably the last member of a fascist government that was an active and successful politician in the democratic 21st century (Daily Telegraph 16.1.2012).

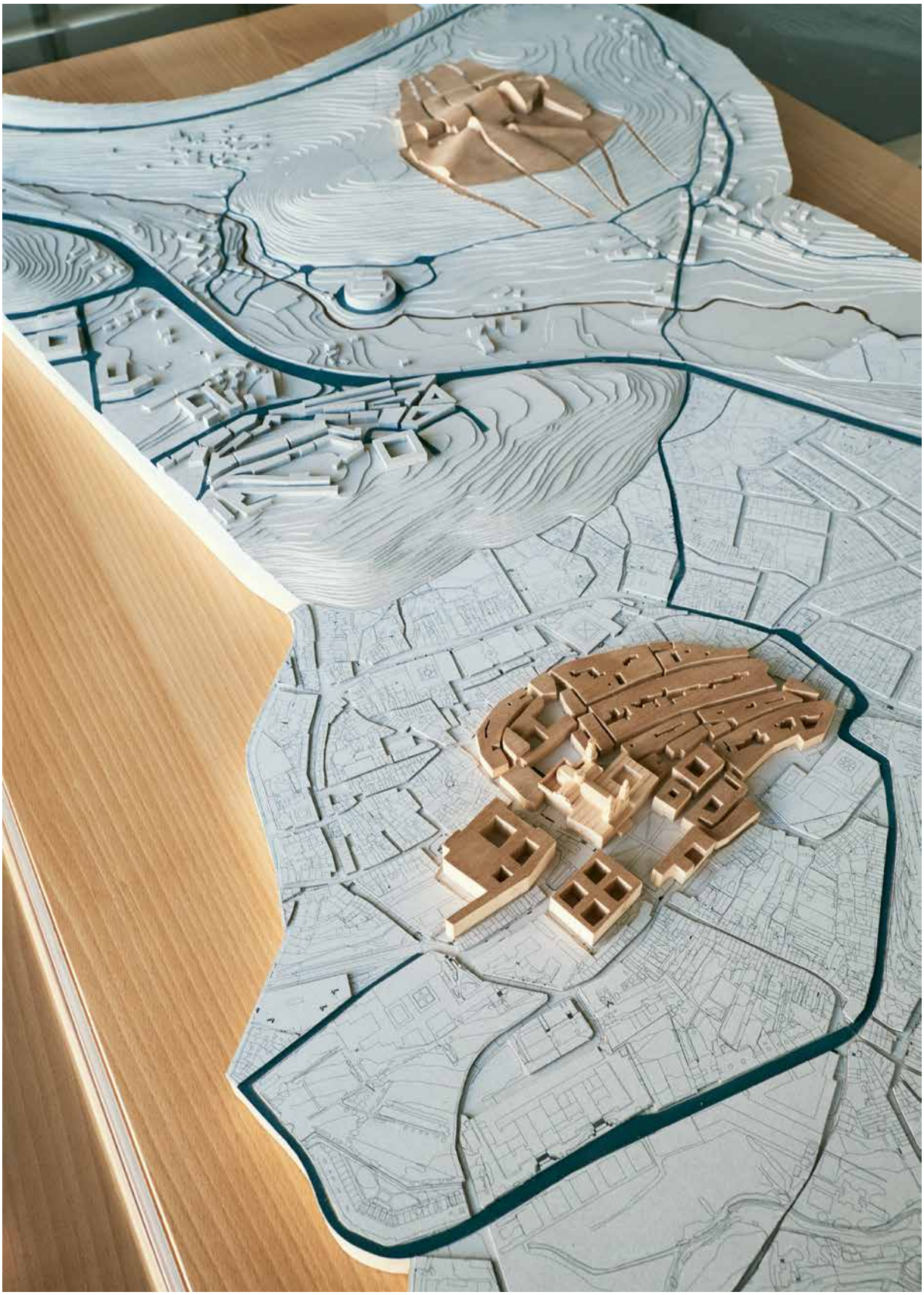


FIG. 6.2.4 Model of the historic centre of Santiago de Compostela and the new City of Culture it the visitors centre (Eisenman Architects, Photo Ariel Huber)

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Under Manuel Fraga's office as Galician President falls the decision in February 1999 to start a competition for a Cultural Centre of Galicia. The gigantic cultural project included a traffic transferium with a highway connection outside the city to discharge the historic centre of Santiago from motorised tourism and large bus-loads. As a kind of buffer it would at once facilitate tourism and minimise its negative impact.

The central target of the international competition was that the new complex should be outstanding architecture that would be unique in the world. The eleven shortlisted architects for the competition in 1999 where Ricardo Bofill, Peter Eisenman, Manuel Gallego, Gigon & Guyer, Steven Holl, OMA Rem Koolhaas, Daniel Libeskind, Juan Navarro Baldeweg, Jean Nouvel, Dominique Perrault and César Portella. Two of these (Nouvel and Koolhaas) also competed at both competitions that resulted in our other two cases in Paris 1992 and Lausanne 2004 (ch. 4.2. and 5.2.).

Remarkably all of the competitors for Santiago are either nationally of globally renowned but none of the invited were architects of the comparable cultural building projects in competing Iberian cities like Bilbao (Gehry, 1991-1996), San Sebastian (Moneo, 1989-1999), or Valencia (Calatrava, 1996-2009), or Architects working on major projects in Madrid, Sevilla, Barcelona, Porto or Lisbon. Calatrava was in an initial selection of twelve but "dropped out" (Fernandez-Galliano in Eisenman 2005 p.11).

In the competition OMA presented a futuristic UFO like ring object, including a garden. Also all other international architects designed object architecture, sometimes with elaborate tunnelling operations, cutting trough or digging into the hill (Nouvel and Perrault), sometimes composed volumetrically in their respective style (Holl and Gigon & Guyer) or with a huge vertical garden of monumental scale (Libeskind). The Spaniards (Portella, Gallego, Navarro Baldeweg, Bofill) integrated their building compositions more or less subtly into the hill, all in one way or another hiding from the old city towards the highway, thereby "ignoring the symbolic callings of the competition" (Fernández-Galliano op.cit., p.11-13, all entries documented in Arquitecturea future 19/20 2009 p. 6-37).

The competition was won by Peter Eisenman who most of all fulfilled the client's idea of uniqueness. A long planning and building process follows this initial competition that, as it rose, also fell with the fate of Manuel Fraga (section 6.4.)

6.3 Impression from the Field-Trip and Design

Seen from the city centre and Cathedral, the City of Culture appears like a huge hill, reminiscent of the shapes of the hills all along the West-coast of the Iberian Peninsula. A steep glass facade calls to mind carved or geologically deformed rock formations similar to the art deco glazings in front of many buildings on the outskirts of Santiago.

Unlike the initial plan, the site does not profit from its strategic traffic location between the motorway, airport and ancient sacred city of Santiago de Compostela. The motorway connection was never realised and most visitors arrive now from the old city on the West. On my visit in early 2014, access on the logical foot paths was prohibited. None of the five pilgrimage routes planned by Eisenman - to connect Santiago de Compostela to the Ciudad de Cultura - were realised. The traffic infrastructure is insufficiently realised, and as such, forces visitors on bizarre paths, circumnavigating the entire site. No airport, coach or bus-line transfer takes place, but one single city bus (Nr. 9) comes by once an hour. In Europe's famous destination of hiking paths (for more than 1000 years people have walked up to 1600km to get to Santiago on foot) not one of the five footpaths connects City of Culture to their five counterparts in the Centre.

My predominant personal impression was how overwhelmingly big this project is. The endlessly repeated grids and repetitively proportioned detailing and fragmentation only enhance the impression of bigness, even if unfinished - or maybe because it is unfinished. Public spaces are vast, splendid and complex.

The vast complex is structured into six buildings (a-f): In the southern end the building once designed as a newspaper archive (a 14'149 m2 footprint) is now advertised (and largely empty) as "co-working" spaces. That building is split in two by a passage under the same roof that connects under to the Hejduk towers at the southwest edge. On the other side of the passage, towards the large square, a smaller exhibition space about the architecture and a conference room.

North is the second finished building, the Library of Galicia (b 21'860m2 footprint). Its interior is the most successful space. The freely accessible books are arranged in the lecture hall with a series of shelves that form yet another layer of topography. Rare books are on display in a glass box inside the volume. The library, maybe due to its program, seems to have been most malleable interior space by the architect. In contrast, the other programs like exhibition halls or operas have such firm technical requirements that architecture is hard to realise apart from large, erratic and monumental structures.

Between the two southern buildings and the square and the two northern finished buildings is a huge gap. Here should be built the the largest building of the project, the Opera (c 59'517m2 footprint) and the New Technology Exhibition Centre (d 12'362m2 footprint). Both of these buildings where 'paralysed' by the 2013 parliament decision. The opera would have been the tallest building in the complex, and the stage tower completely covered under the summit of the artificial hill. The under-stage of the opera would have descended down twice the portal height.

North of the impressive central void are the two more finished buildings. Closest to the eastern parking lot is the Central Services Building (e 6'508m2 Footprint). It is now also used for governmental administration (the interior was not accessible during this visit). To the east lies a relatively small auditorium, that articulates the roof and ground in a gentle slope. Containing multi-functional spaces and offices it is (from plan) less spectacular in its interior. It develops an urban

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FIG. 6.3.1 City of Culture as found in early 2014 ...



FIG. 6.3.2 ... a worksite abandoned after parliment ...



FIG. 6.3.3 ... decided to stop the unfinished project...



FIG. 6.3.4 ... the opera remaining a big hole. (Photos: author)

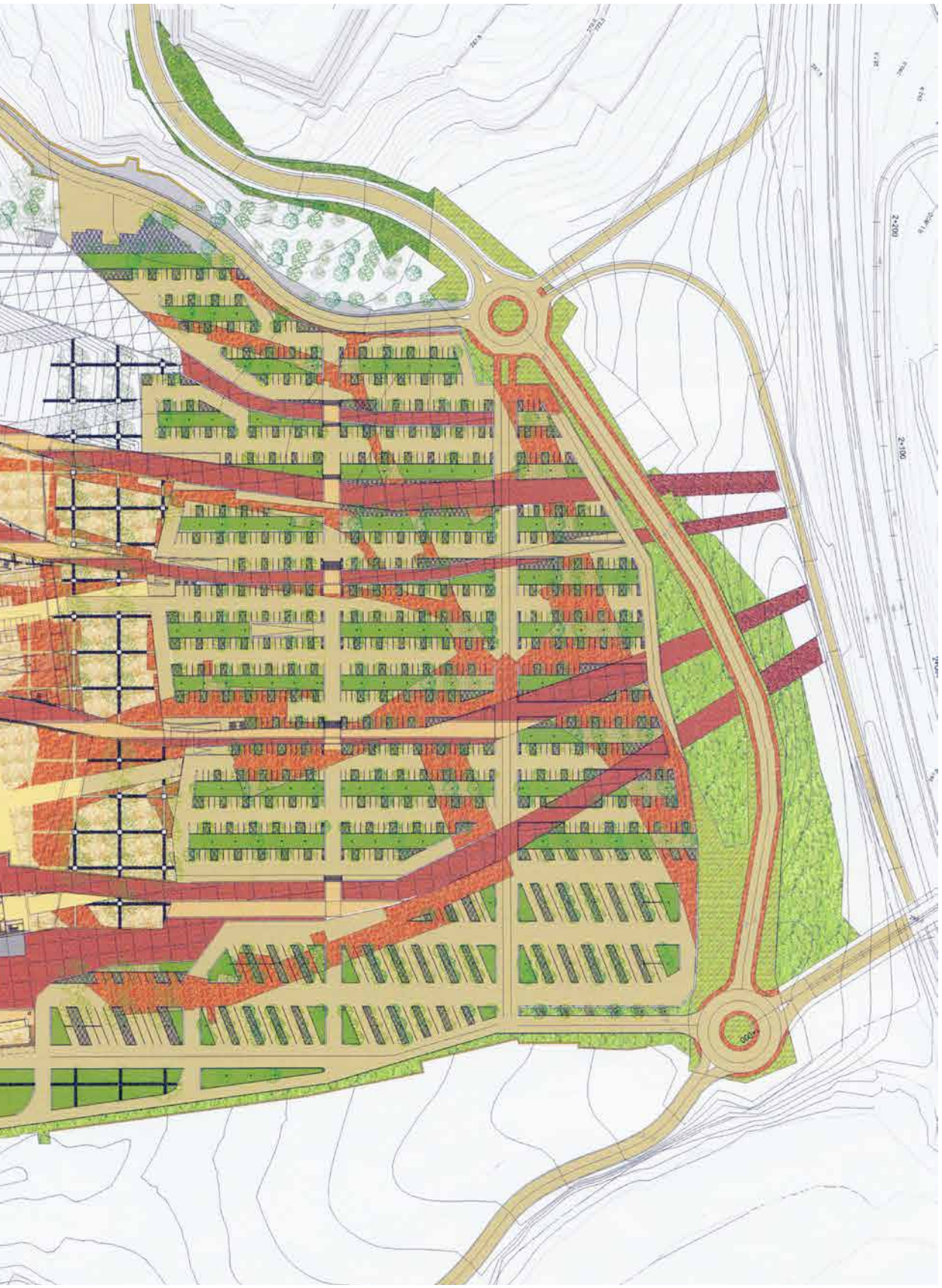
scale facade, intended to form a narrow canyon-like alley opposite the designated audience entry to the opera. The museum of Galician History (f 20'000 m2) is placed at the northwestern corner closest to the ancient city - like greeting the site of Santiago that on its own is a historical spot (section 6.2). It is conceived as the most iconic building with its high monumental glass facade. This gesture towards the city is intended (Eisenman interview A.1.3) to produce an effect towards Santiago comparable to the view of the expressively shaped titanium cladding of Frank Gehry's (*1929) Bilbao Guggenheim (1991-1997). In the old town, descending through the pilgrim routes in 19th century suburbs, one sees references to the grid structured glass verandas typical for this area, that also are an intentional reference in the project (Eisenman interview A.1.3).

The giant glass facade at the highest north elevation shows the workings of Eisenman's architecture, combining several overlaid strategies. Besides the previously mentioned reference to local architecture, it unites a complex multitude of structured forms and grids. The result looks like the architectural equivalent to a cliff. Just like the sudden breaking off of a land form at sea displays geology, this cliff exposes the inner workings of Eisenman's architectural composition. It is the face of the structure exposed; it uses more structural steel than a major traffic bridge. That face may seem uncanny, but it symbolises to me an example of the 'excess of reason' (Eisenman interview A.1.3). The giant facade is waved, fragmented, curved and inclined outward and inward. The ground level entry on the opposite south side of the building leads through a passage (under the galleries) through the volume directly to the monumental glass facade. Along the glass facade with the full



FIG. 6.3.5 City of Culture Site Plan 1:2'000

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FIG. 6.3.6 City of Culture Combined Floorplans Level +281m 1:2'000
(Source: Arqfuture, Eisenman Architects, collage by the author)

height north hall is a longitudinal sequence of escalators in a curve along the galleries, which are stepped on four levels under the sloping roof.

In all buildings the soffit (or ceilings) and the roof are detached in two differently sculpted forms of folded planes. At the museum this inner undulation is most extreme, as if the breaking edge of a giant wave across the whole site. This soffit-wave curves through the building from the centre of the lower galleries. It dives down to entry level in the western interior and jumps up to expose almost the full height in the north (Arqfuture p.75). The escalators stick through this wave and make visitors move between gallery levels like surfers through the architectural wave.

In each building the space articulates differently but gets connected to the complex formal systems that spread across the whole city. The architect's analogy of a Jazz sextet as a genre of composition may help in understanding (Eisenman in Interview A.1.3.). Eisenman composed the City of Culture like musicians write scores. When discussing the issue of program or the use of a building with Eisenman in his work, he has a simple view on it: the use of his works is not his primary concern, but the architecture becomes a goal in itself (Eisenman in Interview A.1.3.). In Eisenman's world, architecture is nothing more than its form, and City of Culture reflects that.

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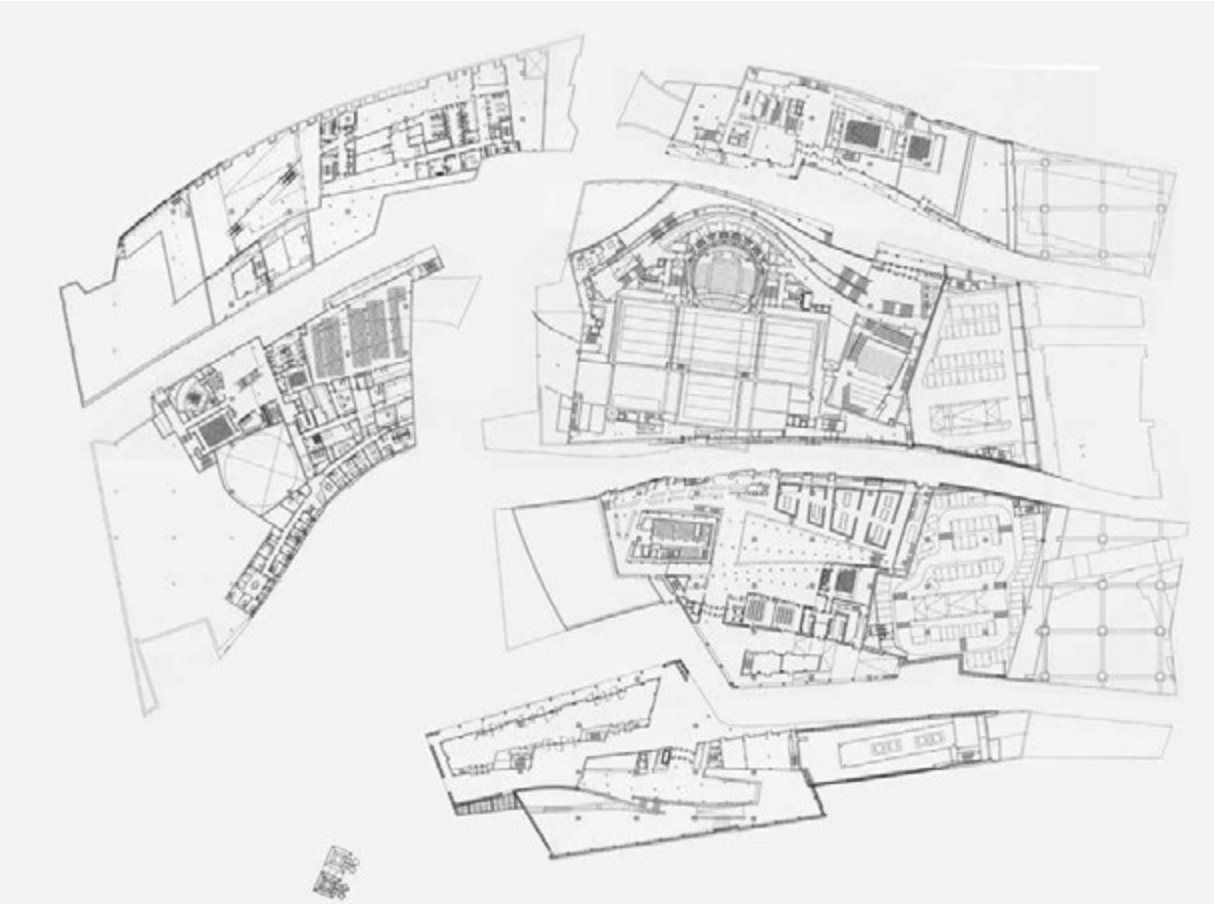


FIG. 6.3.7 City of Culture Combined Floorplans Level +285m to +287m 1:2'000
(Source: Arqfuture, Eisenman Architects, collage by the author)

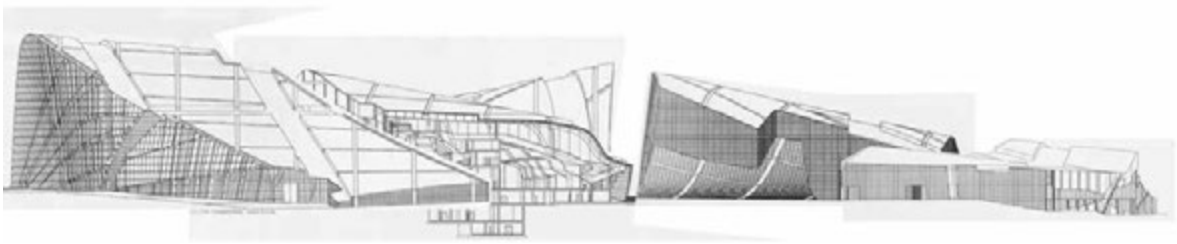


FIG. 6.3.8 Collage of Elevations and Cross Sections 1:2'000
(Source: Arqfuture, Eisenman Architects, collage by the author)

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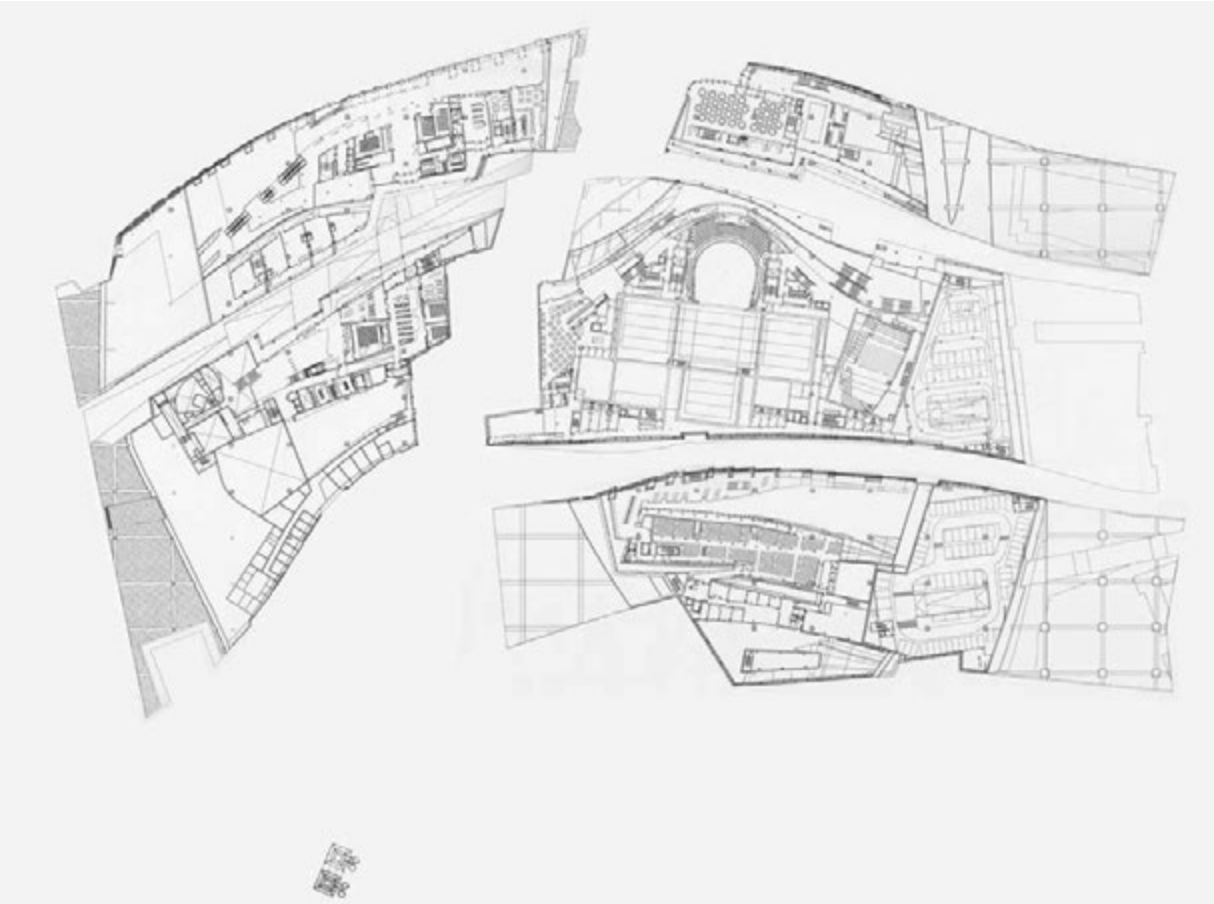


FIG. 6.3.9 City of Culture Combined Floorplans Level +289m to +291m 1:2'000
(Source: Arqfuture, Eisenman Architects, collage by the author)

6.4 Building the City of Culture

Between the intentionally complex plan initiated by the competition for the City of Culture and the currently less than half finished project, many plans had to be adopted throughout the years. Altered was the initial program that had been divided into ten buildings in 1999 (architecture 12.99 p. 42) into a final disposition of six buildings as of today. Of these six, only three kept their original general program (library, Galician museum, and opera) while two others changed from a newspaper archive to business centre, and from a museum of new technologies to an (unbuilt) museum of international contemporary art. A much smaller central services building today also hosts a governmental institution.

A constructive logic is not the expression Eisenman gives to materials, but rather materials express what he wants them to, to express the design process. White painted plasterboard, glass in aluminium mullions, few aluminium claddings and overwhelming masses of natural stone claddings form the bent and wrapped encrusted surfaces, structured with several overlaid bas-reliefs of complex geometries.

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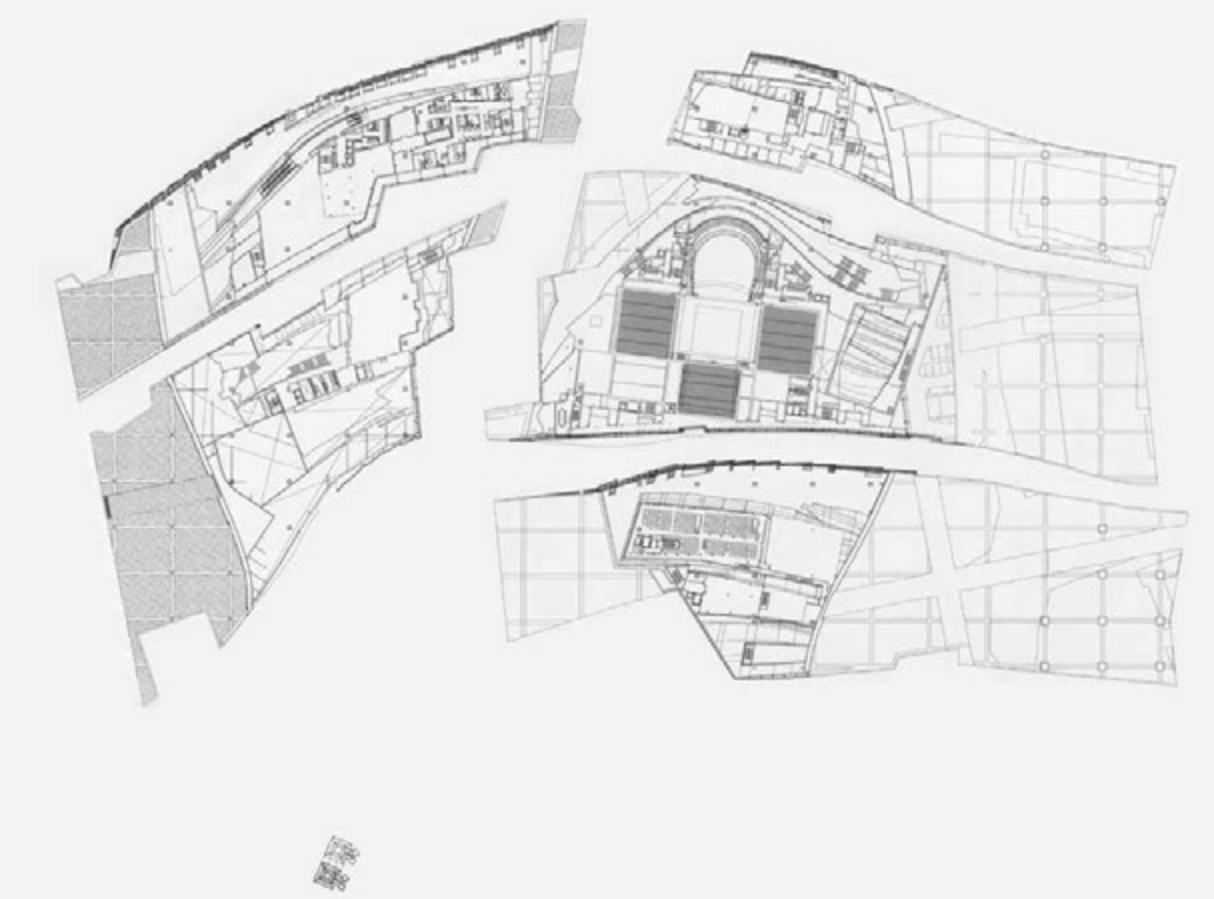


FIG. 6.3.10 City of Culture Combined Floorplans Level +293m to +295m 1:2'000
(Source: Arqfuture, Eisenman Architects, collage by the author)

The outer roof shell was first imagined as a grass covered hill. Later, local stone seemed more maintainable. It was realised in 5 cm thick Brazilian quartzite in shades of reddish and pinkish ochre of the local rock formations. The roof tiles are all hand broken in the quarry and cut in square pieces of 50 by 50 centimetres, alternating with smaller sized tiles that draw grid-lines across the roof. The outer roof follows an artificial topography that was computer generated, like a frozen moment in an animation of directionally thrown cloth, oscillating in resistance with gravity. Eisenman calls this 'indexation' with 'vectors' – a surface that has fallen onto the site, not erected from it – like the mythical campo stellae. The roof has a metal system of bars which allow the free form (fig. 6.4.1). The waterproofing and insulation layers remain invisible below. Below the slab is a system of crossing steel grinders of 16 and 20 meter spans (fig. 6.4.2)

The outer facades follow cuts of the transposed pilgrims paths, vertical or slightly inclined. The walls use a similar material palette to the ceilings, and also have areas with naturally broken stone alternating with recessed lines and sawed cuts. The thick cladding is reminiscent of archaic dry walls (fig. 6.4.3). There are not window openings in stone claddings but ceiling-high glass facades with aluminium profiles.

Roofs and Facades are structured with the recesses of two massive 80 x 80 m gridline systems. These large grid systems cut across the whole site into each of the buildings in two or three wide recessed cuts of 8 meters in width. These meta ordinates do not relate to any construction, but cut diagonally across the outer facades, repeated in the paving system of the large parking lot. (fig. 6.4.4. & .5.).



FIG. 6.4.1 Roof of newspaper archive under construction



FIG. 6.4.2 central services under construction



FIG. 6.4.3. City of Culture. Stacked Facades nd roof



FIG. 6.4.4 Expression of larger grid-lines across ....



FIG. 6.4.5 ... grid-lines across the City of Culture.

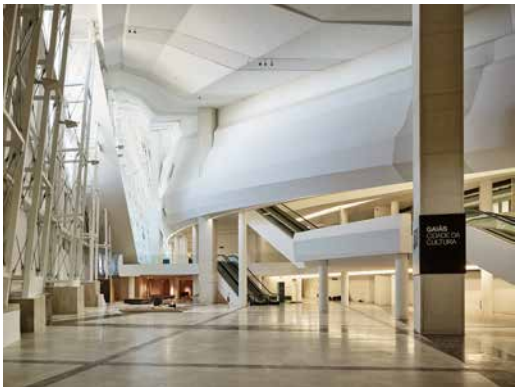


FIG. 6.4.6. North Facade form inside museum lobby

(above row: Davidson 2006 p.312 and p.314, lower two rows: Photos: Ariel Huber)

Two smaller grids of 16 x 20 m and 8 x 8 m are both in the facade and act as a vertical column grid though all the inner floors. The larger grid has a north oriented axis every 20 meters and east oriented axis every 13 meters. The 8 x 8 square grid is turned at a 7 degree angle.

Like other ordering systems these grids were not yet as present in the competition scheme, that was preoccupied with a large scale and less rigid structures. The built grids thus implement a certain constructive logic, but also get alternated following programmatic opportunity. The larger system is only interrupted by the opera stage hall. The smaller grid is used for intermediate horizontal floors, while the large grid supports the roof structure and ends up in the soffit. The large grid reinforced concrete columns are clad in stone on the interior. The small columns are clad in stone when they happen to appear in the facade, where at times they form arcades. Inside, they are round with a white finish.

The soffit or ceiling, like the roof, continuously wraps through the whole complex, but is formed more aggressively than the roof, like a second independent skin. It hangs far down from the girders and, wrapping around several floors as it slopes vertically and folds back on itself at the northern end of the space. This articulation is chosen to suggest the shape was a geological ground. “The roof and the interior ceiling slopes are different. This difference is part of the idea of the ground being a series of layers” (Eisenman in Gomez-Moriana 2010 p.4).

The highest glass facades must resist large wind-loads which bear on a interior system of steel trusses in the monumental hall of the Galician Museum, across the whole length of the building (fig. 6.4.6.). Outside the glass facade is broken and fragmented along a double curving cut with recurring interferences of several grids. It is both from inside and from outside a rare momentum where the City of Culture almost takes a figurative expression, reminiscent of a geological collision zone.

The interior, apart from such rare instances of formal expressiveness, is incredibly sober in terms of material expression: polished stone floors in light tones with repetitive grid-lines, white plastered walls, balustrades of plaster or glass. Recesses in the soffit structure again depict the form and binds space across the long surfaces. Lights and technical appliances are all recessed in an unspectacular manner. While Eisenman’s former work is more polychromic, mainly to distinguish architectural elements, in Galicia the use of colour is very reduced.

Excavation work began in 2001 and the first four buildings were realised by 2011. With a lack of funds the City of Culture has still not been completed as of 2014, and for some, is a symbol of Galicia’s overly ambitious unfulfilled plans.

Manual Fraga, the initiator of the project, was powerful until the beginning of construction, re-elected as Galician President four times since 1990, and for the last time in 2001. But his Partito Popular lost its overall majority in the Galician Xunta in 2005. Manuel Fraga was still in national politics until 2011; he died in 2012 (Daily Telegraph 16.1.2012).

When Fraga left, the first construction stoppage of the City of Culture occurred in 2006. A second construction stoppage occurred in 2010, due to repercussions from the 2008 financial crisis. Finally in March 2013, the legislature of Galicia decided to officially stop all construction work, after twelve years of construction, without realisation of the Art Museum and Opera.

Instead of a symbol of culture, to many Spaniards the City of Culture is a national symbol of the 2008 credit crunch: a theatrical ruin in a remote region with large unemployment rates among the younger generation (35.4% in 2010 according to OECD 2012). The new role of this ruin as a symbol of decay has developed to a point that it becomes hard to remain objective about the architecture itself - which I still intend to do in the following analysis.

6.5 The 4 Layers of the Landscape Architectural Composition

6.5.1 Ground Form

The formal process of designing City of Culture begins with an operation related to the building grounds at Monte Gaiás. The to be founded secular city is generated out of a series of formal interactions with its spiritual counterpart, the historic City of Santiago de Compostela.

The existing site of Monte Gaiás (fig. 6.5.1.1.) is quite literally used as basic material to derive the shape of the new city. It overlaps the existing natural topography with a new, more complex multi-layered artificial topography. In computer modelling software the designers took the existing topography of the original as source material. They consequently overlaid that site model with a series of parallel 'force lines' (fig. 6.5.1.2. -4.). This term, introduced by the designers, alludes to the Celtic druid culture prevalent during the Roman colonisation on many hills in the western Iberian region (Portera Marques and Curado 2014) and relates to the founding myth of Santiago de Compostela.

On computers these force lines where concentrated onto a smaller shape, dragging along the topography and roaming a seemingly random construction like a folded cloth or unmade bed. I call this creation process "up-folding" of the topography ground form (fig. 6.5.1.8 read from bottom to top). The given site limits of the competition play a role (as shown on the topography pos. 1. in fig. 6.5.1.8.). In the contraction process, the straight grid lines (pos. 2.) are deformed into curved ones (pos. 3.). The site limits of the competition design as compared to that of the new contracted area show the footprint of the new city. These smaller extents of the contracted topography correspond to the size of the historic medieval City of Santiago de Compostela. The transformation process thus compares the new to the old city, as it will re-occur in other layers and elements (fig. 6.2.4).

This transformation of up-folding the existing topography produces a new one, that defines the outer shape of the roof (fig. 6.5.1.7.). At the larger scale the roof defines the complex as one giant ground form. In a series of further manipulations it cuts that form into a series of buildings. The roof topography is derived from the site topography. In this, Santiago is different from the other two cases. While the other two define a relatively traditional volume by cutting out a square or rectangle from a formal operation, they are still placing the architectural object onto the ground. At Santiago, the ground form itself is derived from another, larger ground. There is no autonomous figure of the building. The figure only derives gradually, built up by so many overlapping complex rules, that it is hardly recognisable; this is on purpose, as it is the result of the critique of figure-ground dialectics, an important subject in the architecture of Peter Eisenman.

A second ground form – or more correctly a second reading of the same ground form – is the analogy to the emblematic symbol of Saint James: the Shell (fig.6.5.1.5.). Since the 12th century, the scallop of the Finsterra Shell is a symbol of Santiago de Compostela and its pilgrims. Pilgrims from across Europe carried shells, initially collected on the Galician beaches, in what we would call today a souvenir. Depictions of these shells cover ancient books or greeting cards but also can be found as an ornament of buildings in the old city (fig. 6.5.1.7.); across Europe, they are used as a sign for the pilgrims to Santiago. In the design of City of Culture that symbolic figure is blown up

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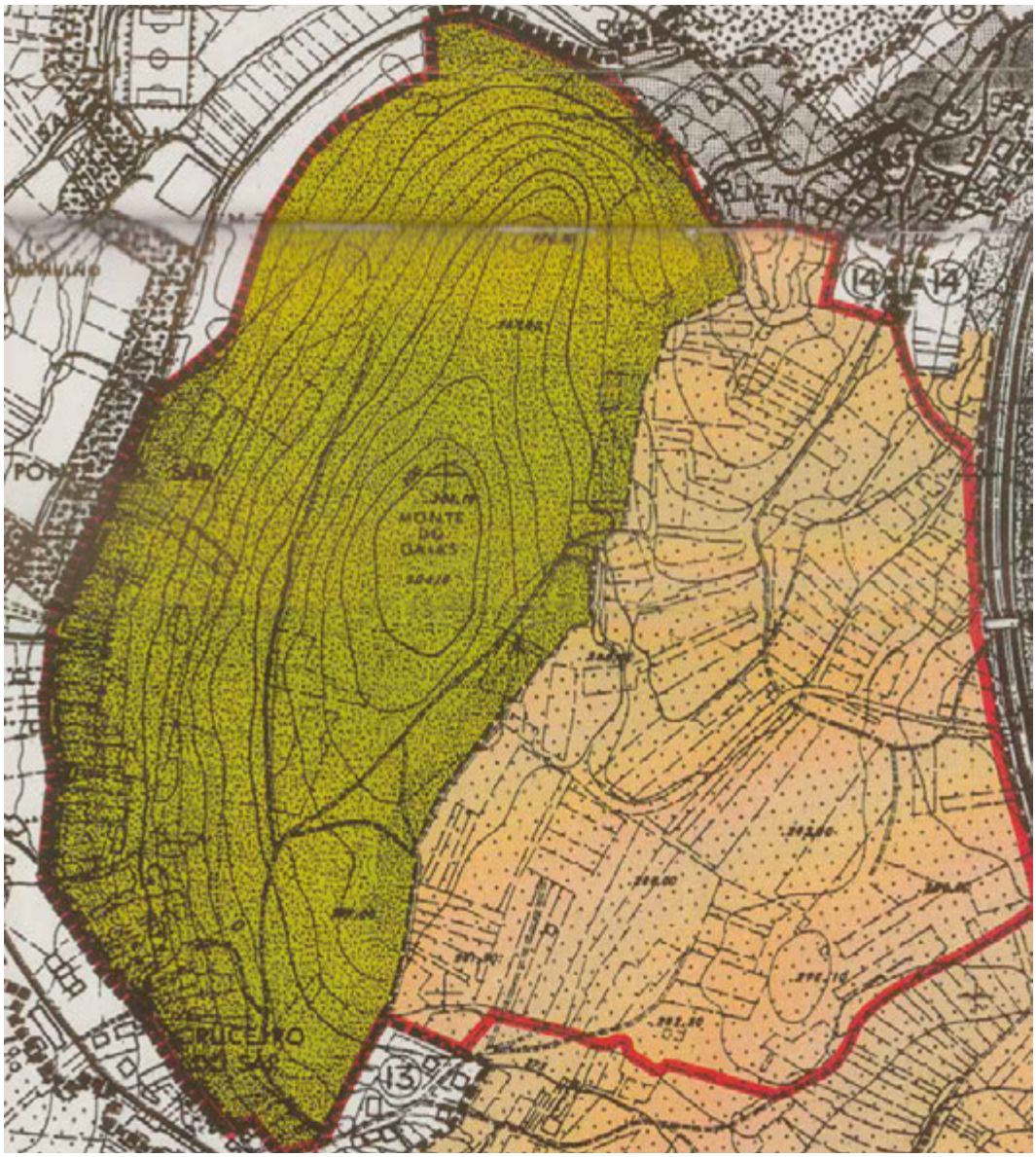


FIG. 6.5.1.1 Site plan of City of Culture competition (source Eisenman 2005 p.41)

to the site of the whole city, defining, more vaguely, a second analogy to the ground form, that of the giant symbolic figure of the hard shell, materialised in the rippled surface of the hard stone roof shape. Out of any recognisable proportion (merely visible from the skies) the figure becomes meaningless as a shape, again overruling the figure ground dialectics of architecture with a large scale metaphorical ground form (pos. 4. in fig. 6.5.1.8.).

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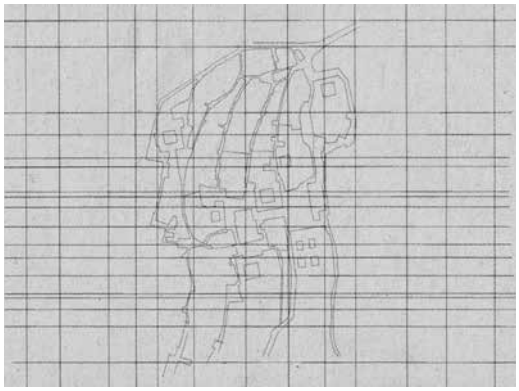


FIG. 6.5.1.2 topography deformation step 1 guidelines

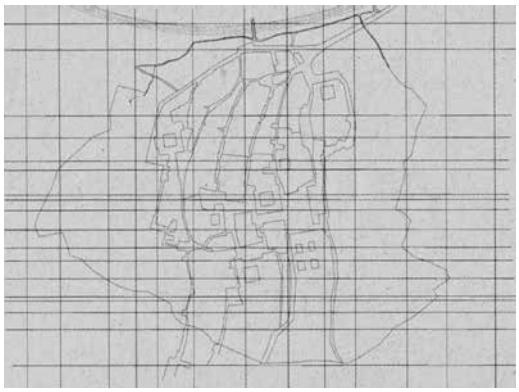


FIG. 6.5.1.3 topography deformation step 2 circumfence



FIG. 6.5.1.4 topography step 3 deformed guidelines

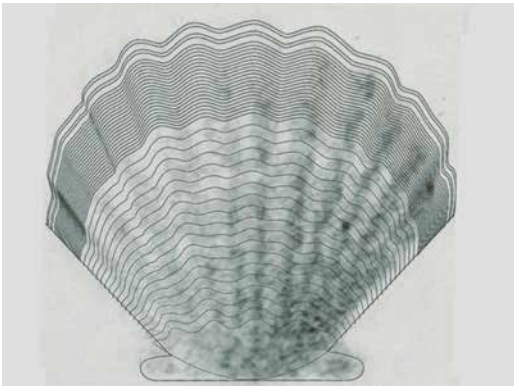


FIG. 6.5.1.5 Shell line drawing Eisenman Architects



FIG. 6.5.1.6 Medieval Santiago c. 1150



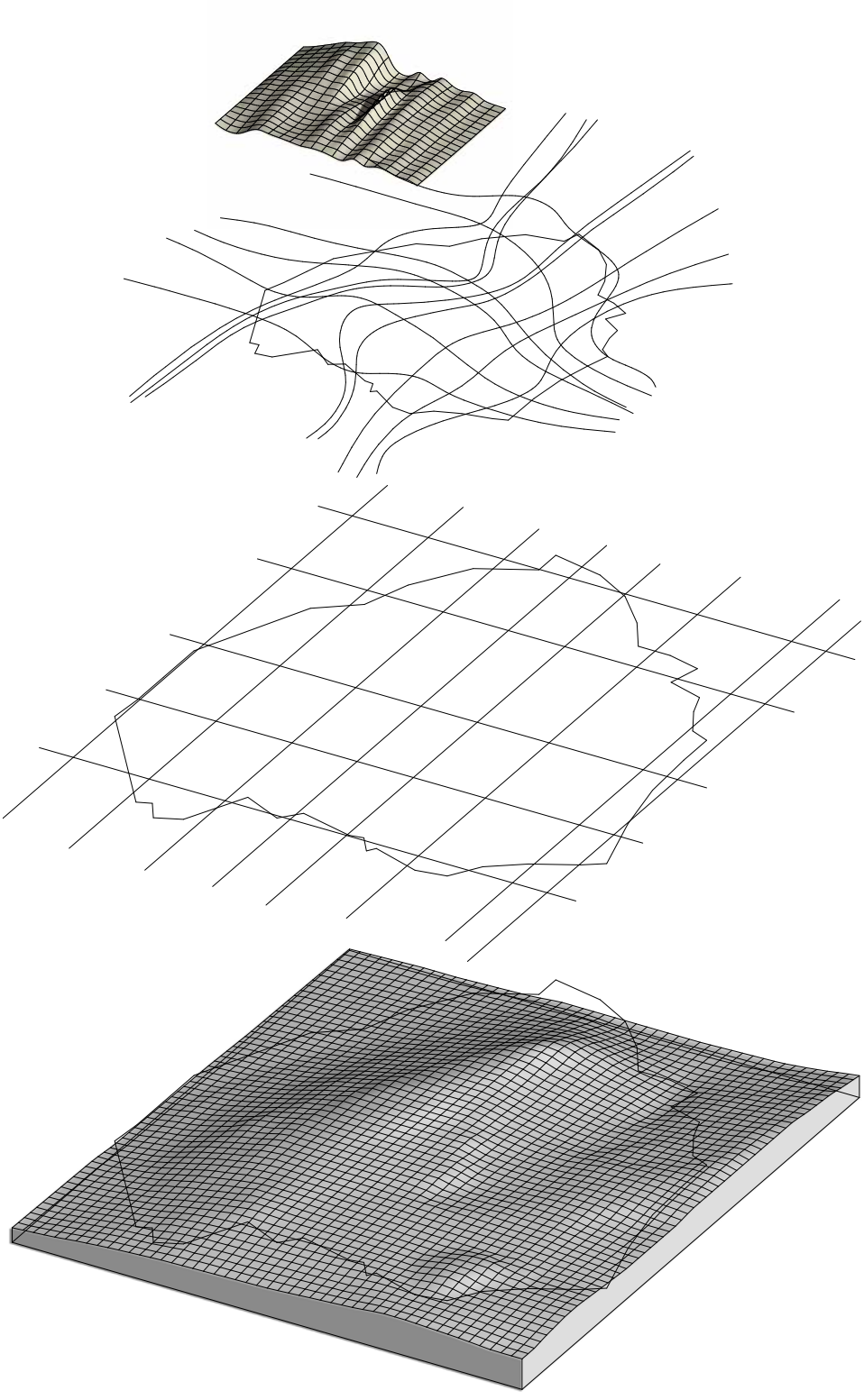
FIG. 6.5.1.7 Shells on ancient buildings of Santiago

(Sources: left column and top right Eisenman 2005 p.48, right center p.24, right bottom: Photo: Xan G. Muras)

A third process at work is the overlying of aforementioned structures into this up-folded site or shell construct. Several line patterns serve as a guideline to excavations in the site topography and volumetric cuts in the artificial roof topography. Although my analysis shows 10 separated steps (fig. 6.5.1.10 and 11.) that could be seen as a process logic, in the actual building that order is obscured as it is the density of structures that is targeted, not their clarity in reading.

With the excavation of a new datum level, the project literally chops off the hill. A new topography is installed here drawn as the entry levels (fig. 6.5.1.10 pos. 5). This cutting in the periphery of the complex creates a series of different spaces stepping down into the hill, which enhances the dynamics of movement.

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4. Roof topography resluting from deformation

3. Deformation of Site along deformed Gridlines

2. Gridlines for topgraphical Operation

1. Site Limits existing topography of Monte Gaias

6.6.1 Santiago Ground Form toporaphical deformation (read upwards)

FIG. 6.5.1.8 **read from bottom to top** City of Culture of Galicia topgraphical deformation (Drawing: author)
Ground Form

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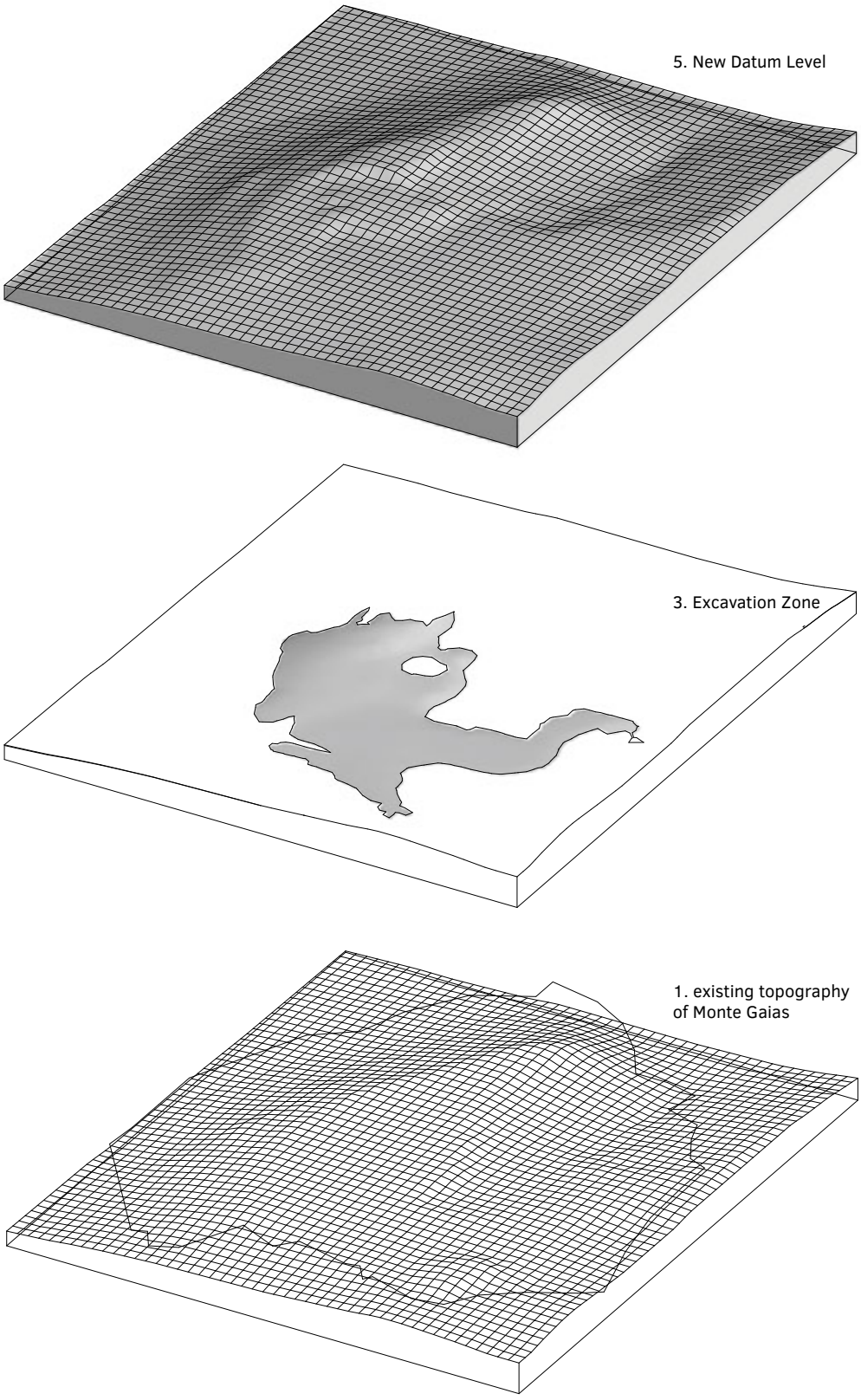
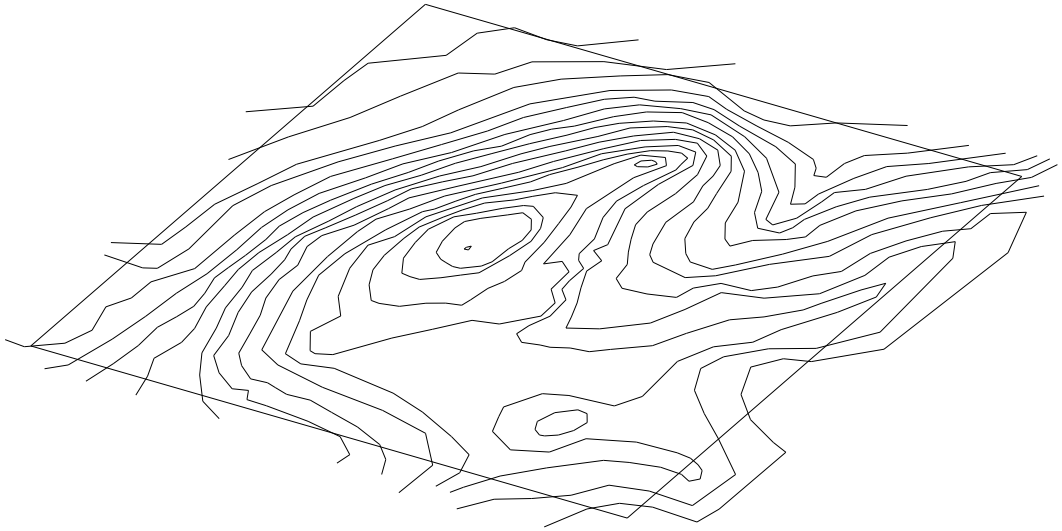


FIG. 6.5.1.9 **read from bottom to top** City of Culture of Galicia layering process 1 to 5 excavation (Drawing: author)
Ground Form

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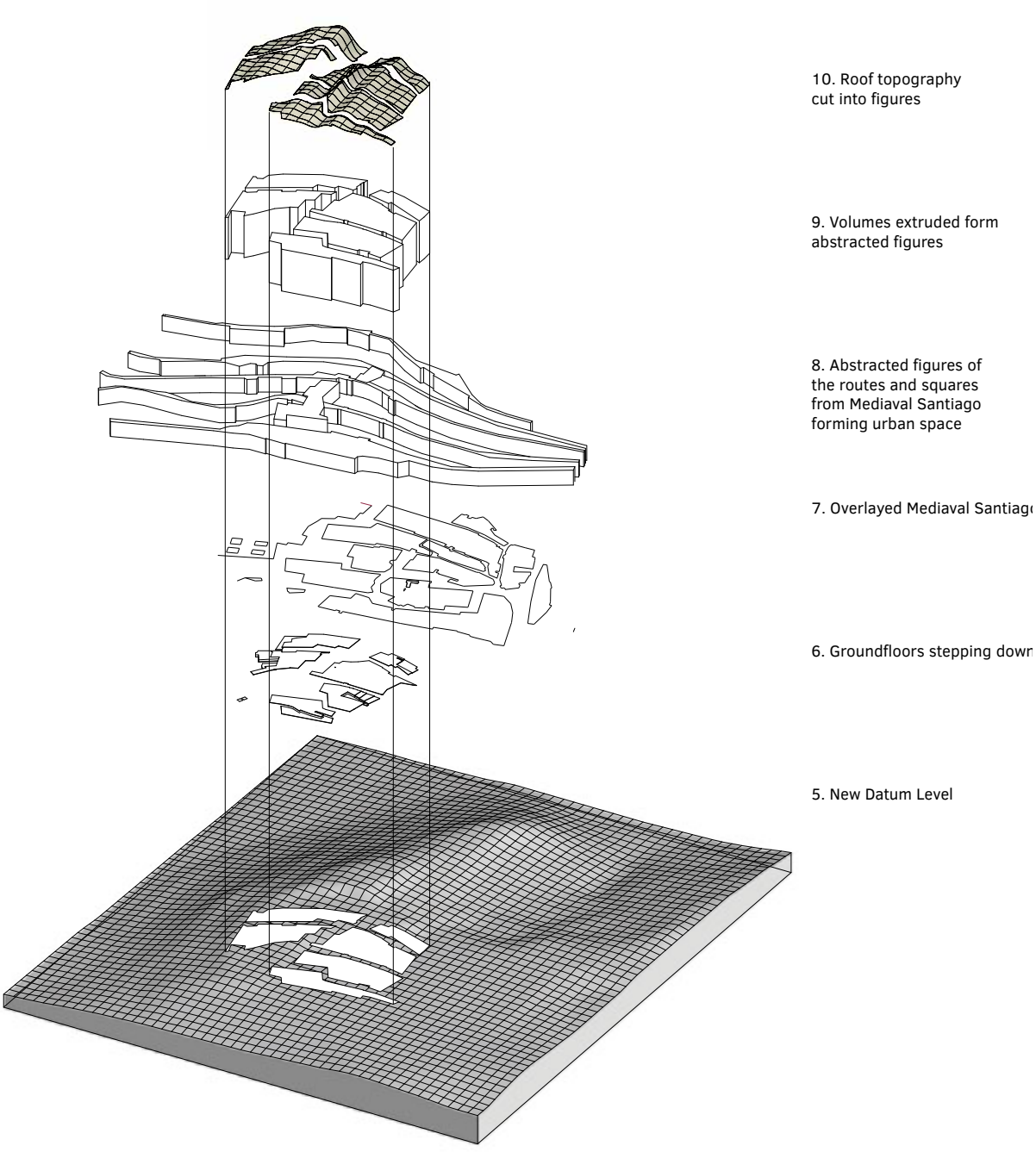


FIG. 6.5.1.10 **read from bottom to top** City of Culture of Galicia layering process 5-10 urban figure (Drawing: author)
Ground Form

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The actual excavation operation on site started in 2001. (fig. 6.5.1.12-14.) Construction work included an underground service tunnel and adjacent facilities. The underground levels are not depicted in the analysis that rather concentrates on the primary public space of the new city.

Like the shape of the buildings, the new datum level is derived from the complex overlaying of structures, different ones recurring at different stages of the process in sometimes altered form. Again a plan of Santiago de Compostela appears, turned 90 degrees clockwise and transposed onto the new site (as before in 6.5.1.7 and 8.). It is abstracted into a longitudinal street pattern and a crossing sequence of squares (fig. 6.5.1.10. pos. 6). It vaguely copies the medieval structure of the old city while a more accurate copy of an old city map also is used as a floor pattern in the new grounds (pos. 5).

In this street pattern, as it is found now in Santiago de Compostela, the main pilgrim routes arrive into the city. By these routes, the new city is connected to its central cathedrals' function as a pilgrim destination throughout the many centuries of its development. As a formal analogy the idea of transposing this structure stems from the original program of the new site, of being a traffic exchange hub. Pilgrims should walk here out of their busses and cars as they would walk in the city on the next hill into the cathedral. The flow of pilgrims is literally formed into the site. It is the founding device for the spatial pattern of the city (spatial form see 6.5.2).

In this overlaying of 'artificial excavation' a series of vertical cuts is performed along the streets into the facades. The building forms are derived from this pattern but also react to local conditions and their inner composition, expressing forces of deformation and spatial form logic (see next section 6.5.2). A complex and multi-fold process hardens as a shell, most visible at the cuts in the roof edges (fig. 6.5.1.10. pos. 8).

The geometry of buildings and even their grid directions are transposed from the old city form into the new ground form of the City of Culture. Typically this process is not rigid but adaptive to single situations that occur in the overlap of existing and new topography.

A last operation is the further deformation of the roof shape into even more complex individual soffit shapes for each building. This formal process was hard to reproduce in drawn analysis, but it is clear to me, that it should emphasise in each building the dominance of the landform process in the spatial impression. All form is derived from a geometrical transposition process and not induced by the structural or programmatic positioning of architectural elements.

The grid lines and bearing systems are of a continuous order, that I will further discuss as the spatial form in the next section (6.5.2). But notable for the ground form is how these completely abstract cardinal systems overlay the whole of the site. A continuous system, like the Jeffersonian grid across the American landscape, it enhances the legibility of the topography.

The program of multi-storey buildings is not piled up on a footprint but added top to bottom from the upper shape defined by the roof. Below it a sequence of stepped terraces mainly developing from the higher North to the lower South works on several different ground levels (drawing fig. 6.5.1.11). Like in the Jussieu design there is no defined datum level for the whole complex. In the City of Culture almost every building has a different level entry and each of them has floors in different levels than the adjacent ones. Like the roof, the outdoor walking space also undulates, independently from the roofs. As a consequence, at the eastern edge, access to the roof is not possible (fig. 6.5.1.17.). Only in one very controlled area at the west of the library, the two undulating surfaces collide. There it is possible to access the roof (fig. 6.5.1.18.).

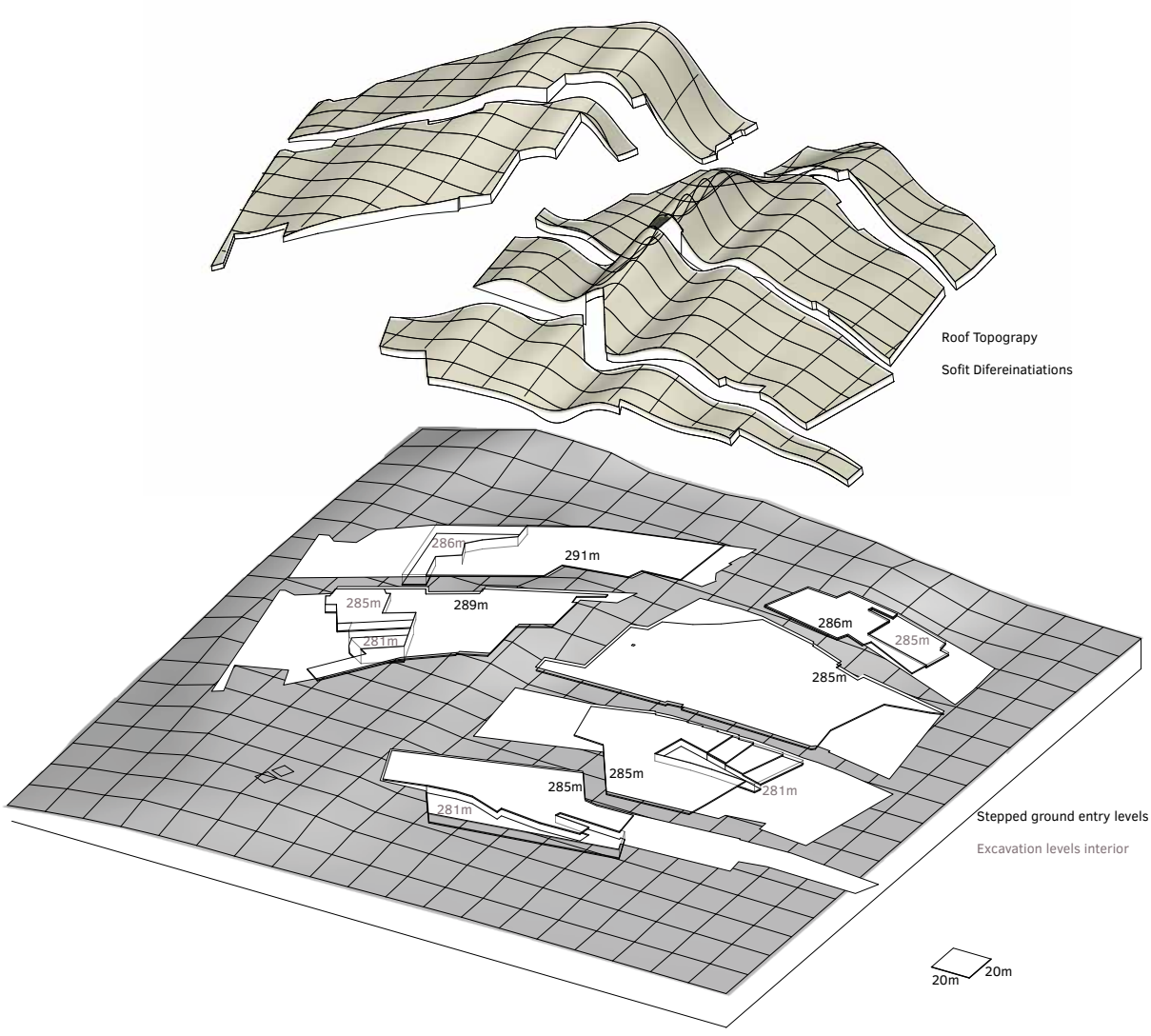


FIG. 6.5.1.11 City of Culture of Galicia layering of topographies at building scape (Drawing: author)
Ground Form

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FIG. 6.5.1.12 Site prior to excavation (Eisenman 2005 p.10)



FIG. 6.5.1.13 Excavation w/ tunnel roof in 2003 (arqufuture 2009 p.45)



FIG. 6.5.1.14 Excavation works and deposits for City of Culture in December 2001 (Eisenman 2005 p.249)



FIG. 6.5.1.15 North Eastern edge of Roof (Photos: Ariel Huber)



FIG. 6.5.1.16 Roof raising from central square to library

In total, with these several varying interfering processes, the complex ground form is installed as a system of overlaid principles. Six formal principles overlap: two independent topographic foldings, force lines, the shell analogy, excavation and street patterns. The ground form of City of Culture is at the foundation of a multitude of layers written across each other, the palimpsest that all together makes deciphering this recent architecture as complex as the archaeology of a long forgotten ancient site. Several ground forms connect to the spatial form, or contain symbolic images and even programmatic aims.

There are so many forms overlapping that they are close to illegible. Many structures are introduced into one single design of architecture. By overlapping a multitude of operations - which all derive from the site's context but in many different ways - the ground form of City of Culture artificially creates the spatial density and richness of an ancient town, while still being a completely original creation.

In the ground form of Eisenman's work we find the integration of the material and the theoretical of architecture. The 'excess of reason' (Eisenman in Interview A1.3.1.) is a way of operating as a designer, in which Eisenman propagates this dissolution of figure - ground dialectics. As drawn and explained in the above analysis of the ground form, he also disposes of other dialectics, or any consecutive logic in total, in favour of excessive reasoning for a dazzlingly complex architecture.

6.5.2 Spatial Form

The spatial form that my analysis of City of Culture reveals has no experiential composition. As Peter Eisenman explains he is not interested in particular views taken from one of his buildings (see interview Eisenman A.1.3). Consequently, a spatial system is to be understood differently, not entangling urban views into the multi storey density of a landscape (like Jussieu chapter 4.5.2) nor providing a park-like manipulation of several horizons (like Learning Centre chapter 5.5.2).

The spatial form as layer of a landscape composition is in this case the geometrical result of a fiercely overlaid and intentionally complicated process of form finding. Its elements replace an existing landmass. They could be described as formal "lava" derived from an eruptive process of form finding, frozen in time on this particular site.

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FIG. 6.5.2.1 Periodicals archive. (Photo: Ariel Huber)



FIG. 6.5.2.2. Library (Photo: Ariel Huber)

The main circulation spaces through the complex are a series of narrow alleys that cut through the continuous roof landscape form west to east. They are copied from the old city centre of Santiago de Compostela (as described in 6.5.1.) where already their layout was related to the constant and century-long flow of pilgrims towards the sacred space of the Cathedral.

The transposition of this spatial system, with the 90 degree clockwise turn, also responds to a functional requirement in the original competition brief: The City of Culture was originally conceived as a traffic interchange, getting visitors from coaches and private cars into walking and shuttle bus service. Even if this is now missing, one needs a reminder that the constant flow of pilgrims and secular tourists was a basic motive for the spatial layout.

Still, City of Culture is a very walkable city with comfortably narrow streets. The allusion to the medieval city of Santiago is about enhancing well-being, the strategy reminiscent of small irregular urban spaces of complex medieval street patterns and squares, as they have been described and compositionally analysed by Camilo Sitte (Sitte 1889/1945, see i.e. Mashall in Portugali e.a. 2012 pp.191-206) .

The spatial composition combines several free-form and grid structures. It works similarly for the interior. Under a free-form false ceiling, vast public spaces flow through the buildings, connecting various elements that do not occur as blocks but rather as one whole broken into many large fragments. Walking spaces continuously flow through and in between the buildings.

Each building (even with only four of the six realised) provides a different spatial experience. Each has a varied sequence of stepped spaces, leaving each floor different, as a consequence of the continuous roof that changes the limits of every floor. Following topographical determinants, the sequence of spaces once goes from west to east (at the periodicals archive), once develops around a core (at the library), or once orchestrates all vertical flows condensed along a vertical soffit at the highest facade (at the Galician museum). The floor plans have no overlying ordering system that would define walls, floors or ceilings along one principle. Such conventional determinants of architectural space vary to a high degree at City of Culture. What remains constant are the passageways, the different grids, the continuous roof and the materialisation of the surfaces.

An important determinant of spatial form are the grids, as they are made explicit as a structuring element. Eisenman has been working with square grids throughout his career. He understood them as diagram (see interview Eisenman A.1.3) and his work on them, as an essential study and development of architecture.

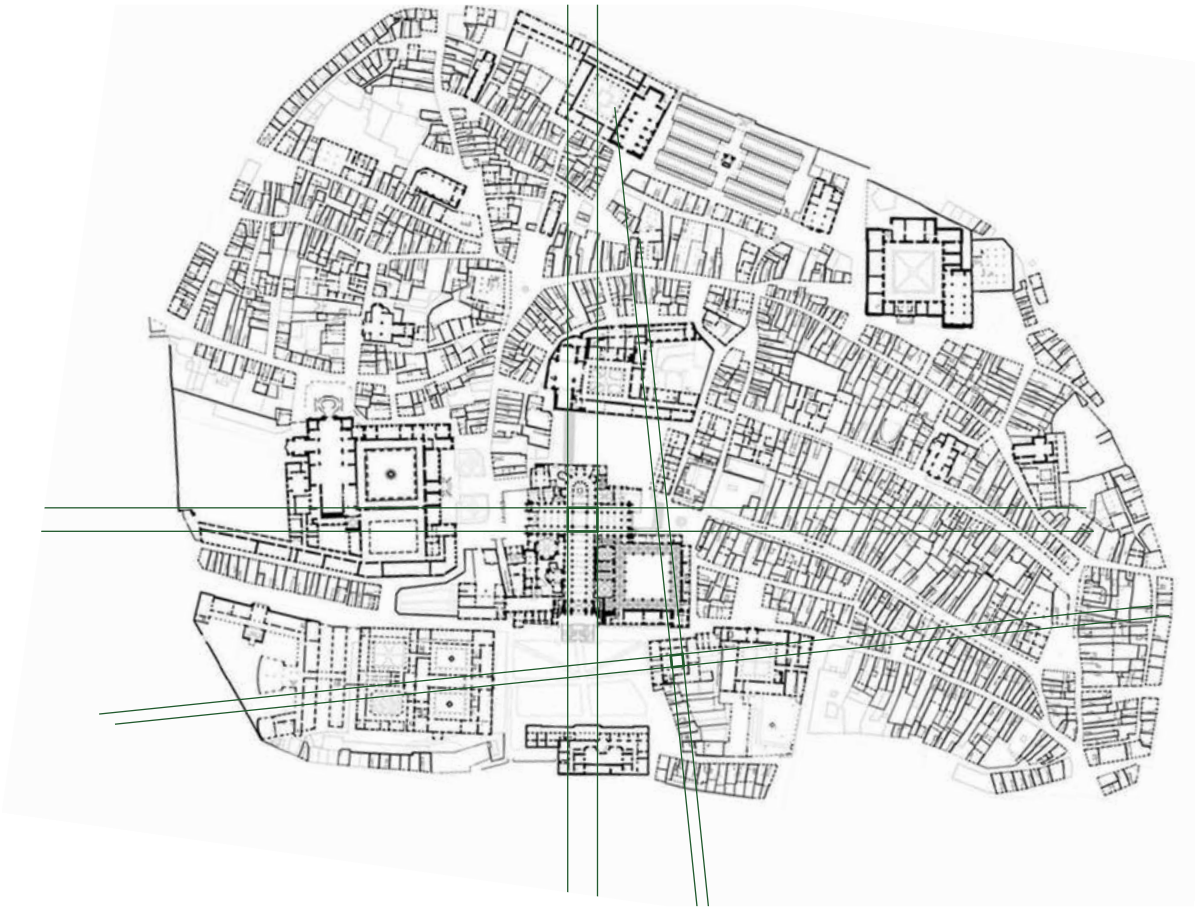


FIG. 6.5.2.3 Grid directions at Medieval centre of Santiago de Compostela ... (Drawing by the author, map: tourist office Santiago de Compostela)

If compared to the use of grids in the early work of Eisenman's Houses, at the City of Culture the grid becomes looser from the often independent direction of walls in the interior, almost as if the actual organisation of the building is delegated away from this structural logic. On the contrary, a very stringent Cartesian order is laid across the geographic landscape making it readable in its sheer endless continuity. A large grid (16 x 20 meters. B) follows exactly north-south, but then a second square grid (8 x 8 meters, C) underlays the first one at an angle of 8 degrees counterclockwise. In the roofs, facades and floors the grids are materialised differently. Across the roughly materialised fields of the two main grids that also order the columns, some even larger ordinates appear locally. Differently directed ordinates dominate across buildings, like the two opposite entries of the Library and newspaper archive that are on an axis 12 degrees clockwise from the main grid, which direction then appears mainly inside the library. So while most layers and ordering systems are continuous, often from horizon to horizon they change dominance, some other orderings systems seem to have breaks and changes. The whole appears like a complex multi-fold composition where one leitmotiv (i.e. a staircase following a movement) can take over from another (i.e. crossing grid-lines and apparently independent columns). In this articulation of spatial form one established order will be overwhelmed by another. None of them follow function but rather program inscribed into the space as form - instead of, and at the cost of, function - which dominates every aspect of this place.

This superposition of ordering systems is also translated from the medieval city. During research in Santiago de Compostela I found exactly this 8 degree angle between the Cathedral of Santiago and the historically important Collegio of St. Jerome that I traced in drawing analysis (6.5.2.3-4).

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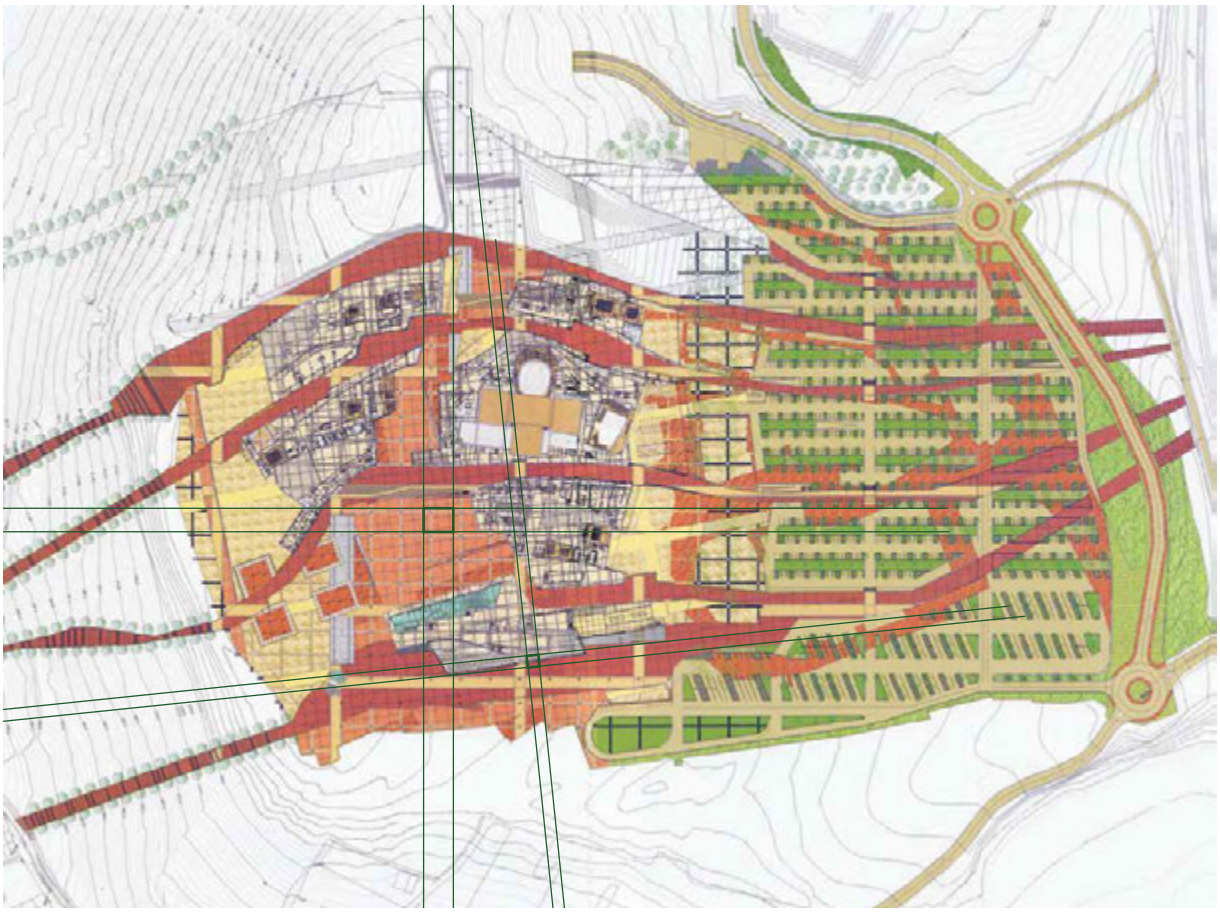


FIG. 6.5.2.4 Grid directions .. at new City of Culture (Drawing green axial lines by the author, site plan Eisenman Architects)

Not a coincidence, as confirmed by Eisenman (in Interview A.1.3). So even the two different directions of the grids are derived from the medieval town, again transposed into a new composition and added as a layer in the many-fold system.

In my analytical drawing of the spatial form (fig. 6.5.2.6.-7.) I reduced the many spatial ordering structures of the plans and surfaces to seven layers. This plan analysis does not reduce the complexity or enable a swift reading of the project. In my spatial drawing (fig. 6.5.2.8.) I show how the grids mark each layer of the ground form and make them legible. Of the four grids (A, B, C, D) one is exclusive for the roof (A) and one for the outdoor areas (D), the larger grid (16 x 20) appears in all layers while the smaller (8 x 8) only on floors of both interior and exterior. Its direction though re-occurs as a tiling for the roof. Similarly, facade tilings and relief structures are derived from the grids, some at exteriors and some at interiors.

Our previous cases (chapter 4 and 5) both had one grid for bearing systems, but the buildings in the City of Culture have four grids. The columns however are not the main determinant of the spatial expression of the architecture as they appear in a classical polistyl-hall (Kröner and Binding 2005 p.371). These grids are in each of the other two cases in Paris and Lausanne reduced, so they may not dominate the architectural expression. Eisenman however uses his excessive strategy to overcome the dominance of the grid. He overlays four grids, that across the design switch roles according to the opportunity with the various programs.

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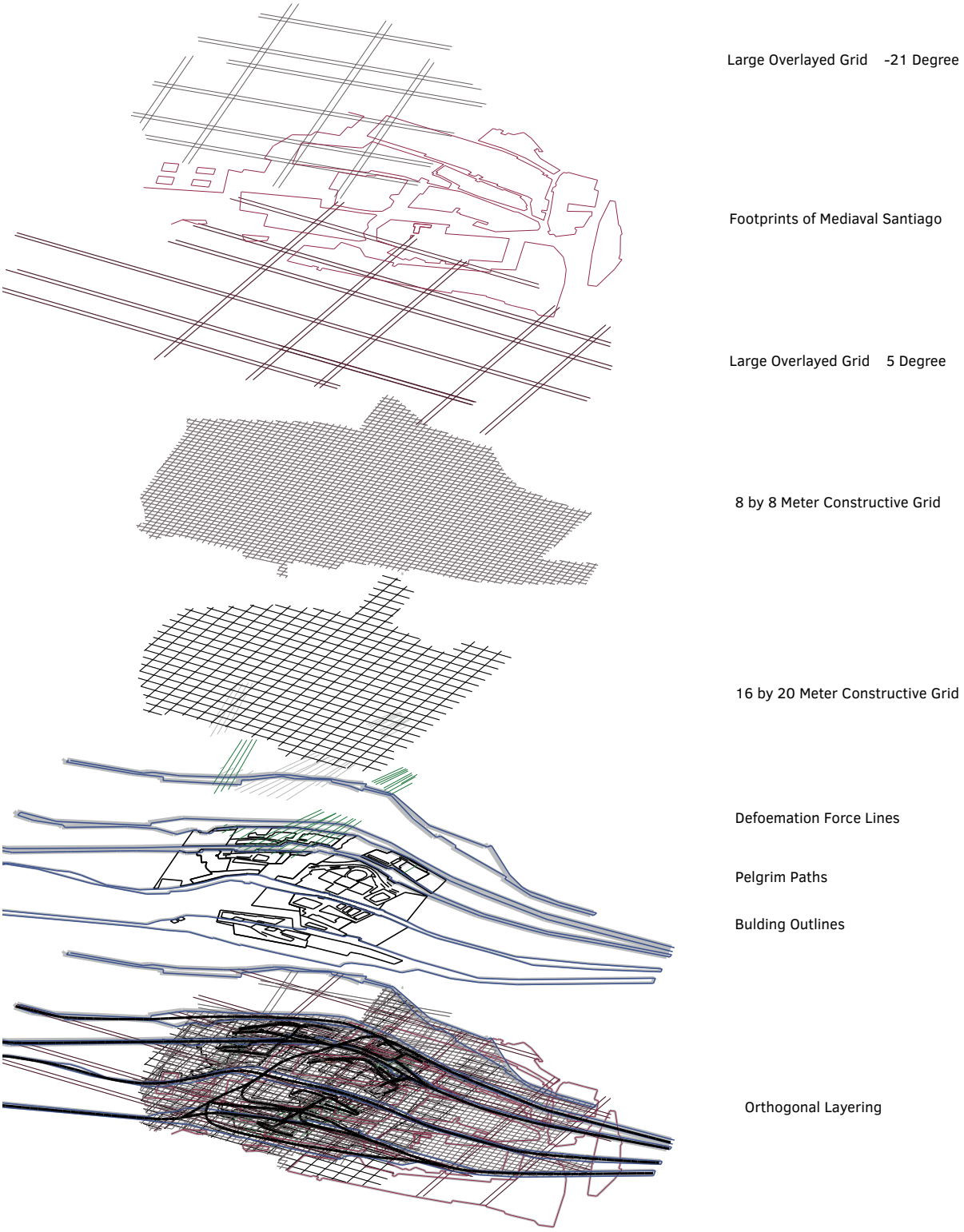


FIG. 6.5.2.5 City of Culture of Galicia layering of sptial ordering systems in plan projection on site scale (Drawing: author)

Spatial Form

TOC

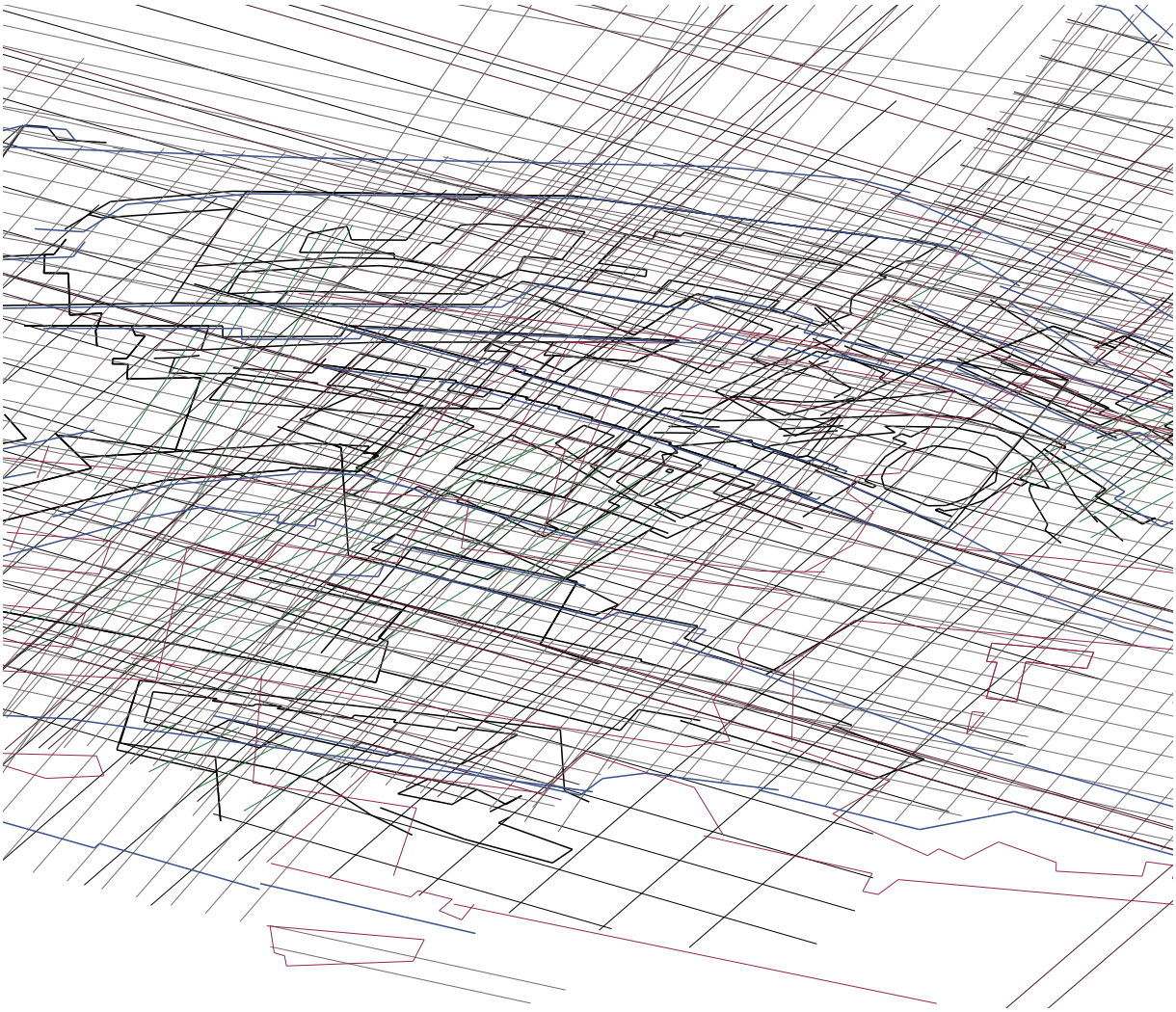


FIG. 6.5.2.6 City of Culture of Galicia layering of sptial ordering systems in plan projection on site scale (Drawing: author)

Spatial Form

These spatial systems of cut alleys, of topographies interfering with horizontal floors, of redundant alternative bearing systems are displayed and expressed rigidly in materials. The grids are dominantly visible throughout the architecture (while our two other projects Jussieu and Learning Centre reduce it). At City of Culture a grid-line can run diagonally across a stair, displayed in a change of material.

It is this combination of dominance and redundancy of the girds, that turns them from a constructive device (of building space) into a conceptual device (of making space). A grid would be a constructive element in architecture, 'a means to a goal'. But in Eisenman's excess of reason the elements are 'a goal to a goal'. To Eisenman the grid is more than a concession to constructive building logic: "The grid is ... the mark of man in nature, you could argue that that mark is not merely conceptual but also phenomenological, in that it marks man as opposed to nature" (Eisenman in Klatmagazine.com Klat #04, fall 2010.).

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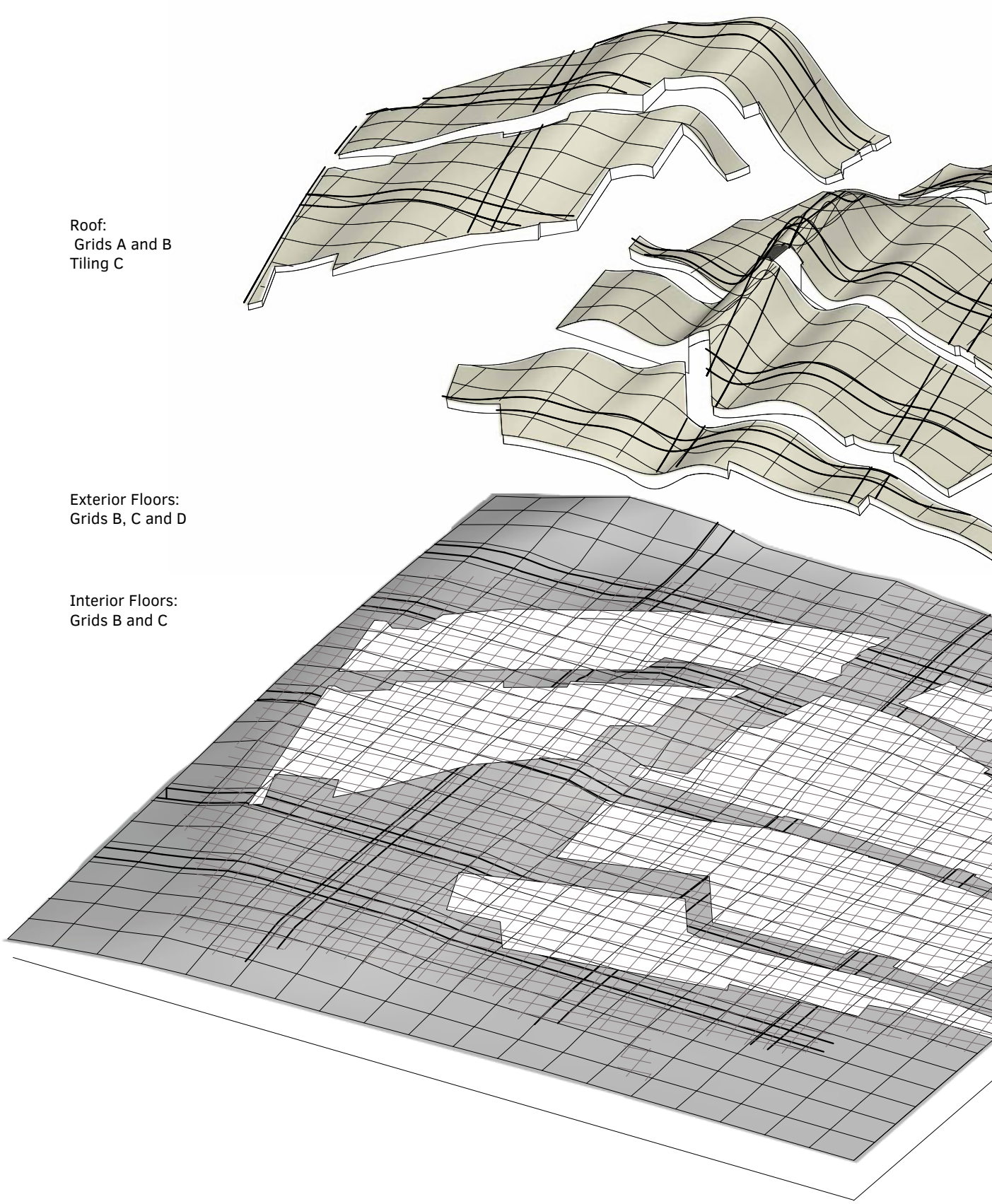
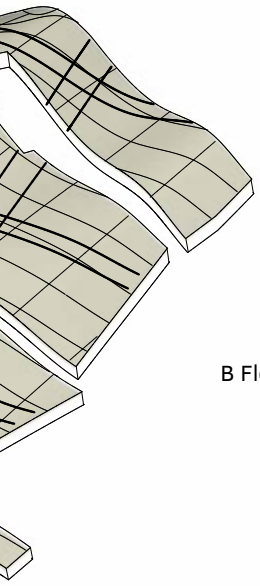
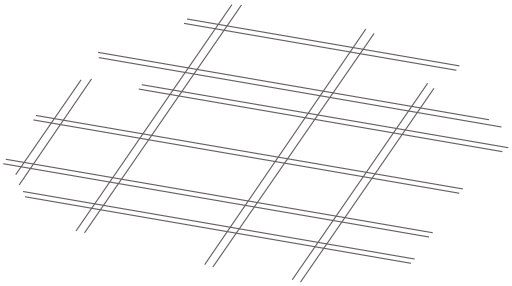


FIG. 6.5.2.7 City of Culture of Galicia layering orthogoal grids onto different Ground Form elements (Drawing: author)

Spatial Form

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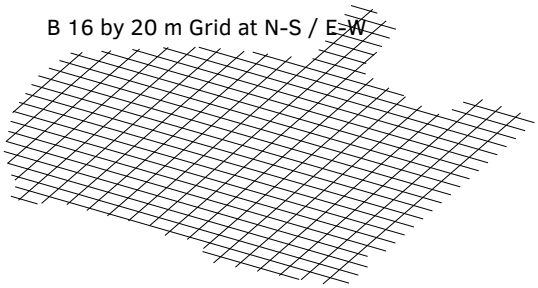
A Roof:
Strips, Light 8m

A Major Irregular Grid at 8 Degree W

B Roof:
Strips Light 1m20

B Floors Exterior / Interior:
Strips Dark 1m20

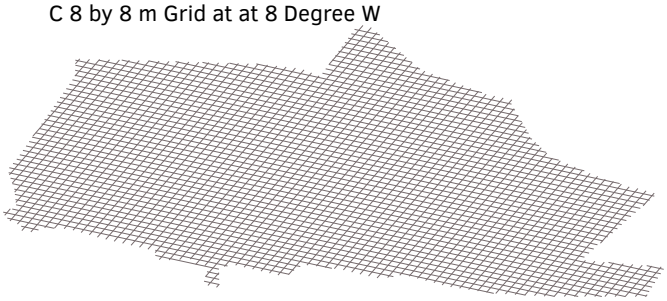
B 16 by 20 m Grid at N-S / E-W

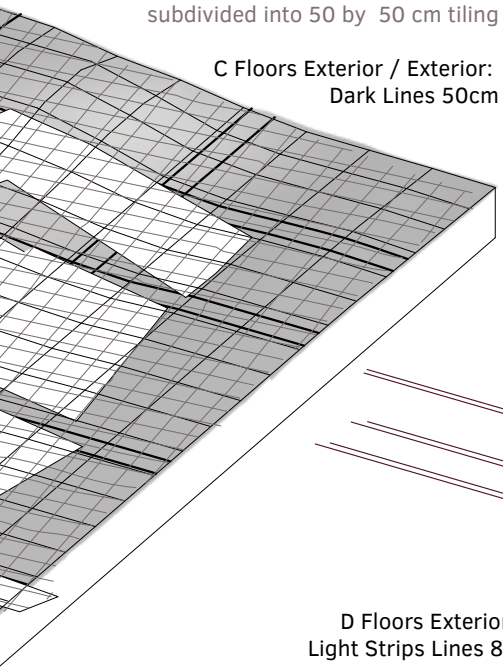


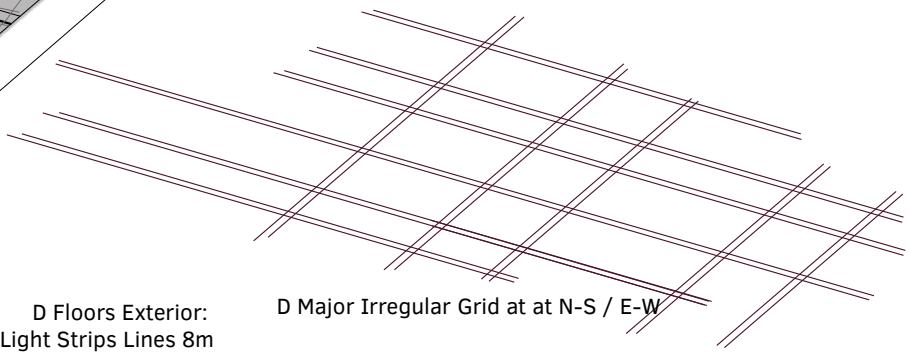
C Roof:
subdivided into 50 by 50 cm tiling

C Floors Exterior / Exterior:
Dark Lines 50cm

C 8 by 8 m Grid at at 8 Degree W

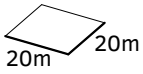






D Floors Exterior:
Light Strips Lines 8m

D Major Irregular Grid at at N-S / E-W



Scale 1:500

6.6.2 Santiago Spatial Form
Layering of Orthgogal Grids ontoent Ground Form elments

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6.5.3 Image or Metaphorical Form

"Nature is never used as a metaphor in my work" (Eisenman in Gomez-Moriana 2010 p.4)

"If the hill will not come to Mahomet, Mahomet will go to the hill." (Bacon 1625)

The complex logic of the design of City of Culture is an independent regulator of form. According to Peter Eisenman, "if you are not interested in form, you are not an architect. Great architects have always been involved in form." (Eisenman in Interview A.1.3). His detailed score determines forms with a multitude of systems, that are in such a density that the form may seem arbitrary. What Eisenman himself calls "the excess of reason" (Eisenman in Interview A.1.3) is materialised here.

Metaphors of landscape elements could be read from parallels to an artificial hill, a rock formation, and a geological fault. The cliffs and slopes, canyons and creeks run across this artificial landscape.

This section does not count all landscape metaphors in City of Culture. Rather it explores how the designers of City of Culture applied landscape strategies in architecture. As introduced in the first two analytical layers, the basic strategy of the City of Culture is that of artificial overlay and densification of composition principles. The composition stems from neither a collage of distinct elements (as in Jussieu), nor an abstraction of natural elements into building properties (as in Learning Centre). The dominant language at Santiago is the creation of architecture, not as a textual polemic nor poetic representation of nature, but as an autonomous architectural artifact. Throughout his career Eisenman has propagated and defended the disciplinary autonomy of architecture. (i.e. Eisenman e.a. 2014)

I propose to establish Eisenman's concepts of 'Artificial Excavation' and 'Excess of Reason' as combined equipment to create architecture as an artificial nature.

The landscape metaphor at City of Culture does not relate to the image of the building but to the process of its design: The constant overlay of structures and the multitude of formal systems combined into one complex composition at the scale of a whole city is the actual landscape here. While Ian McHarg (1969 as elaborated in 2.3.1) unravelled the existing landscape into its many constituent strata or layers, Eisenman generates an artificial landscape from overlying strata and layers.

Rather than reproducing the image of nature (which would be the gardener's approach), City of Culture provides architectural tectonics like the geology of rock formations. The imagery of the built materials and surfaces reveals its own logic of forces and processes.

To better understand this process as landscape metaphor at City of Culture, a brief excursus into modern geology is useful. Geological forces are today very differently understood from even only a century ago. One famous example is the controversy about the Glarus Nappes in the Swiss Alps. Here an old rock formation overlays a newer one, but the explanation was more than adventurous. For a long time, well established geologists Escher and Heim lobbied and published against a theory evolved by Bertrand (1884) (summary of the controversy in English by Trümpy in Müller 1991 p.385-399, Neuenkirchen 2011 p.6-10, Pfiffner 2009 p.176-9). The elder Hans Conrad Escher had explained the layering of older rocks above younger (fig. 6.5.3.2.) with a complex but elegant double fold theory (fig. 6.5.3.2. above). The much simpler explanation of the Frenchman Bertrand (1884) was that a large part of the crust had been overthrown across tens of kilometres from the southern side. That explanation would only be accepted by Heim after 20 years. Long time geologists could not accept the explanation of thrust of giant nappes. The dynamics that would

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FIG. 6.5.3.1 Pangeä (Neukirchen)

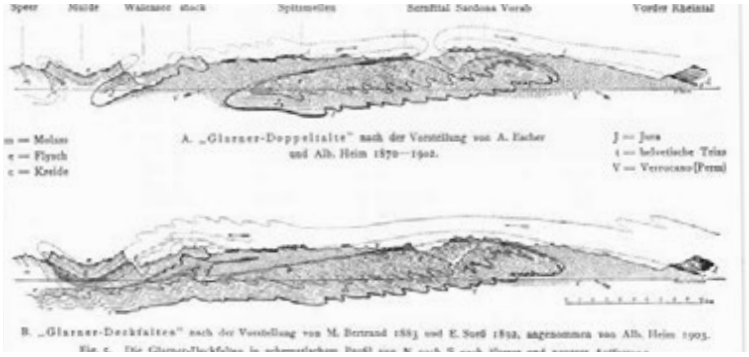


FIG. 6.5.3.2 Theoretical models for the Glarus Overthrust (Heim 1921)



FIG. 6.5.3.3 Zerklüftung (Goethe 1963)

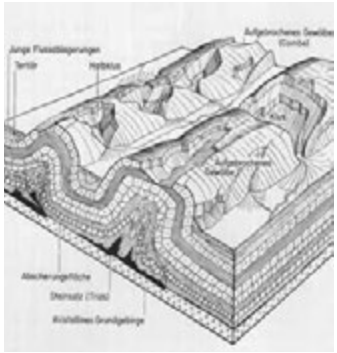


FIG. 6.5.3.4 Faltenjura (Labhart 1992)



FIG. 6.5.3.5 Alps at Elm (Escher)

be able to pull such a giant older stone layer above another could only be explained by the much later accepted theory of plate tectonics. That theory had a similar fate: although Alfred Wegener (1880-1930) had intuitively discovered continental drift from the matching of the continents like pieces of a puzzle in 1911 and first lectured about it, he was ridiculed by geologists and could not establish his theory during his short life span (Wegener 1911 and 1912 quoted after Neukirchen 2011 p. 59). Only in the 1960s modern geophysics, and evidence of magnetic formation and submarine geological probes could explain continental drift with modern plate tectonics, as it is being measured in several centimetres per year (2-10 cm depending on the continental plates, Neukirchen 2011 p. 62).

In former times, natural scientists only could imagine geological dynamics as vertical forces of rock formation caused by inner earth movement of magma (besides Heim and Schmidt 1891 i.e. also Goethe 1811 in 1963 p.114). Modern geology, starting at the end of the 19th century, deduces many formational forces from several layer movements, subduction and thrust-sheets (Suess 1885, today besides above also i.e. Bahlburg & Breitkreuz 2012, Davis e.a. 2012, Gnaägi & Labhart 2015, Labhart 1992).

20th century geological tectonics have evolved into a complex theory of dynamics. In 100 years, we have dealt with a paradigm shift in the field of geology. It seems to me that such a paradigm shift is the transformation of architectural tectonics that Eisenman wants to introduce into architecture. At Santiago he took his chance to build a whole mountain.

In my analytical drawing I explain Eisenman's mountain with the tracing of dynamic geological formations (fig. 6.5.3.4.). In geological tectonics, the folding of the roof is relatively simple, as explained with a contraction in the ground form analysis. It could be compared to a younger mountain formation like the Jura. The roof is folded like a geological nappes with a rough outside

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and a soft inside. Stratification of softer layers is shown also at some instances in the glass facades. In other parts, the glass facades form a ragged, cliff-like exposure, which in some cases serves as a landmark image oriented towards the city. On site is is apparent how similar the formations are to the adjacent natural rock, which can be found in many other areas of the Galician landscape.

The closed building skin is formed fully of raw broken natural stone. Its tiling gives the impression of a weathered rock, leaving smaller fractures in a grid-line pattern. The hard crust to the outside is cut in relief by grid-lines of larger fractures that carve onto the surface of the weathered rock like a form of erosion. These fractures represent the spatial system of grids within the hard shell. Several layers of longitudinal and cross-joints cut into the surface. They follow a mathematical logic that does not in itself structure the geomorphic shapes, but only measures them to the rhythm of architecture and construction.

On the interior, suddenly these systems generate a smooth surface. After an analytical approach it seems to be like in the machine room of natural forces- indeed they are rather architectural forces. More than a geological cave it gives a sense of moving inside a dynamic tectonic model. The movement dynamics are revealed in the structure, as they dissect into columns, patterns, claddings and recesses and (it seems only lastly) into walls. Even the natural stone is polished inside. All that is visible of nature here is cleaned and translated into concepts: just a driving force to architectural form.

Concluding this analysis of the metaphorical form, I state that at City of Culture - departing form architect Eisenman's conscious theoretical position - the metaphor to landscape is in the process that generates the form and not in the form itself. Like a geological formation process, forces generated by the architect recede into numerous details of the materialisation and construction of the building. All spatial and ground form appearance is generated by this overarching geological formation process that constitutes the main landscape metaphor.

For Eisenman the relation of City of Culture to Santiago is that of the fantastic and speculative archaeology of Piranesi to Rome, as he said "If Piranesi said he was doing a plan of Rome, then I was doing a plan of Santiago" (Eisenman in Interview A1.3.1.).

For Eisenman the whole of City of Culture represents an "artificial excavation" (Eisenman in Interview A1.3.1.). I explain it as reverse archaeology: Archeologists try to understand life as covered by layers of rubble throughout the centuries, hidden under hills of rubble and new nature. Eisenman at City of Culture reverses that process of excavation into a act of creating architectural space.

The image of the whole of City of Culture represents this "artificial excavation" process: A city that looks like an excavation site and adds many formal layers in a composition comparable to the complexity of a century old city. An artificial city that takes all of its formal components from either that Medieval city of Santiago or from the site of Monte Gaiás itself. A new 'campo stellae', a secular site with artificially enhanced density of the sacred is created in this process. This 'artificial excavation' is a main novelty of City of Culture as a landscape design strategy. It has no visible and easy reference to natural elements as form but a multitude of almost invisible and complex references to natural processes of formation.

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6.5.4 Form of the Program

As opposed to the two previous cases of single buildings Jussieu and Lausanne (4.5.4 and 5.5.4) the City of Culture consists of a series of buildings and programs under one guiding architectural composition.

While programming of an individual building, in the other two cases, connects landscape layers, here in Galicia the programming strategy is conventional, unlike the formal gymnastics.

The social, ethical or even political dimension of programming is tucked away. Questions to the societal context or political intentions of Manuel Fraga are seldom addressed but with a simple reaction. The architect at many levels seems uncritical and even servile vis-a-vis the demands of the client. The innovation of this architecture lies in formal and compositional aspects, that merit attention in regard to my research on landscape design strategies, but not in any social or political program.

In my interview, Eisenman explained the core idea of the program as a kind of cultural pilgrimage:

“Fraga’s idea, and it was a very good one, was to make an international place where Galicians could be proud of being on a cultural map, on a pilgrimage map.” (Eisenman A.1.3.1)

Eisenman knowingly takes a different position here than for example Rem Koolhaas. In my interview I specifically addressed the question of relating architectural form to architectural program. And out of position, Eisenman explained himself in contrast to Rem Koolhaas

“Rem talks about program, but in the end, do those programs necessarily give you that form? No, that’s his invention. Anyone that tells you they are interested in program you should be wary of. “ (Eisenman A.1.3.1)

Consequently, and as we can read in his projects, Eisenman denies interest in program as a generator of form.

“program, there is no program for most buildings, that defines form in any case. What defines form is precedent. What is the form of a museum? The content, the art to be exhibited, but in the end, is the architecture the background, or is the art? Most painters think that architecture should be the background, and I don’t necessarily think that’s the case. I think architecture is why we go into buildings, and if it’s not interesting, we don’t go, no matter what the art is.

Not every museum can have great art. We go to Bilbao despite that it has no collection; we go to the Guggenheim despite its modest collection, to see the architecture.” (Eisenman A.1.3.1)

In the City of Culture, such programming would be an ad-hoc operation to fill in preconceived forms I compared to a picnic in a park. But Eisenman denies involvement with that.

“I don’t give a damn where the picnic is. If it’s a great garden, people will go there.” (Eisenman A.1.3.1)

The form of each building follows a set of operations to fill in the architectural volume with usage. Functional aspects are followed by the architects, yet the programmatic side of the project raises more questions. Several critics question the use of City of Culture in general like Jakob (2006) in “Werk Bauen und Wohnen” or Curtis (2010) in “Architectural Review”. The program is an expression of cultural optimism, that may have seemed self-fulfilling to its prophets.

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In the more limited and professional context of an architectural design, certainly the program requirements have been fulfilled. Firstly this happens in a competition phase, in the case of this design with a filling of the conceived shapes -after their creation- with the program, then represented by coloured cube blocks (fig. 6.5.4.1). Later on in the design process programs have changed, altered. Practical aspects of the use of buildings seem far from the political decision makers and their will to make a cultural statement.

In my program form analysis I interpret this way of programming as filling forms with programs. The way that City of Culture's programming may have fulfilled a need is less interesting in this case study, than the fact that there is actually no need for anything this giant complex proposes - and how it was (partially) built anyhow. This way of programming is indeed very common in Landscape Architecture. Think of the 'need' for the Royal Gardens at Versailles: there was no other program to it than the representation of the absolute power of the King. Projects bound to political representation are at risk with changes of power.

The political importance of large projects is part of their natural risk (as seen with the rise and decline of Minister Jacques Lang that took Jussieu into its state of limbo in ch. 4.4.). The economical crisis in Spain was of unexpected dimension. The current changes and disruptions in Spanish society are of unprecedented scale since the civil war. Those changes not only undermined the economical basis for this giant project, they also interfered with the larger political agenda of creating such a place for Galician culture, in a time where even the definition of regional - and national - culture in Spain is debated.

The program of a new built monument to Galicia at landscape scale was a giant plan. After being conceived and partially realised, the usefulness of its program is a bigger and less answerable question than it may have been at the end of the 20th century, when the plan arose.

While our two precedent projects Jussieu and Lausanne each found a way to organise a program as a landscape - developing a landscape design strategy of composition - in City of Culture I see the form of the program as a shortcoming from a landscape method perspective. This inability is also a symptom of an architecture that does not take control of the crucial aspect of how it is going to be used.

6.5.5 The Composition

The form of City of Culture is dominated by the collision of themes and ordering systems. They are each reasonable, in classical 'ratio' but together they compress the spatial composition to such a density, they appear as a natural 'irrational' formation, like an artificial rock.

Following some of Eisenman's own statements, City of Culture is not a landscape in a strictly formal sense. It is a composition strategy generating a landscape. No doubt Eisenman is not a nature lover, as opposed to Ian McHarg (1969 as elaborated in 2.3.1). McHarg imagined it in his ground breaking models in Design with Nature that influenced generations of landscape architects.

As discussed earlier in 6.5.3, the appearance of City of Culture is created by a methodological process of composition that is exactly the opposite of McHarg's (and other authors quoted in 2.3.1.) decomposition into layers. As Eisenman calls his own design operations 'artificial excavations' he acknowledges this reverse process.

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Nicolaus Steno (1638–86) first established the principle of layers in soils and thus founded geology. He realised that rock formations are often consolidated sediments, and that such rocks occur in layers in the order in which they were laid down. (Steno 1669 quoted by Lyell 1832 p.31). The layering of different historical strata, or stratification, is used for understanding historical sequences in archaeology up to modern times. Geological sequencing made Charles Darwin (1859) realise how the development of species is related to time in and evolution. Strata or layers have a crucial role in modern thought to understand our world.

City of Culture forefronts this crucial role of landscape formation in a massive composition, that is manifests and freezes its own formative processes in time. It exposes the process of formatting the physical world into a built representation. Ground is ground. The world itself (or at least Galicia) comes into the world (or into Monte Gaiás).

I should like to describe the propulsive act of layering spatial systems across each other at City of Culture as an artificial landscape formation. The spatial form of City of Culture does not imitate landscape's natural spaces or extraction elements, nor does it mime visual landscape experiences. Rather it develops a design strategy to create landscape, that of creating a new nature based on excessive reason.

The design of process in itself is an achievement, including the rigorous transformation of this design process into a building process at an enormous scale and over a significant period of time. The fragmentary results may reflect certain shortcomings, but nevertheless the composition in its integrative working across layers is a significant application of landscape generative processes in architecture.

6.6 Specific Methods of Design Analysis for Santiago

At Jussieu (chapter 4.6) I studied the critical pro-construction. It was a hypothetical executed stage of the unrealised building. At the Learning Centre (chapter 5.6) I investigated the visual space created by the landscape design in architecture, to introduce a landscape space analysis method for understanding architectural space. In the case of City of Culture I chose a strategy more related to the form of the program and its manifestation in the project design. Interpreting the unfinished state of City of Culture as an actual crisis of program, I propose an alternative way of programming with a landscape attitude.

In this section, I explore an alternative program for the two unfinished buildings in the City of Culture. From the methodological position of this thesis, I propose here to make a landscape design based on architectural principles that Eisenman Architects developed for the building program.

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FIG. 6.6.1 Gardens around City of Culture 2017



FIG. 6.6.2 Lake Park Isabel Aguirre, Escola Galega da Paisaxe 2017



FIG. 6.6.3 Literary Garden



FIG. 6.6.4 Bosque de Galicia (all cidadedacultura.gal 2017)

In the following, a design landscape experiment should test the systematic of the Eisenman design and show its compositor's logic. For the underused site I propose a temporary Galician Forest Garden.

The proposed Galician Forest Garden (fig. 6.6.10.–13) as a temporary garden should display the natural and cultural riches of the flora of Galicia. The plantings will be related to the subject of cultural production on land, and culture will be interpreted in its primary, landscape related form as agriculture or farming. The alternative core of City of Culture will be a place for temporary urban farming.

During the writing and analysis of this thesis a series of comparable projects have been realised under Isabel Aguirre, principal at the Escola Galega da Paisaxe, belonging to the Juana de Vega Foundation (cidadedacultura.gal accessed August 2017). They consist of a Bosque de Galicia (fig 6.6.4) a Lake Park and a Literary Garden (fig 6.6.2-3.. These recently published and realised projects partially overlap in place and theme with my proposal. (cidadedacultura.gal accessed August 2017)

From an ecological perspective the current state of large parts of City of Culture is a wasteland to be recovered. The site of City of Culture has been excavated since 2001. Fertile topsoil was removed to cultivate architecture. Below it a partially rocky underground was removed for building

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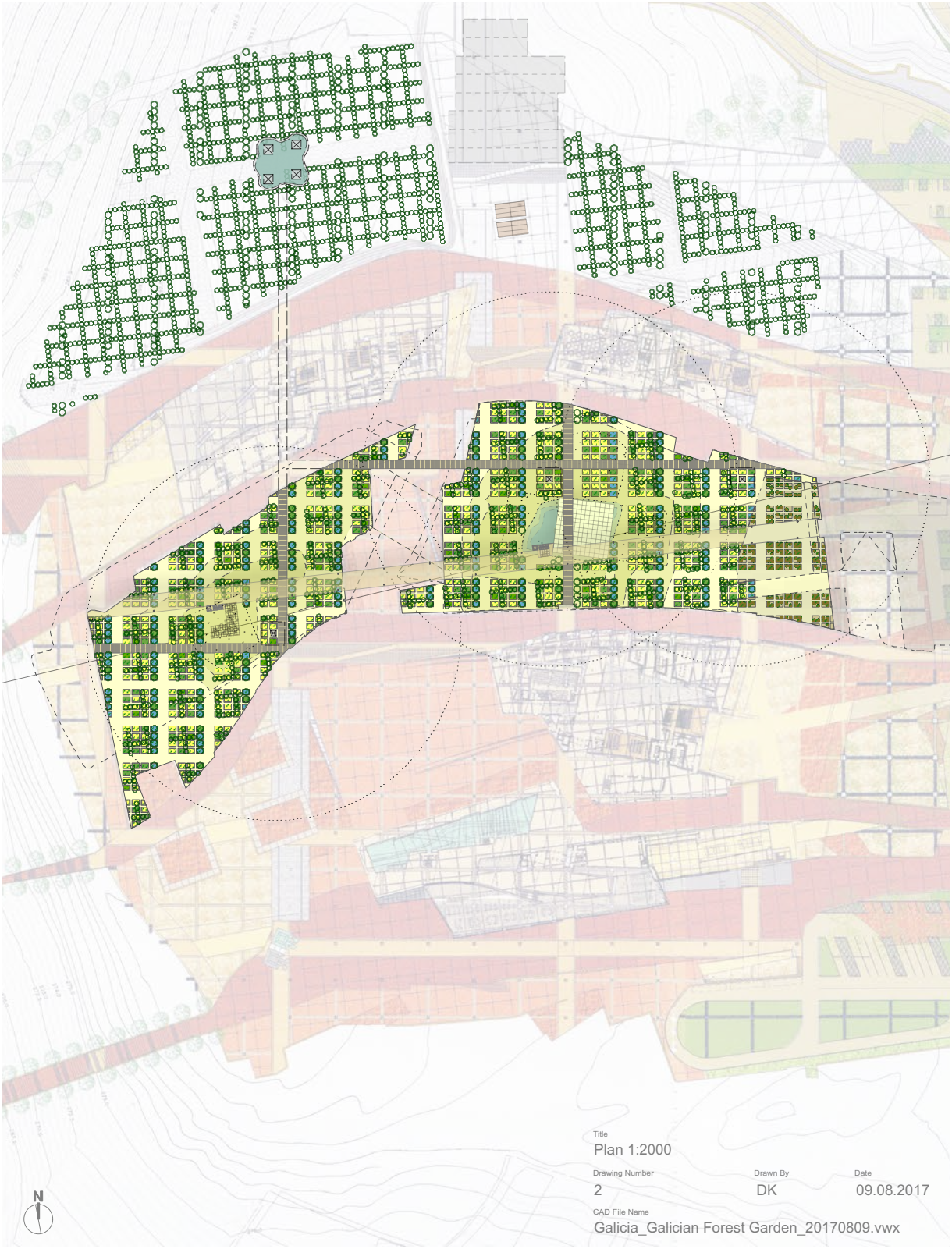


FIG. 6.6.5 Galician Forest Garden
(Design drawing: author & Daphne Keegstra, DGJ Landscapes)

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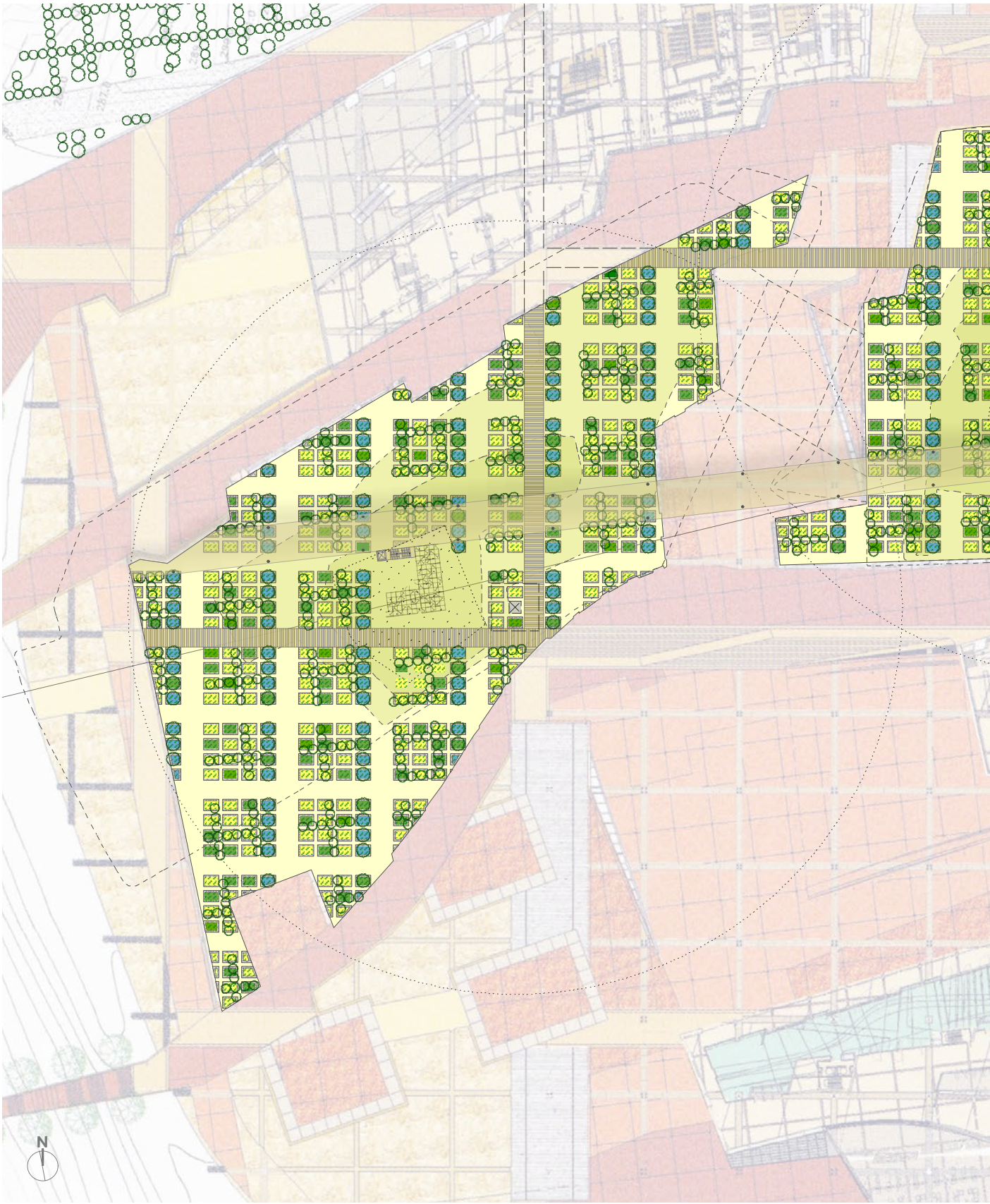


FIG. 6.6.6 Galician Forest Garden
(Design drawing: author & Daphne Keegstra, DGJ Landscapes)

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Title
Plan 1:1000
Drawing Number
1
Drawn By
DK
Date
09.08.2017
CAD File Name
Galicia_Galician Forest Garden_20170809.vwx

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a tunnel and foundations and largely exposed to erosion. Technically the unbuilt ruin might be stabilised for another couple of years. Nevertheless a permanent construction site is not a good urban environment to live and work in. The bad microclimate (of extreme temperatures and rainfall) will further deteriorate the site and the livability for the City of Culture is severely reduced by the presence of these vacant holes - besides the effects it has on the morale of visitors (see ch 6.3).

Galicia is a region with a large forest and Spain's most dominant timber producer. In Galicia, forestry experts see the urgent need for a regional centre for information on sustainable forestry (Roback e.a 2012). As City of Culture already partially incorporates provincial institutions for sustainable forestry, forestry research with botanical and education services could be adopted here. Moreover, my temporary programming is a public garden to develop how forest cultures can be used for food production.

For this thesis the primary purpose of the Galician Forest Garden is a design experiment. The proposal shows the design composition of the overall project - instead of displaying its failure. The tree nursery is like a living park scale walkable landscape methods design exhibition.

The junger trees in the nursery are to be planted in a pattern based on the smaller 8 x 8m grid. Larger trees are put in Lines every 20 meters. Below the crowns I propose a terraced garden to hold the terrain for trees and experiment with forest food cultivation techniques. The tracing follows the 16 x 20 meter grid, subdivided in 4 x 4 with a wide grass covered path in between. Through the overlapping grids the composition will partially lose its artificiality and look at instances more like a wild forest; at others the geometrical order of a cultural landscape will be visible.

Nursing will involve tree cutting and annual or bi-annual replanting and delivery logistics. Therefore I propose to install three large building cranes and use the parking facilities of the designated opera in the east as a delivery bay.

The terraces are materialised wit a simple modular gabion system filled with rock-rubble. Large masses of partially still unorganised rubble at the southeast rim of the site can be reinserted into the site temporarily. The pond bottoms of the opera pit will serve as a water reservoir for tree and forest culture irrigation.

The forest is composed of different climatic zones according to depth in the pit, distance to water and height, steepness and light exposure. It contains a series of species that are either naturally grown in Galicia (bosquesdegalicia.es) or that seemed to us useful to sustainable forestry in a cultivated form. The forestry plan is based on two locally dominant forest types: the souto with Alnus, Betula, Corylus and Qurcus that is typically cultivated with chestnut since Roman times on the light exposed hills, and the moist forest devesa on the shadowy sides. Departing from Galician and Spanish forestry standard documents (Mapa Forestal de España 1:200.000 since 1985, Saura Carballal 2004, Ruz der Castillo y Navascués e.a. 2006) I determined three zones relative to sun exposure, anticipated humidity and the effect of the coastal winds on the local micro-climate inside the two pits at City of Culture. The highest is zone 1 and pest in the pit is zone 3 (fig. 6.6.zones). Each Zone has larger and smaller trees while chestnuts (Castanea stevia) return at each zone (table 6.6). In zone 1 we would cultivate a series of oaks (Quercus ilex, Q. super, Q. pyrenaica & Q. Robur), alder (Alnus glutinosa) and common white birches (Betula puberscens). In zone 2 we propose white birches and besides the chestnuts also hazel (Corylus avellana). In zone 3 we would find again alder, chestnuts and mountain-ash (Sorbus aucuparia).

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Zone 1	Zone 2	Zone 3
Alnus glutinosa	Betula pubescens	Alnus glutinosa
Betula pubescens	Castanea sativa	Castanea sativa
Castanea sativa	Corylus avellana	Sorbus aucuparia
Corylus avellana		
Quercus ilex		
Quercus pyrenaica		
Quercus robur		
Quercus suber		
Brassica rapa	Brassica rapa	Brassica rapa
Lupinus angifolius	Lupinus angifolius	Lupinus angifolius
(edible) perennials	(edible) perennials	(edible) perennials

Title
Zoning plan trees 1:2000

Drawing Number	Drawn By	Date
3	DK	09.08.2017

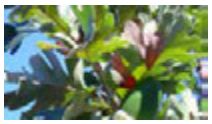
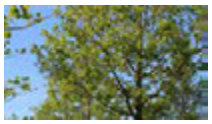
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FIG. 6.6.7 Galician Forest Garden Planting scheme with microclimatic zoning and loading circles of cranes
(Design drawing: author & Daphne Keegstra, DGJ Landscapes, planting consultancy Thijs Dolders, Ebben Nursery)

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TABLE 6.6.1 Galician Forest Garden Planting scheme

	2025: planting size		2030: selling size		2125-2150: adult size		Crown shape	Density	Image	Application
	Ø stem (cm)	Height (m)	Ø stem (cm)	Height (m)	Crown width (m)	Height (m)				
Zone 1:	highest,ostly flat area, exposed to sunlight (except for shadow of the buildings on south side)									
Alnus glutinosa	12-14	2,5-3	20-25	6-7	6-12	10-20	wide pyramid	half open		- Devesa, high areas
Betula pubescens (Betula celtiberica)		2,5-3		6-7	10-15	15-20	oval, multi-stemmed	open		- Souto,ixed with Castanea - Devesa, high areas
Castanea sativa (high-stem)	12-14	2,5-3	20-25	5	20-25	25-30	round	closed		- Souto, warm areas, dominant
Castanea sativa (multi-stem)		2,5-3		5	20-25	25-30	round, multi-stemmed	closed		- Souto, warm areas, dominant
Corylus avellana		2,5-3		5	4-8	5-10	vase, multi-stemmed	closed		- Souto, high areas - Devesa, transition area - Mixed with Cas-tanea
Quercus ilex	12-14	2,5-3	20-25	5	5-8	5-8	round / egg	closed		- Souto,ixed with Castanea - Devesa, calcareous soil
Quercus pyrenaica	12-14	2,5-3	20-25	5	5-10	10-15	egg	half open		- Souto,ixed with Castanea - Devesa, high/ sloped area
Quercus robur	12-14	2,5-3	20-25	5	25-35	25-35	round	half open		- Souto,ixed with Castanea - Devesa, shadow areas
Quercus suber	12-14	2,5-3	20-25	5	10-18	10-18	round	half open		- Souto,ixed with Castanea - Devesa, flat/culti-vated areas

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TABLE 6.6.1 Galician Forest Garden Planting scheme

	2025: planting size		2030: selling size		2125-2150: adult size		Crown shape	Density	Image	Application
	Ø stem (cm)	Height (m)	Ø stem (cm)	Height (m)	Crown width (m)	Height (m)				
Zone 2:	sloped area, comparable toountains, sunny on the north side, shadow on the south side									
Betula pubescens (Betula celtiberica)		2,5-3		6-7	10-15	15-20	oval, multi-stemmed	open		- Devesa, high areas
Castanea sativa (high-stem)	12-14	2,5-3	20-25	5	20-25	25-30	round	closed		- Souto, low/warm areas
Castanea sativa (multi-stem)		2,5-3		5	20-25	25-30	round, multi-stemmed	closed		- Souto, low/warm areas
Corylus avellana		2,5-3		5	4-8	5-10	vase, multi-stemmed	closed		- Souto, high/steep areas - Devesa, transition area
Zone 3:	lowest, sloped area,ostly wet andoist areas									
Alnus glutinosa	12-14	2,5-3	20-25	6-7	6-12	10-20	wide pyramid	half open		- Souto,oist/wet areas
Castanea sativa (high-stem)	12-14	2,5-3	20-25	5	20-25	25-30	round	closed		- Souto, low/warm areas
Castanea sativa (multi-stem)		2,5-3		5	20-25	25-30	round, multi-stemmed	closed		- Souto, low/warm areas
Sorbus aucuparia	12-14	2,5-3	20-25	5	6-8	8-12	wide egg	half open		- Devesa, steeper areas
Plants	Lupinus angustifolius, Brassica rapa, (edible) perennials									

** TreeEbb*

Souto: Castanea forest,ixed with Alnus/Betula/Corylus/Quercus

Devesa:oist forest, North oriented (shadow side)



FIG. 6.6.8 Open-Air Opera on central stage ar Galician Forest Garden (Design visualisation author and Aaron Stumpf, DGJ Landscapes)

Lower parts can be planted with extensive soil enrichers like rapeseed (Brassica rapa) or lupin (Lupinus angustifolius). A succession of a wide variety of preferably edible perennial plants will establish a plant society in a micro-climatic equilibrium according to the principles of permaculture.

A forest like this is not grown in a couple of years, like a building. A park would need at least 20 years to grow to its intended size. I defined three growth stages for each tree: a planting size for a proposed year 2025 with a crown between 2,5 and 3 meters is when the tree would be acquired from the field in the surroundings or a nursery elsewhere and be planted into the Eisenman grids at the Galician Forest Garden.

According to their development in the nursing phases, trees would be re-planted in a new row in the Eisenman grid every one or two years. Older trees might get more permanent positions. While middle aged trees will depart, younger ones will follow.

Accessibility of the halted construction is provided by two access paths that run in the North-South and East-West directions; they must be at times as steep as stairs. With less slope (accessible to wheelchairs) I propose a passageway on scaffoldings to the main entrances for larger visitor flow on one of the large scale grid-lines that cut all the way through the site. Stairs and elevators connect down to the garden, the two deep holes dug for them made accessible to the public.

The project alters the abandoned construction site in the centre of City of Culture into a public space. A periodical pop-up market will develop and stimulate improvised and innovative local garden economy. Take-away kitchens in food trucks and huts invite locals, tourists and pilgrims for alternative recreation to the overcrowded historic centre of Santiago. The services involve the initiative of local residents. The design of the Galician Forest Garden must not overrule the character of a construction site. Everything can remain temporary, be built up slowly and removed

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FIG. 6.6.9 Tree nursing and forest cultures at Galician Forest Garden (Design visualisation author and Aaron Stumpf, DGJ Landscapes)

step by step if building recommences. If the opera is finally built, the Galician Forest Garden can move to the north where extensions to the project site were proposed in the initial competition.

The design structure of my experimental programming of a temporary alternative follows the systematic of the Eisenman design. Instead of the ecologically dead site and unachieved Opera, the Forest Garden would be a lively and living display of a landscape transformation process at work.

The same components of the design of the Galician Forest Garden are used for different functions than they had in the City of Culture design, after dissecting them into ground, spatial and image form.

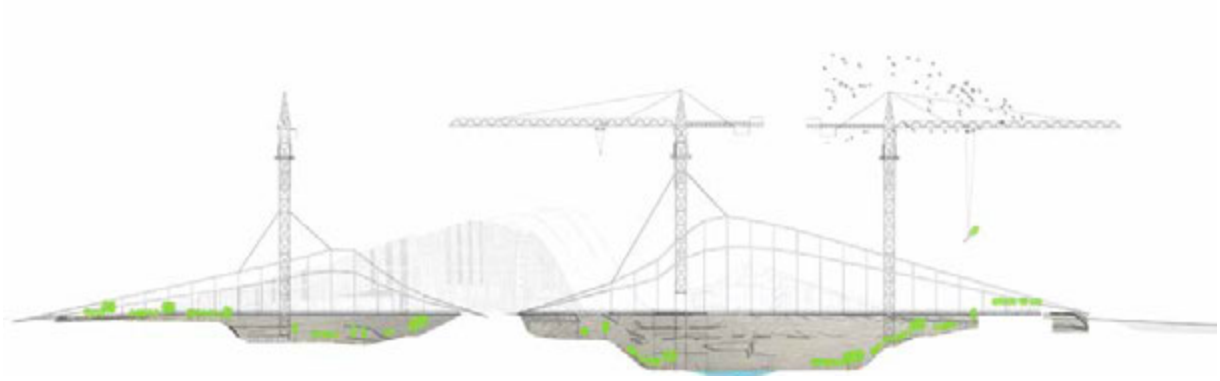


FIG. 6.6.10 Tree nursing footbridge in Eisenmans volumetry (Design drawing: author and Aaron Stumpf, Daphne Keegstra DGJ Landscapes)

The roof as a main element of ground form the buildings would have had, is indicated with the structure of the crossing bridge; in combination with the permanent cranes, it anchors the potential building as a project, but does not let its construction stoppage further paralyse the site.

The spatial forms that are materialised as columns, divisions and claddings in the building are used for planting, terracing and landfills.

The metaphorical form of creating a landscape out of a geological formation process is translated into an ecological succession process. The permanence of a building - frozen time - is replaced by the temporary character of a garden - living time.

The indifference to program that I see as a weakness in the project is used as the chance for my experiment.

As a re-composition, the design experiment of the Galician Forest Garden with landscape architecture reveals the layers of the original composition - a variation on the theme. The design experiment in the framework of this PhD thesis shows how architectural principles can be applied onto garden design. On an identical site I apply the principles in a completely different materialisation.

If Eisenman says (in interview A.1.3.) he never intended to create a landscape, my experiment shows that a landscape could very well be following the rules of composition that Eisenman developed for his buildings.

6.7 Landscape Architectural Attitudes at Santiago

Peter Eisenman's attitude as an architect is ironic and self-critical (Petit 2012). "Ultimately" Eiseman said in my interview "I'm not interested in phenomenology, and materiality is part of what is dominating landscape today, not the conceptual idea of landscape" (Eisenman A1.3.1). Eisenman himself is much too conscious about his form making than that he would use formal analogies. In the above quote Eisenman denies landscape. However I find distinctive landscape attitudes at City of Culture according to my definitions (Marot 1999, chapter 2.3). On the contrary, while the physical, material, and formal reality of City of Culture seems to hinder its characterisation as landscape, the intellectual attitudes of design very clearly connect to it. Design strategies raised by Eisenman for architecture (in the project or in descriptions like the interview) almost read as an alternative definition of landscape attitudes: the anamnesis attitude of Marot (1999, chapter 2.3) could be seen very closely related to Eisenman's concept of artificial excavations. The invention of archaeological sites is a returned process of anamnesis. Eisenman is most conscious of all designers analysed in this thesis about that.

"In my work you can see the shift from a humanist idea to the enlightenment idea to the modern idea to the postmodern idea; each has a level of energy about what the site is." (Eisenman A1.3.1).

At City of Culture the use of anamnesis is the clearest among the three cases. The densification of a several centuries' history of Galicia and Santiago de Compostela, the anamnesis becomes the trigger and framework for the design of this project. The concept of "artificial excavation"

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TABLE 6.7 Resume: City of Culture of Galicia in Santiago de Compostela

Landscape Design Strategies in City of Culture Santiago de Compostela			
4-layer design analysis (Steenbergen & Reh 2003)			
Ground form	**Spatial form**	**Image form**	**Program form**
Topographically deformed roof shape, and soffit Shape build the "Ground-Ground" concept. Other landscape elements are deforming force-lines and shell	Routing as flow across that is channeled. Rather indifferent to views - arbitrary but as a result to size and position good views. Inner ravines, break-lines, opening as a vis-a-vis to the old city. Key spatial principle of complex over-layering.	Main landscape image of stratified folded layers, complex carved rock. Landscape imagery elements are: rocky facades, folds, resemblance to excavation, terraced interiors, undulating ceilings, fractured glass facade. Key metaphor is none built, but geological form process	Programming strategy is filling volumes opportunistically "don't care where the pick-nick is" (Eisenman A1.3.1.). Reenacting a new city, with overlayed copies of the old one. Landscape of artificial excavations make the urban form seem derived from a hill
Landscape attitudes (Marot 1999)			
Anamnesis	**Process**	**Sequencing**	**Context**
Artificial Excavation. Invention of archaeological site as returned process of anamnesis. A constructed history as self-inflicted dramaturgy of making architecture. Interwoven with process in Eisenman architecture.	Process is activated and fully controlled by the architecture. Process materialised and displayed in the architecture. Superpositions, jumping across scales and reconfiguration of meaningful urban structures of ancient Santiago. But this intellectual process of "coding" is completely different form a ecological landscape process	Views less relevant, but design of paths along structure of five pilgrimage routes is important. Not fluently interwoven like at Jussieu and Learning Centre but added as yet another layer. Similar experience than old town through transfer of scale and a detail like arcades.	Complete formal control of the context. Abstracted integration. Most layers of composition derived from context. Citation of remote old city disconnects form actual context. Creation of a new independent context.

(Eisenman A1.3.1) provides a constructed history materialised as a monumental form on the hilltop. The anamnesis is introduced in the self-inflicted dramaturgy of architectural form-finding like the 'deus ex machina'.

Similar is the relation to process that is activated and fully controlled by the architecture. The understanding of the design process as a consciously developed part of a building, even materialised and displayed in the architecture itself, is a recurring central theme in Eisenman's architecture. Eisenman's early houses are based on design processes with rules of formal transformation like House IV (Falls Village, Connecticut 1971 in Davidson 2006 p.44) - here the process results in manipulation of architectural spaces and it elements like columns, walls and ceilings, that we can also find in City of Culture's spatial form. In "Architecture as Second Language" he (Eisenman 1988 in Eisenman 2004 p.238) would describe "design process" for example as an "open ended series of superpositions" for the Romeo and Juliet project (Verona 1985 in Davidson 2006 p.118). In this design he introduces jumping across several scales and the process intervenes into the configuration of urban elements in a transposition of Shakespeare's dramatical text set in Verona. A similar process of reconfiguration I describe in City of Culture's ground form. Here the mythical meanings and the urban structures of ancient Santiago de Compostela are superimposed onto the new site. The process combines both the spatial and ground form. Eisenman's design process is displayed very clearly, almost eclectically detailed at the City of Culture.

Process however is understood in a completely different manner from an ecologist, or a landscape architect like Ian McHarg (1969) would understand it. For Eisenman process is not a physical environmental reality to which he would relate his design but rather an intellectual and philosophical process of thought. In "Coded Rewritings: The Process of Santiago" Peter Eisenman (2005 p.27-35) describes how City of Culture adds a new dimension to this process he calls "coding":

"Coding is a process that, in its reorganizing or rewriting of the original, erases the traces of process usually found in an index. (...) the idea of rewriting in the context of architecture and in the project for Santiago in particular signals an important shift in our work, from an idea of index to one of code." (Eisenman 2005 p. 33)

This "coding" process is intentionally complex, and more complex than earlier designs like the above mentioned Verona project, that could be qualified as "index". Even with increased complexity Eisenman is still consciously in control of process. It becomes part of his formal categories. A multitude of theoretical reasoning produces intentional dissonances. The dominance of process goes as far as overruling formal criteria for metaphorical or programmatic rules with the determination of process that controls every aspect of the architecture as a formal synthesis.

There is almost no distinction between the two categories of anamnesis and process in Eisenman's design; they are interwoven. The architectural form is a frozen and complex amalgam of these two, and even more of Marot's attitudes get integrated in this design.

The spatial sequencing at first sight seems not to be a category of thought in Eisenman's design process. As he states clearly (A1.3.1.), he is not designing views, and is not even interested in a specific view of the own building. However the spatial sequencing and design of routes is clearly present in City of Culture. Mainly City of Culture is structured with the five pilgrimage routes cutting east-west through the complex. They where directly imported from the those dominant routes of the medieval street pattern of Santiago de Compostela (as described in the Spatial Form analysis chapter 6.5.2). As opposed to Jussieu and Learning Centre (chapters 4,5), at City of Culture the spatial sequencing does not fluidly interweave with the design process, but rather is part of the layering process. An obvious and conscious collision is created between the flow - transposed across place and time from the pilgrims flow formative in the medieval city - and the juxtaposition of buildings on the site. Not surprisingly, the street patterns transferred from the old city - even with the arcades, strange to Eisenman's architecture before - lead to a comparable urban experience of the street space as in the centre.

Any landscape attitude at City of Culture claims autonomy of the architectural composition; this becomes most apparent in the treatment of context. The architectural formal control over context is extreme in this case. Its integration plays into a complete abstraction. Many, if not all, of the formal layers of Eisenman's architectural composition are in one way or another derived from the context: a ground form from topography, deformation with force lines and a shell, a spatial form from routes and the ground form itself, a metaphorical and programmatic form dominated by composition principles. The City of Culture is extreme in the creation of its own context. Even though replicating the old, the created context is disconnected from social and political reality, especially after its rapid changes in the economic downfall. The mixed (and sometimes harshly critical) reception of this project often focuses on this point. With this creation of its own context City of Culture also disconnects itself the from the actual existing context. Formally integrating a great many elements of the history and formulating them as a vision, City of Culture greatly displays the government vision for the future of Galicia.

Manuael Fraga Iribane wrote in his preface to the first monograph: "The City of Culture will be a symbol of the continuity of our history, set into the landscape and extending over the top of Monte de las Monte Gaiás ... ". (Fraga in Eisenman 2005, p. 7). The creation of its own context is to be seen within a political vision of a very specific time that found an abrupt end with the paralysing crisis of 2008. It may not be obvious today, after the credit-crunch, how this vision of creating an independent context might be completed.

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If the City of Culture appears today isolated, even hermetic, that may well be due to the fact that it is the creation of its very own world, complete unto itself.

Time will tell if this is a dinosaur skeleton of a soon to be extinct species of giant projects, or a predecessor of a new scale and type of project we may have yet to understand.

6.8 Landscape Design Strategies at Santiago

"Look at the light between the trees." (Eisenman in Interview A1.3.1)

The case of City of Culture does not easily fit into my methodological framework. It is in many ways a sturdy part of the study of the main question:

In what way do landscape strategies change how we understand and create architecture? (Q 1.1.1.)

While the first sight is very apt to interpretation as a landscape, the amalgam of artificial rock was harder, different to dissect, and unexpectedly dense.

The tension between the obvious landscape analogy and the claimed autonomy of architecture (from landscape architecture) touches the core of this thesis. More than in the two other cases, the question of how the architect applied landscape strategies was to be answered here by my own analysis rather than by simple questioning of the author or their documents. None of the authors by the way directly answered my main question, and so I had to investigate each throughout the whole spectre of my methodological framework. To what end in the case of City of Culture? My conclusive dissection follows along the four subsidiary research questions:

How does Eisenman Architects apply landscape strategies in architecture? What are their motives and goals to do so and what do they accomplish? (Q. 1.1.3.)

While Eisenman pointed to this denial of landscape in presentations (i.e. at The Berlage Lecture Eisenman 2010) or in my Interview (A 1.3.1) – the case of City of Culture itself, its popular reception and interpretation by architects seemed on the opposite side to confirm the landscape character of City of Culture. It was fruitful for the thesis in regard to this question that I encounter a position of denial in this third case.

I should state, and demonstrate with the case of City of Culture, that an urban design should not simply be landscaped. The formal composition of material elements in structures, as defined by generations of theorists, and as formulated by a long history of architecture, should not be denied in an imposture of landscape metaphors across the city.

Which landscape elements are applied to architecture at City of Culture, what concepts of landscape are applied in architecture, and how is their formal composition developed? (Q. 1.1.4.)

Any of the four layers of landscape form displayed in City of Culture (sect. 6.5.) cannot be separated from the interwoven, complex amalgam of its composition. The layers are interwoven, ground form and spatial form switch against each other, and the image form is only determined by these two, not referring to landscape as an interpreted category. Nor does the program influence the form, as the form itself is an autonomous creation of Eisenman's architecture. From this consciously formal design process, attitudes are rigorously connected to that same process of form finding: anamnesis and process inflict a form, and spatial sequencing and context are determined again by the dominance of form finding.

The landscape form at City of Culture is mainly related to the first appearance – an artificial topography – of excavations carved in natural stone on the manipulated top of a Galician hill. The ground form and pictorial appearance of City of Culture are that of an amalgam between a city and a mountain.

How does Eisenman himself understand the idea of landscape and its design strategies for application in architecture? (Q. 1.1.5.)

One could think that the denial of landscape and claim for autonomy of architecture by the architect Eisenman is a kind of cocetterie, if reading it or seeing it in academic literature. But as I found at my interview, the 'elder architect' quite simply clarified his position in regard to this thesis research.

Eisenman takes time to explain vividly and in detail his position, and insisted to me that he was not interested in landscape.

"I tried to explain to you why I am not interested in landscape. ... To be interested in landscape, you have to be interested in sensation – how things are, or intuition – that is how the garden might grow, or feeling – how people will love it. ... a thinking type goes into the forest and asks "How many trees are there?" A feeling type goes into the forest and says "How wonderful the trees are!" The sensation type goes in and asks "What kind of trees are these?" And the intuitive type goes in and says "Look at the light between the trees."

"I'm interested in the light between the trees. Not what kind of tree, how many trees, not the lovely bark on the tree. I'm interested in the light." (Eisenman in Interview A1.3.1)

Still I found landscape elements in City of Culture that could be explained as a landscape attitude (in previous section 6.7 and 6.5.). The topographical form of roofs and ceilings, manipulation of the ground with force lines, carving of routes, excavation and use of natural rocks are material manifestations (sect. 6.5.) – many wonderful kinds of trees. The material appearance of architecture seems less important to Eisenman (sect. 6.4.). What really is a guiding landscape element at City of Culture is not these materials, neither collaged (as in Jussieu ch. 4) nor intuitively composed (as in Learning Centre ch. 5). Eisenman's architectural composition, the essence of the work, provides a way in which things are arranged in a structured and complex process. Eisenman is into the "light" (Eisenman in Interview op. cit.), meaning he is interested in the juxtaposition of all these elements. More dominant than the landscape elements is the landscape-like layering, the palimpsest of writings, the self inflicted anamnesis of "artificial excavation"(Eisenman in Interview op. cit.). If, like

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in Piranesi's fantasies (as Rome in Eisenman 2012[120]), this world of the City of Culture is completely artificial it may well substantially not be a landscape. It may not consist of the trees in numbers, character and sorts. But the links between the layers, the ties in the construction, the interferences in the palimpsest are there.

What kind of landscape strategies are successfully applied to the design of the Santiago case of architecture? (Q. 1.1.6.)

I think dealing with time is key to Eisenman's theory most of all, and this is where I found a hinge that breaks open the defensive system of his autonomous architecture: City of Culture was looking for perfection in disregard of its own limits of time.

I could maybe better understand its connection to the Galician landscape not in renderings of unfinished buildings but when visiting the existing site. I propose to accept the decay – embracing complexity with enjoyment. The 'artificial excavation' of Eisenman is a highly cultivated approach. Eisenman imposes complexity too, but vis-à-vis the current state of the site, City of Culture as consequence of a seemingly open process is determinist. At City of Culture I found decay, but that is not wanted and may only be endured with either reluctance or equanimity by the architect.

Time seems to be running out to complete this project. This is why my specific analysis (sect. 6.6.) suggests to complete City of Culture in an alternative way. My speculative counter proposal of a temporary Galician Forest Garden instead of the unfinished opera is about a fundamentally different way of the relationship to time of the architectural project. If we think that Eisenman masters (folds, disjuncts or otherwise quasi-philosophically manipulates) time in architecture he needs all instruments for big gestures. My proposed little urban garden – small in it's ambitions, irrelevant in architectural history, but persistent – could establish a connection with real people and real culture. A side show – off the large planned gesture. One stone at a time with no financial resources it may remain an urban fantasy for many years. Meanwhile the large project that bleeds the funds of the province of Galicia has lost support and awaits completion.

Santiago de Compostela, with its centuries of enduring Christianity in an enemy state seems to me a good place to ask: How much time is needed to found a city? My different time-perspective on the project could let City of Culture grow one day into a fusion of culture and nature that architecture could not have imagined, had it not adhered – first in vain and later patiently – to be a landscape.

Eisenman engaged more in the process of architecture itself than in the real conditions of the site. He pursued the becoming of form, in an outstandingly complex way. Eisenman cherishes complexity – but with a drive to control it.

What is needed in architecture most, as a landscape approach, is a new view onto time. Architects need to learn to design not only the product but the process in the time it takes for their designs to become complete living environments. At City of Culture, Eisenman touches upon this time dimension – but an incomplete project of doubtable success also leaves fundamental questions open. City of Culture shows how in architecture, the mastery of the time of becoming is a landscape strategy still to be explored.

120 Peter Eisenman built a model of Piranesis Rome for Exhibition at Venice Biennale of Architecture 2012

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7 Landscape Strategies in Architecture

7.1 Comparative Conclusions

In the first section of this last chapter (7.1.) I will "comparatively" answer the main question related to each case before coming to broader discussion (7.2.) all of which contributes the the main question:

In what way do landscape design strategies change how we understand and create architecture? (Q 1.1.1.)

At first I differentiate the motives and objectives for landscape strategies in the specific context of each of the three study cases in chapters 4, 5 & 6 to discuss the development of landscape design strategies in architecture:

How do architects apply landscape design strategies in architecture? What are their motives and goals to do so and what do they accomplish? (Q. 1.1.3.)

In terms of spatial contexts the projects are quite different. In particular, the dense urban situation with a long history dating back centuries in Paris; the implementation in a modern campus in Lausanne; and the placement outside Santiago with historical reference to the early medieval city are three completely different project contexts. In terms of surrounding landscapes, the riverside urban development of Paris; the large plateau above the lake Geneva; and Monte Gaiás across the valley from Santiago pose different landscape relations.

The landscape concept in each project intervenes strongly in the context and also transforms this context differently. In a physical sense there are different key concepts, each relating to the surrounding natural landscape, the urban setting, and the expanded architectural object understood as landscape in different relations. At the hermetic Jussieu University complex, the newly inserted libraries quasi incorporated urban contextual relations and activated the nearer and broader surroundings. At Lausanne, the existing EPFL campus is much more open, but similarly lacks connections. These missing connections are activated in an inner area of the new building by manipulating the visual experience of that surrounding in a circumscribed area. At Galicia, a completely new context is created, relating to the ancient city as a counterpart, echoing many forms and structures in several layers but still creating a completely alternative world. Additionally, disconnection from the practical and ideological reality of the site are present in its execution.

We need to consider the differences in project size, related politics, realised program, urban and geographical contexts at this point as they were introduced in each case. The differences should however not undermine how architects apply landscape strategies in the following comparison (table 7.1.1.).

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TABLE 7.1.1 Differences in Context and Building Technique in three case-studys

	Chapter 4	Chapter 5	Chapter 6
	Jussieu Libraries	Learning Centre	City of Culture
Place	Paris	Lausanne	Santiago de Compostela
Project architect	OMA	SANAA	Peter Eisenman
General Differentiations			
Interior m²	22,000	37,000	90,000
Politics of realisation	Culture & Education Ministers 'Grand projet', dropped after change of government (1993)	University Prestige Project, significant budget raises plus additional sponsoring with stable government	Provincial prestige project, stopped in parliament after loss of government majority (2014)
Type of Program(s)	2 University Libraries, Congress, Student Facilities	University Library, Aula, Institutes, Open Learning Space, Restaurants, Congress, Student Facilities	Library of Galicia, 2 Museums (1 stopped), Opera (stopped), Administration, Tourist & Pilgrims Facilities. Pilgrim Bus-Hub (abandoned) and Newspaper Archive (abandoned, later start-up Incubator)
Client vision beyond Program	Uniting 2 separate faculties that share one campus, integrate science and culture back in Uni and city	Providing a new central heart of the (peri-urban) campus for students and faculty	Providing a secular cultural center and relief historic center, Iconic building with 'Bilbao Effect'
Building Technique			
Structure	Stacked undulating concrete floor slabs on steel column Grid	Below: continuous undulating concrete slab with on column grid on top bent steel long beams and wooden crossbeams	Concrete and steel skeleton with two overlapping grids, 'opportunistically' used in non-structural plan and volume disposition
Particular measures at structure	Complex horizontal stiffening	Integrated prestressed tension cables like integrated bridges in lower slabs, 'fake' shell (no bow working)	Service tunnel, 10 and more m "thick" roof, 40m high curtain wall facade with steel structure
Energy saving standard	Low (despise of technicians)	High (Swiss Minergie® Standard)	Adequate (local best practice type)
Material experimentation focused on	Glass facades, interior	Form-work construction, Otherwise moderate	In stone claddings exterior and interior and in the high curtain wall

Besides the general differentiations from the synoptical chart, we also see clearly specific techniques for each project. It is thus not simply a matter of new techniques in the material production that lead to a new type of architecture.

All three projects employ a concrete and steel construction. The structural complexity increases from Jussieu through Lausanne to Santiago. While in the Jussieu project there is a conceptual choice for a certain grid with cross-bracings documented, the individual situations at more complex 'landscape' forms of bent or inclined slabs were not yet studied or documented in this early phase of the design. On the other hand, the Lausanne project leads to highly specific building techniques as documented in the respective chapter and a rather conventional use of materials. In Jussieu there is some experimentation documented on the facades (see the sources from OMA as discussed in the Interview A1.1.1.) without coming to a definitive design. The Galicia project is an experiment in terms of Eisenman's use of natural stone for the first time in his career. Although common in facades, natural stone is rather uncommon as a roofing material. This material choice serves as the expression of the landscape character of the whole city and as a translation of the landscape metaphor, while in the Galicia project much more of the landscape is translated into the material appearance of the building's exterior surface. The other two projects' formal references remain abstract and are more of a self referential system. While the Galicia project could be interpreted as

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TABLE 7.1.2 Comparison of landscape methods in three case-studys

	4-layer design analysis (Steenbergen & Reh 2003)		
	Chapter 4	Chapter 5	Chapter 6
	Jussieu Libraries	Learning Centre	City of Culture
Ground Form			
Use of topography	Connect to parvis Continuous plan stacked	Continuous floor elevating to panoramic level, providing openings underneath	Roof Shape, Soffit Shape "Ground-Ground" concept.
Other landscape elements	Ravine inside, Terrace to lower floors	Two merged hills	Force lines, Shell
Spatial Form			
Type of routing	Spiraling up and down in montage	Flow around undulation	Flow across channeled
Landscape spatial views System	Incidental but conscious view relations to urban context. City as backdrop. At design stage still in development.	Strong multi axial viewing system, reacts to form, consciously manipulated horizons,steered views in a landscape park style	Rather indifferent to views - arbitrary but as a result to size and position good views. Inner ravines, break-lines, opening as a vis-a-vis to the old city
Key spatial principle	Spiral space cut	Undulating hills	Complex over-layering
Image Form			
Main Landscape image	Multiple folded slab, complex geological section	Single folded slab, simple geological section	Stratified folded layers, complex carved rock
Landscape imagery elements	Amphitheater/Grotto, hill(s), slopes in various forms. Roofgarden and terrace cascade (not worked out), sports-park (removed form project)	Grotto, slopes, hills, terraces, amphitheater, huts, clearings, serpentines, funicular, small inner gardens	Rocky facades, folds, resemblance to excavation, terraced interiors, undulating ceilings, fractured glass facade
Key metaphor	Urban landscape collage	Minimalistic and surreal abstraction of a landscape	None built, but geological form process
Program Form			
Programming strategy	Urbanising a landscape flexibly	Colonising a landscape statically	Filling volumes opportunistically "don't care where the pick-nick is" (Eisenman A1.3.1.)
How dealing with urban ...	The building as a city, the inner street folded ...	The building re-framing an inner city in the open campus, contains a park ...	Reenacting a new city, with overlayed copies of the old one ...
... vs. landscape	... as connecting square and landscape in a interior dense city	... as an interior landscape, reverted frame	... artificial excavations make the urbs seem derived from a hill

an artificial rock or giant dry garden, the Jussieu and EPFL projects avoid any 'garden' language except for terraces evoking Sansouci (mentioned by Cornubert in the Interview A1.1.1.) that was discussed but never made explicit in the terraces of Jussieu (table comparison in Appendix).

Comparing the application of landscape design strategies in the three cases provides a detailed insight in order to recapitulate the answers to the question:

Which landscape elements are applied to architecture, what concepts of landscape are applied in architecture, and how is their formal composition developed? (Q. 1.1.4.)

Apart from the material and structural differences mentioned above, the application of the landscape theme into a formal composition is equally intense among the three projects. At the basis each case project demonstrates specific ground form (table 7.1.2.) in its architectural composition. Jussieu employs topographically manipulated floors rather unconventional in architecture at that time. It expresses landscape ground-form in several elements of design, namely, a hill and a ravine. In the EPFL Learning Centre, The two hills as the most explicit and large ground-form elements inform one single slab. Even though all three projects share the variation and complexity of ground-form elements, in Jussieu, ravines, terraces and hilly slopes merge into one continuous

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folded plane as a collage of elements. Still different is the roof slab that crosses all separate buildings that together are City of Culture. The roof is only one of several layered ground-forms. The object appearance of the complex as a "mountain" results in a monumental iconic shape: a new "landscape" is literally made as a mountain. But the actual landscape is rather the complex spatial system, that plays on several other compositional levels that overlay one another, which in itself is a landscape quality.

The ground-forms in all three projects inform the spatial system, but each in a different manner (table 7.1.2.). The ground-form steers the circulation into a spiralling movement at Jussieu with a connected system of controlled views onto the city of Paris, based on incidental reactions to opportunities. With the conscious manipulation of openings and undulations toward views and horizons, the connection of the spatial systems with the ground-form is much more explicit and deliberate at the Learning Centre, leaving a rather free flow of visitors to explore those spatial systems in a way very similar to a landscape park composition. In the Galicia project the flows are channelled in a street pattern that is transposed from the pilgrimage paths through ancient Santiago. The views are much less controlled and the architecture seems indifferent to controlling them, which does however produce an ambiance of 'natural' landscape as if climbing through and looking from a rock on top of a hill. Complex architecture with its materialisation in stone leads to an apparently simple landscape metaphor. But hidden behind is a larger complexity. That this is not visible at first, is a result of the deliberate blurring of the "figure-ground" logic inherent to the conventional urban plan. The architects' "ground-ground" or "figure-figure" concept (Eisenman A1.3.1.) undermines the distinction between ground and spatial forms, or rather overcomes them in the completeness of composition.

The contrasts between the three case projects in spatial working continue in the detailed image-form (table 7.1.2). However, in one form or another, the main landscape image in all three projects relates to the geological formation of layered sediments or stratification. These result in a complex section at Jussieu or a simpler one at Learning Centre. While these two projects both have a relatively controlled and usable landscaped surface, at City of Culture, the folds and undulations are several building levels high in amplitude, creating an extreme condition that merely becomes a monumental roof shape, adding iconic "geological" expression rather than usable surface. Other large allusions to "geological" landscape formations in the vicinity at City of Culture can be found in the rock-like fractured design of the giant glass facade and a similar expression of the many stone clad facades. In comparison such "geological" elements are relatively modest as grottoes, cascades, and terraces in the architecture of the other two projects.

While so far analysing formal resemblance in the three different architectural expressions, I also observe fundamental conceptual differences in dealing with program-form (table 7.2.4.). Such differences start with the strategy of dealing with given programs. The Jussieu project provides a kind of flexible and dense urbanisation of a landscape (relating to Koolhaas 1995). In Lausanne, the shire size of park-like space colonises an open field through the wide single-storey layout with its multi-sided openings. The City of Culture provides opportunistic forms that are supposed to be an autonomous expression of architecture while the program remains secondary in value. In this case, such opportunism also deals with (or rather avoids) politics. The Japanese architects in Lausanne provide an egalitarian spatial system in line with the ethics of an open university. OMA alludes to a political program by connecting the imagery of Jussieu to the May '68 movement or art history to the Situationist revolt. Once the socialists lost the election, such provocation could not survive without political backing. The street revolt translated into a revolving street at Jussieu also results from specifically dealing with urbanity versus the rural or landscape character. Jussieu proposes its users to see the building as a city. This means that the landscape on which that city can grow is contained inside the building. While there is literally no trace of actual landscape outside left to

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connect with, these larger scale relations have to be established with views on higher levels of the building. In comparison to Jussieu, at Learning Centre the interrelation of the inner park landscape with the campus and the outer lake and alpine landscape is more controlled and results in a much wider reach for an almost regional scale from the core of the building. The City of Culture has yet another approach: It creates a new artificial city that refers to its counterpart with quotations of old Santiago overlaid as phenomena rather than relating to the actual visual space of the landscape with a spatial strategy. Copies and cuttings make the City of Culture seem as if it were a landscape itself rather than using landscape elements in terms of an active formal composition to create of space.

When differentiating these project specific analytical methods I have also reacted to the differences among the projects and in particular the different relations to inform my 4-layer analysis. The pro-construction of Jussieu (chapter 4.6) leads only to rudimentary expressions of the image-form of a prematurely halted project (1992 - 1993). Its complex spatial and image-form has so far not been understood by architectural critique (at least in the literature reviewed in 1.4) and is thus what I attempted to highlight with my research, which also simulates the process of development of the concept into the materialisation of the project.

The analysis of Learning Centre (chapter 5.6) revealed more about the spatial form than the other cases. My particular analysis of it's visual space gives new understanding for this buildings' spaces but also allows transposition of them in a common ground of other architectural spaces designed with landscape strategies. This leads to a better understanding of the complex park-like spatial system and the inner and outer relationships that are studied in spatial form.

The extension of my analysis to the unfinished buildings in the heart of City of Culture (chapter 6.6) is my own composition study related to all the formal layers and theoretical context. It reflects on the programmatic form, a relation Peter Eisenman much discussed also in the interview. While the City of Culture project first seemed hermetic to formal analysis, it became more clear to me after my own design intervention (chapter 6.6). Only when infiltrating the language of Eisenman I could start to understand his elements and put them in relation to landscape.

The extension of the 4 layer model of Steenbergen and Reh with a broader view on landscape attitudes following Marot certainly proved useful, in particular in this consecutive order. The focus on formal aspects of the "Delft Method" is sometimes criticised - more often by designer - architects than by historians or critics. The reduction of architecture to purely formal aspects supposedly misses other important architectural categories and considerations. As explained in the methodological introduction to my design analysis (3.2.) even colleagues of my research group have found the method lacking focus on non-visual sensory aspects in metropolitan garden designs (de Wit 2014), on the social implications of designed urban parks (van der Velde 2018) or on temporal aspects of movement (both de Wit & van der Velde op. cit.). While I partially see these limitations also in my analysis of buildings, I think that these multiple aspects are, in the case of my subject architecture, rather well covered with the method. Not only does the "Delft Method" stem from an architectural theory (Frankl 1914) suitable to buildings, the focus on objective formal aspects helps to sharpen the analytical lens. Any architectural project this size is infected with a large amount of public relations rhetoric - or 'narrative' - of its architects and clients. The dissection into formal layers helps to expose layers of potential embellishment and project sales tactics that ultimately disguise the true nature of the built (and unbuilt) matter of the design.

After unravelling these layers, the composition can be reconstructed more easily, and with a more objective view onto landscape.

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TABLE 7.1.3 Comparison of landscape attitudes in three case-studies and their influence on the form (in order of importance)

	Landscape attitudes (Marot 1999)		
	Chapter 4	Chapter 5	Chapter 6
	Jussieu Libraries	Learning Centre	City of Culture
Anamnesis			
History in design strategy?	Strong, As a reaction to site building history involving it's political dimension, very involved as a consequence of constraints	Less so, rather answering in an autonomous figure, some few smart interrelations with the development of the site	Constructed history with the concept of artificial excavations. A mise en scene of 'anamnese ex machnina'
Leads to forms	Ground, Spatial, Program Form	Ground, Spatial Form	Ground, Spatial Form
Process			
Landscape strategy in design process?	process seams even if unstructured, interruptive, surrealist (paranoid critical), propagandistically dissonances, programmatic synthesis	process seams less structured, rather intuitive but, precisely controlled, poetically mystified in form, functional synthesis	intentionally complex but from there very structured, multitudes of theoretical reasoning, self-analytical, intentional dissonances, literally expressed in form, formal synthesis
leads to forms	Ground, Spatial, Program Form	Spatial, Program Form	Ground, Spatial, Program Form
Sequencing			
Sequential experiential design?	very important, complex manipulative montage	important, subtle influencing of flows	less important, mostly comparable to urban street experience
leads to forms	Spatial and Image Form	Spatial Form	Spatial and Ground Form
Context			
Context design strategy?	React to and recreate context ins strong dialectical opposition	Reverse context in more subtle spatial composition	Replicate context, but also create it's own completely disconnected one
Leads to forms	Ground, Spatial, Program, Image F.	Ground, Spatial, Image, Program Form,	Image, Ground, Spatial, Program F.

The attitudes of Marot on the other hand are in a certain sense more philosophical; they treat landscape as a category of thought. The advantage of using these after the dissection and reconstruction in the manner of Steenbergen and Reh allows me to neutralise to a certain extent the marketing-philosophy of architecture practises before taking a clearer critical stance on each project. While I use Steenbergen and Reh's scalpel for anatomical dissection, I use Marot's attitudes for re-interpretation as a form of synthetic knowledge building in the theory of architecture. This two-step analysis and synthesis of theory should be seen as the main contribution of this thesis to the systematic study of contemporary architectural design strategies. Although complex and often deliberately disguised, architectural design is not merely alchemy; it could be shown here, with the tool of analytical landscape methods, how some practises of architectural design truly work. If we better understand how architects innovate the notion of the constituents of a public building and it's function in its context, we gain knowledge for our discipline that is valuable for further research, education and practice of future building designs.

Although in design analysis and synthesis methods overlap, I made the separation between the design strategies of architects and the analytical methods applied in this thesis. A good design, in particular in landscape architecture, cannot exist without analysis. But for the logic of research the analytical methods must be differentiated from the interpretative conclusions and critique of design strategies.

More of the strategies becomes visible in the critique that I defined with the landscape attitudes after Sebastien Marot (Section 2.3.5.), I also emphasise the differences in developing these attitudes among different projects by different architects. In our cases different architects develop a different understanding of landscape. Again I summarise and compare the attitudes and answer our initial research question:

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How do architects understand the idea of landscape and its design strategies for application in architecture? (Q. 1.1.5.)

The architects of the three study cases each have a different understanding of landscape; they apply it within different design strategies for different applications. Their understanding at first appears superficial when compared to the theory of landscape attitudes as I have developed from Marot (Chapter 2.3.). Talking not of one design strategy but of several design strategies, I underline the variety of attitudes, as they are derived from different motives. I would like to stress how in each case the landscape attitudes are differentiated by each author's understanding of landscape.

The attitude for two library designs for Jussieu Paris by OMA (1992-93) was loaded with critique of existing malfunction of space: a product of the quashed student revolt that disintegrated the university institutions and ultimately represented the bureaucratic authority in the buildings themselves.

OMA's design in Jussieu demonstrates how landscape design strategies can activate a social space. Landscape introduces as a new dimension of public space inside built structures. The landscape elements applied to the composition of Jussieu indicate a programmatic will to change institutionalised social space. It is also loaded with the link to the revolutionary role of students as a catalyst for the society. The Jussieu project is probably by far the most influential of the three: because it remained unbuilt, its capacity as a 'social magic carpet' has never been proven in reality. But the project's architectural landscape inventions certainly promoted innovation and liberal thinking in architecture.

As I discussed in 4.8, the landscape attitudes for the Jussieu Libraries design have greatly enriched the idea of looking at architecture as a landscape and developed a novel set of formal tools. Its potential is still to be fulfilled.

The attitudes that manifest in Learning Centre are in some ways similar to Jussieu – although far from both the revolutionary context of the late 1960s or of the polarisation of our early 21st century democracies. In a gradient from political to apolitical, this project would take a middle position. SANAA's concept and understanding of landscape harmonises the means to unite use and user groups across the building, from the academic staff or sponsors to recently arrived foreign students. The architects' focus on the creation of simple space with a clear set of aims makes their composition much more legible than the other two case study projects. In interaction, landscape emerges as a harmonising concept, a set of spatial principles that reach far into enhancing human environment with a new language.

In City of Culture, landscape plays a more established architectural idiom. The structures follow an excessive compositional logic of reason. At the end of my story of ideas about landscape, I encountered in Peter Eisenman (in my Interview A.1.3.) a denial of using landscape metaphors in the design of the City of Culture. No landscape attitude at first sight. As with my design experiment I explore common grounds of landscape design and architecture. But temporality of the garden only slowly undermines the 'paralysed' architecture, and it had to come from the outside. Continuity in my view stems from the dissolution of the figure-ground dialectics. The dissolved dialectics enter the very core of architectural creation.

While Jussieu can be seen as a collaged landscape, overriding the university complex with a new unitarian language, and the Learning Centre as a harmonious composition in the finest tunes of landscape tones, City of Culture pushes landscape into the very process of creating architectural form. The geological, time oriented process of designing architecture itself is the novelty employed

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here. Peter Eisenman calls it “artificial excavation”. I interpret this revered archaeological process of “artificial excavations” as a landscape design strategy. In the most form-oriented of the three architectural languages we find the most methodological way of understanding landscapes.

To conclude further from our three case analysis of the various projects, I will compare the cases along one last subsidiary question attempting a comparative synthesis. This tells us more about the reach of landscape in architecture.

What kind of landscape strategies are successfully applied to the design of these different cases of architecture? (Q. 1.1.6.)

Three architects apply landscape strategies in very different manners in order to explore individual extremes and solutions for each assignment that extend architectural conventions. To explain these conceptual differences I refer to the figure-ground distinction (one that Eisenman stresses in the Interview A.1.3. and his project descriptions as in Davidson 2005). The different workings between (conventionally architectural-) figure and (conventionally landscape-) ground, ground-form could be summarised as an evolution between the three projects:

— **Ground into Figure** (Jussieu)

— **Figure into Ground** (Rolex Learning Centre)

— **Figure into Figure** – Ground into Ground (City of Culture)

In Jussieu I interpret “Ground into Figure” from the conceptual diagram: How the ground of the parvis is folded to form a new figure of formal expression. The continuous folded plane is opposed to stacked layers in an audaciously experimental manner. The daring proposal to not simply stack floors but wrap them into a sloping continuum made the project at its time unique but also hard to defend.

At Learning Centre, on the contrary, the figure of the single folded slab in itself forms a new artificial ground with only two layers of spaces. While less audacious, SANAA’s relatively simple manipulation of just one large slab forms a more rigid ground-form that more clearly resembles a landscape.

While these two are already analytical interpretations in answering my research questions, at City of Culture the ‘figure - ground’ relationship is consciously addressed by the architect (Eisenman op.cit.). Dissolving oppositions into a ‘figure-figure’ or ‘ground-ground’ principle comes from excavations, dissolution into complexities and overlaying of spatial structures.

Eisenman’s complex formal operation summarises a simple concept, whereas in opposition, SANAA’s simple formal operations lead to a complex richness of spatial experience. OMA maintains a complex collage that is complexly experienced. The reciprocal relation of landscape intent and landscape means provides the most striking difference: where there is almost no intent to create a landscape, many means found in Santiago are used in the City of Culture.They express analogies to the landscape in architecture like the copying of city routes, the use of cladding materials in the colour of the surroundings or even the transformation of actual topography. At Learning Centre, strong intent employs a reduction of means that reveals elements of the Lausanne landscape but in itself the landscape means used remain sober and concentrated. At Jussieu there seems to be

a certain equally (strong) emphasis on the landscape means and landscape intentions – if I could imagine it built in Paris.

Synthesis between the three can hardly be a goal seeing their rather opposed positions. On the contrary, the application of different landscape elements and concepts may be better read in each case separately. Already quite large differences are in the selection and composition of the landscape elements applied in each project. As the use of each project is very different too, the great varieties of landscape elements, types and forms can not be summarised in a new typology of 'Landscape Building'. Rather, a rich variety of programming strategies that display different positions in the overall discussion about urbanity and landscape must be employed. This is not surprising if we compare the potential of landscaped buildings to all potential uses that could take place in a garden, varying from the court ceremonies placed in 'Baroque Gardens' or the focus on the individual romantic experience of all 'Landscape Parks'.

Such comparison could tell us a great deal about the potential of these buildings in terms of urbanity. What is the social intent of each architectural approach? I would differentiate between the focus and means of the three projects in this field as follows:

- **Jussieu** is a urbanocentric social architecture
- **Learning Centre** is a anthropocentric social architecture
- **City of Culture** is an autonomous architectural urban system

The interaction between space and public as an intervention in urban culture is understood very differently in each project. Each has a different intent to form public spaces that favour a different kind of social use.

At **Jussieu**, OMA deals within the architectural concept by redefining urbanity itself: they are proposing a city of books, revolving streets across a building, and relating views to urban landmarks, which are all strategies of integrating the urban into a single building. Their transformation of 'ground into figure' produces this "urbanocentric" social building. In essence, this expresses the belief that a liberating city -like Paris- can be condensed into a liberating building -like Jussieu- and the building would at that time have the liberating and even revolutionary character of that city.

At **Learning Centre** the focus is more on the human experience. I would call it anthropocentric social architecture: a spatial composition formed around human experience of users more than around conceptual intent of the architects. SANAA promotes non-hierarchical encounters and facilitates equality – with a focus to create harmonious and continuous spaces. The continuous space and smoothly connected zones are very different in experience than of various kinds of disruptions at either of the other two examples.

City of Culture is – however interrelated to context in its layered elements – an autonomous architectural composition at an urban scale. Its architecture simulates landscape in material, form and even morphogenesis, but at the same time completely eradicates and replaces the existing landscapes. Additionally, the architecture does not directly address social aspects of the project context. The responsibility for its social impact is put in the hands of the program that is being proposed by the client. Maybe that unfinished ruin, the central fragment of the non-realised Opera of Galicia, is a monument to the limits of such autonomy – as its fragments of a giant pit and

unfinished parking garage sit like an erratic block, a geological stranger to its landscape, at the centre of it.

Overly ambitious hopes for a 'social magic carpet' at Jussieu – or complete indifference towards social relevance at Galicia are two extremes; the middle ground may lead to more sustained success.

Architecture designed with landscape strategies could reach far, but the social and political context of each project has not dramatically been transformed. Nor has the 'social magic carpet' of Jussieu been seen flying across Paris, nor has 'City of Culture' delivered the 'Bilbao Effect' to Santiago de Compostela.

Our cases display a new type of architecture: each has overcome the theoretical paradigm of the architectural object placed in opposition to the landscape and takes the landscape as a field and as a space that – in varying manners – gives new forms to architecture. After modern architecture discovered, stressed and liberated the spatial continuity between inner and outer space, contemporary architecture is – as in my three cases – immersed in novelty of space. In Jussieu, new design strategies undermine modernist urban space with the invasion of continuity. In Learning Centre, they envelop architectonic space composed of free programs that form all conventions of the object. In City of Culture, new design strategies transgress and subvert the continuity of history with the disruptive transformation in time, a geological folding into places.

The contribution of this thesis to the scientific study of architectural design strategies was not only to reveal landscape components with analytical methods, but to create a framework for understanding their composition and a critique of their position in the context of landscape and urban development. Landscape can be a precise ordering system for a formal composition as well as for a design attitude of an architectural project.

It is clear to me that these three projects have expanded the horizon of architecture. Landscape design strategies represent more than just another trend in architecture[121]. Their integration of landscape design goes far beyond the common in architecture.

7.2 Beyond Landscape Strategies in Architecture

Before concluding this study I should come to the discussion of the methodological framework, the analysis method, of my case studies in terms of how these analytical methods worked and how they could contribute to further studies:

With which research apparatus can we better understand the idea of landscape and its design strategies – specifically for application in architecture? Which analytical methods best reveal landscape compositions in architecture? (Q. 1.1.7.)

121 Whether there is potentially an epochal change for architecture or paradigm shift or not, I could not possibly tell from the short distance in time, which allows no historical classification.

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With selection and comparison the analytical research methodology of this thesis clarified and contributed critically to the science of architectural and landscape architectural theory. By means of morphological research I reveal landscape forms in architecture that are specific to each project's design. Each case has a relationship between the architectural form and content that relies on landscape elements. Spatial concepts and design-related knowledge have been revealed in each analytical chapter. I dissolved and dismantled three designs into components and juxtaposed them in each composition and in a comparative structure. By showing the workings between elements of each design and their composition, the graphical analysis and interpretation combine a detailed view with a holistic perspective.

Each case study chapter (ch. 4,5 & 6) shows specific results that validate the method for the three cases - Jussieu, Learning Centre and City of Culture. In the previous section (7.1.) the results and limitations of the three cases are compared. Before concluding more generally let me discuss how the methodology could work beyond these three cases for architecture in general.

In their own introduction to Architecture and Landscape, Steenbergen and Reh write "The examples selected in this book report this (architectural) conceptual conquest of the landscape." (Steenbergen Reh 2003 p. 15). In a reverse manner, the examples of this thesis display the "landscape conceptual conquest of architecture". At its current stage, the fascination for these experiments may have seemed vague, such as the English landscape was to the 18th century inventors of the Landscape Garden - "labyrinthian, limitless and scaleless" (Steenbergen Reh 2003 p. 238). With the use of structured analytical methods, this thesis elaborated from such a fascination into a more detailed view and also critique of the projects, their innovations and benefits, as well as their shortcomings and limitations.

The result of our analysis shows how landscape strategies propose a site-responsive composition which accounts for context, space, image and program. These are explored on three projects that more or less explicitly refer to landscapes as their design reference.

On the one hand, the methodology of this study could be easily extended to a great number of other projects that chose similar or diverse approaches to architecture framed as a landscape. Long lists of many dozens of projects have been made and evaluated for this study. They are in other literature (ch 1.4.) or have come up in my own research. Other projects could be explored to refine the answers or broaden the field. Partially, these studies also preceded this thesis, which only contains a focused selection from a wider field of projects studied. Since my analytical methods have been refined from such studies and experiments on many buildings throughout several years of research at TU Delft, they could easily be extended. The geographical extent into other regions and the understanding of diverse architects from younger generations and with different cultural backgrounds is a field these analysis methods could be applied to.

On the other hand, a potential route would be to develop landscape method design analysis as a critical tool to view architecture that may not have been primarily conceived as landscape. I imagine a perspective for these analytical tools to give a more spatial, more design oriented view onto holistic design of larger architectural projects. In studying and also critiquing here three cases - and outside this study many more - I have come to the conclusion that my analytical method of landscape qualities in architecture must contribute to an integrative qualitative design approach to architecture. Architecture that seriously focuses contextual aspects should incorporate a holistic approach into the spatial design. And landscape strategies - developed on the designer's drawing board also with these analytical methods - are a valid approach to such holistic architecture.

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Design and analysis are two directions in the similar movement from the thinking head into the drawing hand. Understanding of landscape methods – as sharpened here through the practice of analysis – can contribute in architecture to the future of a useful, sound environment. The path of analysis chosen for this thesis has sharpened our view onto architecture – in what architecture is if looked at as a landscape, but also in what architecture is not yet. The analytical methods show not only what works – and what does not work (yet), they still show an enormous potential for architectural design in the realm of landscape. That potential needs to be explored further whether in renewed practice or in future research and teaching endeavours in the academic realm.

Finally the conclusion here should move from the cases to a general theory of landscape in architecture.

What is the benefit of landscape to architectural design? (Q. 1.1.8.)

In individual forms, and with respect to all their differences pointed out in the previous chapters, I may not talk about one new design strategy in architecture that is derived form a novel concept of landscape, but use the plural 'strategies'.

Some novelties can be applied further than our cases – continuity of inner spatial organisation across the rigid structure of levels and walls has spread from a project like Jussieu across all our cases and into a wide range of contemporary architectural projects. Architectonic space is read as free for programming and process oriented design strategies.

During the three case studies, my focus has shifted from unity to diversity of landscape concepts. That diversity enables several contemporary architects to overcome conventions in different forms and with different attitudes. The common denominator I identify is how landscape responds to a need of a holistic understanding of architecture as design of human environments. Each of the three designs follow different – sometimes opposed – intuitive and rational decisions. If each constitutes an aesthetic composition contrary to a commonly used form – they need to be different from each other too.

How do landscape design strategies contribute to architectural theory? (Q. 1.1.9.)

I have so far demonstrated that we no longer need the dialectics between architecture and landscape. Landscape has proven (through the cases and beyond) to be a valid and successful intellectual structure to conceive buildings of public space. It is a not only a valid design approach but expands our of thinking about architecture.

Landscape is beyond the natural or cultural realm. Applied onto architecture landscape binds the natural into our cultural lives. Landscape design strategies in architecture question the dichotomies that have been held up by architectural academia for centuries.

To conclude my main question, let me recapitulate:

In what way do landscape design strategies change how we understand and create architecture? (Q. 1.1.1.)

The cases demonstrate that the practice of novel landscape strategies in design indeed has the potential to redirect architecture. However this potential cannot be seen as a common ground for three different architects. There is no new dogma. The sometimes distinct differences, explained in my analysis, rather show that landscape strategies exist as an experimental design practice across several streams and inside differing positions in architecture.

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The landscape design strategies provide a great variety of application to architecture. To answer my main question I would like to focus on the differences rather than the similarities among the three projects discussed thus far. The motives and goals of each project to engage in landscape are different. Moreover the directions of influence between landscape and architecture are different: the programmatic use of landscape could generate the form on one side and the landscape form per se can override programmatic intent as pure architecture on the other side. The programmatic and almost revolutionary intent proclaimed by Rem Koolhaas for the Jussieu project (Koolhaas 1995 p. 1306), is opposed by Eisenman not only with his own work in Galicia but also with a knowing critique of Koolhaas' work. As Eisenman put it in my interview "... Rem (Koolhaas) is the greatest formalist of all. Yet he seduces the world by other means. " (Eisenman A1.3.1.). SANAA's path seems - with less wordy underpinning - more pragmatic, leading to a rich and understandable application of the landscape concept. Learning Centre is in a practical sense the most successful example as it is the only of the three designs that has been completed as a building in 2010.

A centuries-old dialectical division of architecture and landscape cannot be overcome by applying my proposed 'landscape methods' as a new dogmatic system of thought that would simply replace the old one. Landscape and architecture remain different - from each other and in each instance on their own. Landscape ideas simply open a new direction for architecture. These ideas remain an open system of several 'landscape design strategies' - and may never be reduced to one 'landscape design strategies'. Part of this openness comes from the variety of understanding and ideas about landscapes, as I will expose in a wider critical outlook b**eyond landscape strategies.** Let me look for the discipline of architecture beyond general conclusions.

What additional landscape strategies are still missing in architecture? (Q. 1.1.10.)

Each of our cases develop a landscape not only for different reasons but also with different understandings. We conclude that differences must be cultivated - moreover that landscape strategies may foster diversity in spatial understanding more intensely than architecture based on any formal canon.

If I think of landscape as a model for space taking into account a wide range of human-nature interaction patterns - different in each culture and with each geographical context - my conclusion should be about specifics more than about generalisations. I must acknowledge the differences of each task. It's those differences, that make the employment of landscapes valuable.

In regard to the value of landscapes for architecture, I must also critically revise my own high expectations: during these studies I wonder how self critical our academic discipline of architecture is. The projects may also show how through many constraints architecture has a hard time finding a path towards its own transformation.

Note the dramaturgy of high expectations in the Utopian and critical Jussieu project - unrealisable with a change of power. They are contrasted by the perfection and slickness of a well crafted and still more moderately novel project for EPFL Lausanne, that needs sponsoring and a kind of consensus that is overly compromising and in essence not critical at all - but has also been completed. Then the harsh reality of the non-completion of City of Culture - a symbol of maybe unreachable greatness - to some, already a mausoleum of a past megalomania of state driven landmark architecture, or even the end of "star-chitecture". These three projects each searched for a boundary in architecture, and they have crossed it, but that involved the risk of a failure - and in each case, that failure is just as much proof of crossing a new frontier in architecture than a success would have been.

Clearly these three projects have touched on the extreme limits of public architecture in each of their societal contexts: They are most or least critical, most or least build-able, most or least relevant to their society. Each architect engaged in landscape - for serving an architectural client task - which they all still did or tried to do. They are limited, sometimes failing partially or completely, also because of their ambition. But neither their success or failure is to be judged here: Their ambition is why they are interesting for the study of new approaches in architecture.

If I take into account all the constraints, the competitiveness, the commercial struggles, the lucky and unlucky alliances with changing representatives of democratic power, the ups and downs in the economical framework to major projects, these three cases are products of architectural practice and they still show the limitations of architecture as well - precisely because they challenge the limits of architecture.

In these three cases, I recognise an attempt to resolve internal differences inside architecture's complicated relationship with landscape that can be summarised in three critical strategies. The approach combines the three strategies that changed the way we understand architecture.

— **Landscape as experience:** Firstly, a landscape provides us with experience. In architecture such experience can relate people and context and lead to a liberation of equal lifeforms in harmony with each other and the environment.

— **Landscape as resource:** Secondly, a landscape is used by people. For architecture, we must learn to cultivate local resources critical to our needs with architecture more in balance with nature than in control of nature.

— **Landscape as time:** Thirdly, understanding the formation mechanisms of landscapes and seeing the time of rising and falling buildings with all their complexities related to transformation process rather than as a closed system. It should help us to have a broader understanding of our building activity in the big societal picture.

These strategies are present as a beginning; in nucleo, they do relate to real challenges that architecture will have to face in this century. But seeing the cases and their limitations, a solution to the challenges is still a distant ideal. The three postulates are different from what we have strived for in architecture so far.

I believe we must engage in the complexity and variety of nature, understand it as a landscape and from there understand and further develop our role, for instance through architecture.

With landscape design strategies architecture will systemically integrate itself into dynamic contexts, open spaces, lead to other routes, and expand the notion of program. In sum, the object of architecture opens up new horizons in landscape as a threshold to a space beyond.

For architecture, landscape is destined to be an open end. Instead of a solution I still describe a problem and its potential for solution: If aesthetics of landscape have the potential to act as a means of reconciliation of man and nature through the built environment, a development in this direction could also point to a future architecture.

An architecture with a wider scope of human position vis-a-vis the natural environment questions a lot of established conventions. Landscape aesthetics form a theoretical framework beyond such conventions. Architecture itself needs to establish fundamentally new answers in the cultural relationship of human and nature.

Beyond my conclusion I propose an opening: The meeting of landscape and architecture leads to a promising future in the development of both arts and sciences. My research contributes to understanding the extension architectural design through the idea of landscape. It puts crucial projects in a context of theoretically understanding the two disciplines of architecture and landscape architecture. Both disciplines had, for different reasons, still a thin theoretical basis in regard to my subject, which I could lay foundations for to become solid. Beyond the differences in character of each case studied at its respective stage, and beyond their respective limitations, I managed to establish a new common context for the three and with them for many more. I laid out a map for a field that has merely been discovered. Each of these discoveries moved out of the ordinary dealings with landscape and questioned conventions in architecture. The map drawn here during these discoveries is not closing down. Rather my thesis should be a basis for further exploration for both architects and landscape architects and researching and educating scientists to bring this new constellation of architecture and landscape to a new prosperity.

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A.1 Appendices to chapters 4/5/6

A.1.1 Appendix to Chapter 4 Jussieu

A.1.1.1 First Interview with Christophe Cornubert[122]

Former project leader Christophe Cornubert (CC:) was responsible at OMA for the Jussieu project throughout all critical design phases. The Interviews where video- recorded on Skype (AV over IP, internet-videoconference) Cornubert in Copenhagen and Daniel Jauslin (**DJ:**) in Rotterdam in April 2012, but the central part (Part B) was exchanged in an email beforehand.

DJ: (...) First of all, what was your professional relationship to OMA?

CC: At that time, I had been working with OMA for, I think about two, into my third year maybe. I met Rem originally when I was still a student at UCLA, here in Los Angeles, and I ended up going out there for the summer, and that was a summer of intense competitions. That was when the TGB (Tres-Grande-Bibliotheque, 1989), amongst others was happening. That's also when the ZKM (Zentrum Fur Kunst und Medientechnologie, 1992) competition happened. That was one of the projects I worked on. We won the competition (...) and I was working on the ZKM project until that sort of ended.

At that time, just before Jussieu, I was working on a project also in Paris, an office tower (Zac Danton, 1991) across from Jean Nouvel's Tour Sans Fin. (Unbuilt skyscraper project east of the Grande Arche de la Défense).

DJ: At La Défense?

CC: Exactly. Behind it.

At that time, there were suddenly three competitions that the office started (...) and then finally the Jussieu project came up (...) and Rem asked me to be in charge of it.(...)

DJ: So what were your tasks in Jussieu, you were the project leader?

CC: Yes absolutely project leader, basically doing everything, organising the project as it needed to be, also basically functioning as the lead designer on it.

DJ: (...) Could you describe the involvement of Rem in the project? Was it normal or particular?

CC: At that point, three competitions were happening simultaneously. I think in the beginning if I remember correctly, Stedelijk was getting a lot of attention, of course it was an important project, a sort of flagship possibility. As things developed, Jussieu went through a classic brainstorming period, looking at varying approaches as to what the project could be, and on the other hand the essence of the project did crystallise pretty quickly. At that time we were working with physical, simply paper and cardboard models, they were a driver for how we would work. Somehow very quickly the essence of these distorted slabs came, and it really caused a lot of excitement, and Rem became extremely involved, and so I would meet with him, three, four, five times a day practically. So at a certain point, it was interesting to see a shift in momentum, Jussieu from being a 3rd project, to almost really the focus [in the office]. I think even the entire office became completely aware of the project, even if they weren't working on it, they were extremely interested in what was happening here, it was quite a beautiful moment. So I worked pretty intensely with Rem he was very much there.

122 Abbreviated version for the thesis. Abbreviations are marked with ...

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(...) The final 2-3 weeks of the competition he was out, he was in Japan. That was an interesting shift, because in those days basically we were communicating by fax and telephone, literally sending sketches (...) back and forth. By the end of the competition it was a pretty huge team, because if you look at the competition it was a project for the libraries but also a sort of urbanism and landscape for the rest of the campus, so we had a separate team that was working on, let's say the urbanism, that I was also running. By the end, there were about forty people involved so it was like a small army of people that I was, I was still a pretty young guy, I had to keep mutinies from taking place, and people having breakdowns, there was only so much communication with Rem that could take place. A lot of decision making had to just sort of deal with it.

It was incredibly exciting, but those last few weeks I slept no more than three hours a night. It was tricky because all the final presentation material we had to pretty much deal with and take a lot of steps autonomously, and of course you never know how that is going to work.

DJ: Do you remember any other lead designers or people that had specific roles in the competition team?

CC: I was trying to recollect some of the names (...) Jacob van Rijs was on the team (...) he was really trusted to keep track of some of the most technical aspects of the project and to make sure the whole package meshed together.

Another fellow, he was specifically put in charge of the programs, it was like a thick binder, incredibly detailed, how many linear meters of books etc. and it was a very complex program. If you remember, it was actually two different libraries, one was for each university. One, if I recall correctly, was equivalent to a Liberal Arts [library] and one was a Science library, and that was one of the crucial decisions we made, was to combine it together into one building. If you studied the project, they were implying it should be two different [buildings]. That was one of the first radical or important moves we made, was to put them together and to start to see a continuity of the knowledge taking place in the library. That was his job to keep track of the program and make sure everything was in the final competition project. He was important from that perspective.

At that time, for OMA, it was the first generation of using computers and starting to create images digitally. There was a Swedish guy in charge of that. It was also classic, machines would crash all the time, we would lose all this monumental amount of work, etc. Nevertheless, some of the early images were some of the first digital renderings coming out of OMA at the time.

That was taking place, and the whole sort of Landscape Urbanism taking place, a lot of balls in the air that I had to juggle with Rem.

DJ: What was the importance of the project in OMA's work? (...)

CC: You can judge yourself. If you look at the time, it was quite a unique project, different as a design language of the work at that time, and even the work after. You could see in Yokohama you could see some influence, in a radically different way. There was a sense that we had literally discovered something quite new. I remember myself working on the project, and it was such a different way to conceive of a building and of architecture, there was this incredibly fluidity to it that you could just simply make it do what you wanted it to do, if the slab had to change slope, you just simply did it, there was a kind of beauty to it that was very liberating. (...) I think it was truly influential. If you look at Seattle Public Library (2003), you can trace some lineage to it, and yet it is a radically different project. (...)

DJ: Do you think there are other projects influenced later by Jussieu?

CC: For me personally, the next project that eventually came up was the Educatorium (1997) (...) very different project, but some of the lessons learned in Jussieu helped to inform some of the approaches of the project in terms of the possibility of a deformed slab and what it could be and how it could transform. (...) with Jussieu, there was the competition (...) and then look at the final proposition, at a certain point in the design development, I (...)set up an office in Paris with our local partners there. (...) if you look again at the (competition) scheme and the final (developed in Paris), the lower half of the building is actually completely different. At a certain point it became clear that there were certain height restrictions we had to deal with, so the project had to be pushed literally into the ground. It's just next to the Seine River, there were serious problems with the water table and water level, and we had to deal with some serious technical engineering issues, and at one point I had to redesign almost half of the building - the lower part. (...) We were dealing with these real world issues, how to make the project work properly, from the point of view of structural engineering, mechanical systems, putting program on a sloped surface, things like that. Even the facades, you have tuned into the facades as something unique. We had already spent a lot of time on the technical detailing and approaches of that. For me it was a big learning curve and I became sort of an expert on façade systems, so that knowledge, surely some of it transferred to Educatorium, not to say it was the same concept, but if you look at Educatorium, if you look at something like the skin, have you been there?

DJ: Yes.

CC: There are two lecture halls, the larger one for 500 people, which has the glass facade, again that is a very unique structure, and installation, there was somehow a certain lineage that might have come from Jussieu in terms of an interest about what you could do with glass, and how it is a material, and how it is transparent, and how it is also physical.

These things were ideas that might have been instigated in Jussieu, and found a different and new place in Educatorium. In reverse engineering, you could say that maybe Educatorium might have also shown how Jussieu might have developed in certain terms, in terms of DNA with air conditioning and heating and cooling and things like that.

DJ: I have the technical questions later, but a more theoretical question, as a practice how did Jussieu influence the theoretical work of OMA and Rem in particular? After that was a very intense phase of theoretical production; is there a particular influence of this project, or was it like the others?

CC: (...) For Rem it was almost the opposite, almost the culmination of a lot of his thinking and finding, and finally here was a project but also a new technique that we invented that allowed theory to become a reality. So, clearly Jussieu as a concept of basically taking the streets and organising it into a building, it was almost a reverse engineering of taking Rem's ideas and here was finally a project and means to make it real and make architecture out of it.

I think from the point of view of just someone being in the office, you just have to look at the work, there was still a huge diversity of projects and design languages, it's not like this dominated the situation completely, but I think it did at least for us that were working there and for myself, it did forefront the concept of a real kind of fusion of the city and a building, of urbanism and architecture, and even now in a more contemporary mode what you would call Landscape Urbanism, we didn't really have that term at the time. I think that is precisely what it was about, without us having the proper term for it.

DJ: You could almost call it a meme that comes up before consciousness, a sort of unconscious mutation of other ways of thinking and it needs another step to turn it into a theory actually. It's not a theory from the beginning.

CC: I think a lot of people are confused about how a design works, and how theory and a project are connected, and you know, at its end, it's a creative process, and in that sense there is a spontaneity that you have to be open to, and that creative moment can in itself encapsulate a whole grand theory in itself. I don't think it's possible to talk about which came first, the theory or the project, it is an incubation process, you need the proper environment and the proper temperature to allow things to blossom, but the blossoms in themselves can be quite autonomous if that makes any sense to you.

DJ: I have a speculative theory myself about the fact of how the project is dealt with in the SMLXL book. It is not in the L section dealing with Bigness, and it is not in the XL section dealing with the death of urbanism. I feel in this connection, it is a big building but it also is integrating urbanism in the shape of a building, it didn't fit into this radical distinction, so that was my theory as to why it was added as a post script. What do you think about that speculation?

CC: Interesting take, try and articulate that as you see it (...). On a more pragmatic level, it may have been partly because that project was in process while the book (...) ready to be published. On a more practical level, here was a project we are going to print, but this is one of the most important projects the office has done at that time, it needs to get in there, but let's not go back and try and re-edit the whole book. I can't remember exactly, but I think the project was still alive, meaning we were still optimistic that the project was going to move forward, the material that you see in there was the stuff we had just finished, it was fresh and it was happening, I think also that is maybe also why it has that special place there.

If you remember there was that OMA, MOMA show in New York – a diversion from the script a bit.

I was in Paris working on the project, and I think you know what happened. There were the elections in France, the whole government completely flipped, and Jussieu was a victim of its larger situation: all the policies of the previous regime were stopped. So that's why Jussieu was sort of held hostage as part of this larger program, and there was this long limbo process where we didn't know if it was going to be a temporary delay, because at the time it seemed clear that the University really needed these projects, this new library. (...) I came back to Rotterdam, and amongst other things, I was working on the concept and design for the OMA MOMA show, and at one point there was an idea that the whole show would be dedicated to the Jussieu project, so I was doing these simulations inside the MOMA gallery of sloping the floors almost at a full scale installation of what the project would be like. But when it became clear that Jussieu was likely not going to move forward, that is when it became a more classic retrospective on OMA's work.

DJ: The key question about my thesis is the influence of landscape design or the notion of landscape on architecture. In some key texts it is described as a landscape. How important was landscape for the project?

CC: It was incredibly important.

DJ: What was meant with landscape in this context?

CC: This is where you surely want to ask the question to Rem. From my point of view there were a lot of things in play. Part of it, it was very Dutch, if you spend time in Holland and experience the so called "landscape" there, I am from California originally, to talk about Dutch landscape compared to how we do here is completely different, the completely synthetic quality of Dutch landscape is mesmerising. All you have to do is drive around the country, or take a train, or fly over, it is amazing how it is so synthetic, and the meaning of landscape really changes - it's not about nature or anything like that, everything is manmade actually. So somehow in the background, maybe unconsciously, that was a huge part of why it was important to be in Holland at the time and these ideas probably could have only emanated from that place and context.

In a completely different way, when I was designing Jussieu, I was looking at parking garages, so if you go to Neufert (German "Bauentwurfslehre" or English "Architect's Data" various editions) and look at their parking garages, at that time there is this amazing encyclopedia of approaches of how to do a parking garage, the difference between a ramp and a sloped surface to park on, in terms of the efficiencies etc. That was an influence in itself.

I think the landscape context and its fusion with urbanism, managed to get at a kind of eureka moment, at least for myself, was the idea that program could be seen in a much more provisional way. So that the program, a library, even at that time, it was clearly understood that libraries were a project where change was completely part of what it was. At that time it was still very much about physical books, but there was an understanding that the way to organise the collection was almost like a museum, it had to do with an almost a curatorial approach - how do you organise knowledge? Is it alphabetical? Do you use this particular system of encoding? Why should the science material be separate from the art material, from the literature material? All these things were already in play, in flux, and were an important part of what the project already was. So in that sense it was this understanding that this kind of project was about change and evolution, and in ten years it would be a different concept of how

to organise material. This was the very beginning of internet and digital approaches, but we could already understand that that was going to have a huge impact.

But finally, this library, especially as a university library, its subtext it was meant to be this living room for the university, for the students and faculty, but also as a window for the outside, for the rest of the city, so therefore, and its interpretation as a street became very important. The street as the center of life, the buildings change and the programs change, but the street remains the same, so to speak. In that sense, landscape has this adaptable interpretation, the finesse between a landscape and a street, or urbanism for us, for me at least, was something that could really change and become a kind of synergy between them.

DJ: Was there a programmatic choice towards landscape and the integration of streets, not in a sense of program how architects do it, but in a political programation almost? You would give another direction to building when choosing landscape or street as the subject of a building, which is typically outside the building?

CC: That was definitely there and - for me as a relatively young architect - added a new dimension of awareness that was really accelerated in that particular project. Of course you know the Jussieu campus had a very infamous history, as one of the starting points for the May 1968 events. And I was quite a student of that; I'm also French, and especially at that time and prior to it, I had been very interested in the Situationists and a lot of the movements that had taken place there. A famous line from the movements of '68, "Underneath the street is the beach."

DJ: "Sous les pavés, la plage?"

CC: Oui. Exactement.

Which is incredibly powerful. (...) there you have it already - landscape and urbanism being described. But again, look at what happened: Jussieu, that is part of the reason the campus wasn't completed, the site for the library was the broken part of Albert's grid, and it was never finished. That was specifically because of May '68 that they decided to stop building the campus, and at that time, they began to build the campuses outside of the city so that they could control the students and avoid this kind of event in the future. So it was a super charged history and a super charged site that we were working on. The idea that the building was a piece of the city and as open to the city, and doing the building as a public space, it was very important, we were thinking about that.

DJ: The choice of location, if you compare to other competitors, really put the finger on the open wound of the grid Albert, the corner which is left open. I think there was an important dialogue with this project going on.

Something else. I have seen some influence of landscape architects in the work, especially on Kunsthal, but also some earlier sketches from the TGB, sort of proposed a "landscapy" building. Do you remember a disciplinary influence from landscape architecture? Or was that a marginal appearance in the office?

CC: Well I think it was definitely there and if I remember Rem really, when he would come to visit, it was always an important moment, I think if you look at, for example, the Parc de la Villete competition project (1982), before my time, that was an extremely important project because it was something that we would revisit in different ways. If you deconstruct that project, you can talk about it as Landscape, in terms of Program, you can talk about it as Architecture, you can change your language and that is the sort of beauty of it. That was a really important project, and if you look carefully at it, you can see certain scenarios and approaches that you can see in the future work of the office. If you want to talk about Jussieu in particular, a lot of people forget, like you said, compared to the other [competition] projects, we pushed our project in a particular location for various reasons. It did allow them this mall, this landscape element, which is actually very French, very Parisian. That was an important part of the project in the competition mode; it was something that we had to give up to Jean Nouvel in certain terms, it changed some of the focus of the project after the competition. For me, I grew up and was educated in the US, and here to this day there is a much larger separation if you are a landscape architect, a planner, or an architect, they are very distinct (...) professions. In general for me, my time in Holland at OMA, there was this experience of these things being completely mashed up together.

DJ: I was wondering about, after Jean Nouvel got attributed from this political movement the surroundings, but you were attributed the building, it lost an essential element, I thought in all the sketches it has a very strong connection to its surroundings both the axes connecting to the Seine and both crossing the building . That must have been a really big concession made to this political move.

CC: I imagine you are quite correct. I am not sure I can give you any special details on precisely how that transaction occurred. (...)

DJ: (...) I don't know if you were aware of the fact that, on the Friday the competition results were announced, it was basically OMA as a sole winner. It took one weekend in Paris until the press conference on the Monday after, that Jean Nouvel made the right phone calls, and that they announced two winners. That was later published, in a new interview with one of the members of the Jury, and it is a printed fact.

CC: I was aware of this. Rem was telling me about some of these things that were happening (...). There was a pretty brutal behind the scenes series of activities that were taking place. In terms of how the final concessions were made, whether it was a choice or a fait accompli, that is something I couldn't quite say, because I wasn't privileged to that. But it was clearly something, how important the project was to the larger urban design project if you want to call it that. So if you look at the development of the project after, you can sense how it changed the project itself, given that we could no longer work with the environment.

DJ: It is almost as if it was reduced to an object from a sort of site specific more contextual strategy. More an object reduced to a box.

CC: I wouldn't agree with that at all. To call it a box I think is fundamentally wrong. In fact the connection to the parvis was a crucial one because remember, it was a university library, first and foremost a research library, so its connectivity to the university was primary. Its connection to the city of course was important in its conception, and maybe that part was compromised or changed (...). I think to talk about it as an object is not correct, it was a thing in itself, but the idea of continuity with its environment, that remained, it changed but it remained. In terms of design development introducing very specific and complex issues of how we were doing that, changes of levels, staircases versus ramps versus escalators, it was very intricate, but it was always a dry run for the project and how it would be knitted into its environment.

DJ: Was there any interface or cooperation with Jean Nouvel, or was it a theater setting where nothing really was intended to happen, more for the politics that he was introduced as a cooperating designer?

CC: Well you know the reason it happened you can draw your own conclusions pretty clearly. There was some exchange in material and I remember going to meet at Nouvel's office a few times, but the project never lasted long enough to the point where that would have become much more important in terms of having a linkage between the designs, as far as I can remember, Nouvel's project stayed at a pretty schematic level. We were talking about things like views, trying to keep a clear disposition. We were really interested in trying to make it a Parisian project as much as anything else, and some of that was setting up very classic, almost Houseman style axial connections, so some of the moves were based on where Notre Dame was and where the Seine was, so really a mapping project to bring Paris into the project quite literally.

[Part B Questions in writing]

DJ: If there was a chance to still build the Jussieu Library ever - would you still think it is worth it?

CC: Absolutely. The project holds its own on and while some of the design language have been co-opted by others in the meanwhile it remains the architectural equivalent of a punch to the face.

DJ: If it were to be opened in two years from now - would it be the same or how would it be different, and how?

CC: Of course it would be different specifically from the point of view of program. Remember the project was conceived when libraries were still very much about books. But we understood history and emerging trends and that adaptability was a key driver for such a building. So if you look at it carefully you see how you could erase the interior layouts and replace them with something totally different. Without realising it fully – well at least for myself would never want to speak for Rem - we invented the architectonic fusion of landscape and urbanism.

DJ: We will make some CGI renderings for this PhD and maybe able to make a VR tour if we can use faculty resources - would you like to see and comment renderings?

CC: Let's think about it. It's a bit like someone else dressing your children.

DJ: For both renderings we are currently working on a digital reconstruction of how the Jussieu project could have looked if it were built. My Supervisor Clemens Steenbergen called it a "pro-construction". It is a kind of prognosis with means of reconstruction. For this we would like to sake you some specific questions - let's assume you where our superior and we are the render man and hired architect for this task - and let's assume we have slightly less time than a OMA employee and also no budget to spend on this project. We would like you to comment on that process now and at one or two future moments. Could you see your role in such a process?

CC: Basically I would look forward to helping you in the endeavor. As an architect I guess you understand that it would be hard if the reconstruction diverged from the vision. Would be helpful to better understand the scope and diffusion of this/your work here.

(...)**DJ:** What do you think form your experience with Jussieu and Educatorium (or other projects you worked on as an architect) are now, if we start detailing design phase, the main challenges in the design?

CC: It's possible to detect some DNA transfer from Jussieu to Educatorium but the two projects are radically different. Educatorium is built and can be analysed down to its details to contemporary criteria. The culture and industry of building and construction remain rooted to gravity and have changed more in terms of delivery techniques rather than details.

DJ: To my impression at many OMA project detailing meant, that there where new techniques to be found to solve the challenges.

CC: It's not only about new techniques but the manifestation of ideas. So Merz's work may have influenced the Jussieu facades. Materials and their applications, orthodox or likely not, were always a parallel track for design. For example I remember Rem introducing me to a consultant who had a specially coated piece of metal that could emit light. We just had to use it, somehow, somewhere.

DJ: There seem to be at least two different approaches to the facade design. We worked out two. The first one we call Facade A. We found your publication (Cornubert 1994) saying that there would be a shingle kind of glass construction, resembling a Mario Merz Sculpture (Fig.CC02 & 03) on the IMA and Jussieu side and a full structural glazing in the Cuvier and Seine side. Is that correct?

CC: Sounds right.

DJ: On the competition panels the slabs on the facades Seine and Cuvier are actually showed in section (Fig.CC04 panel 6 OMA Competition project 1992) and the IMA and Jussieu Sections showed the Mario Merz Type of structure (Fig.CC05 op.cit. panel

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7). Is it fair to say that in general at this stage there was not too much of a façade to be shown - it should not be the main issue that the building would have a façade.

CC: Yes and no. The building was a kind of x-ray; there is essentially little difference between a section and an elevation, imagined at a distance, a layer to keep the rain out. But the thinking flips and the tactile sensations become paramount. So looking out at a view of Notre Dame requires different treatment than a view of 60's generic.

DJ: We found some details of the façade. Are these drawings (Fig.CC06 Cornubert 1994 p. 154) made by OMA, a consultant engineer (like Arup) or where they made at the Journal Deutsche Bauzeitung?

CC: They were made by OMA/myself in collaboration with a façade consultant whose name escapes me.

DJ: Are they correctly representing the design?

CC: They should be seen for what they are – preliminary design.

DJ: We assume that your text (Cornubert 1994) even though published in 1994 is more or less based on the competition stage of the design and the technical drawings are probably not yet really details as an architect would implant them but more "principal" solution, especially in the division of glass panels on the left side elevations?

CC: Correct.

DJ: Another Drawing that exists as sole option at the OMAR Archives shows a more patchwork like façade. Form our historical view this looks typically "OMA" for the 1990s. It reminds us of Kunsthal or Educatorium. Can you identify this drawing? Was it part of preliminary competition studies or rather later phases (Fig.007 OMAR)?

CC: Never saw this not part of the phases.

DJ: Usually if we where to design a façade we would do a lot of try-outs. In your case we have one solution and one try out. Why are there so few façade versions? Is that just a gap in the archives or typical for this (or other) projects at OMA?

CC: Because there were strong ideas driving the process. You should look at the "Black" facade corners for insight in terms of design.

DJ: We made a sketch solution of a viable implementation of above scheme in a more OMA 1990s feeling for our pro-construction we call here Facade B (Fig.CC08). (...) Do you regard this as a plausible "pro-construction"? What would be your critique or proposition supposing you where our lead designer?

CC: Manifold...

DJ: Technically it seems almost impossible to fullfill the requirements of Rem Koolhaas (or OMA and yourself) in building design. Especially as you describe it in that article. The building ought to look open, merely have a facade, not be dominated by building technology, have openings, there is a lot of thermal problems if you just look at a simple section you see them in 1:200 scale already. There would have been compromises necessary. What is your prognosis for them?

CC: No not compromises, rather a driver for new solutions.

DJ: (...) There was no indication of any handrail or falling prevention detail. We were thinking of using glass balustrades with a wood top rail inside. Would you regard that as plausible or what different solution would you thing could have been chosen?

CC: No! (...)

DJ: The bookshelves should in Koolhaas's words build a city the walk through. We see this very effectively form our first rendering try-outs in the entry level. The shelves play an important role in this very open space. Was there already an idea of how shelving could be materialised?

CC: Would like to see your try-outs. Again at that time books and therefore shelving were a major part of the design. So you can see how the position and direction of shelves vary and set up views etc of the building and of the city outside. The material of the shelves wasn't really in place, more dealing with how they would work on a sloped surface.

DJ: To your knowledge are there any particularities in materialisation that we missed so far or that are notable for the pro-construction?

CC: We had a full-scale mock up of a typical sloped surface, with a special book-cart for the librarians to test, there should be photos. There were studies for façade emerging – curtains, color, etc – and for mechanical systems.

DJ: For the renderings that we started to model, we found some interesting visual relations to the surroundings i.e. towards Notre Dame de Paris (Fig.CC09). Do you recall any other such views or relations to the surroundings that where of particular importance?

CC: That was super important.

[End of part B: Back to oral interview]

DJ: Some of the meeting minutes from meetings in spring 93, around May, and there is this very hostile tone, I was wondering about that situation, very hostile against the architect and it says Rem Koolhaas was present at these meetings. Do you remember how he reacted to this environment at the university or the ministry of finance?

CC: Can you be more specific? How was it hostile?

DJ: One of the meetings, they were (...) saying that large parts of the library function wouldn't work anyways and they wanted to take it away from your assignment and put it into Jean Nouvel's assignment. There was no real conclusion. That was the conclusion of the meeting. Someone drew up the meeting minutes and that was it. I was really wondering about the tone of that? How was the situation anyways with the project, how did it end?

CC: It sort of there was a long limbo and then at one point I was literally the only person working on it. There was no team anymore and I was basically there to answer questions and deal with communications for the project, but it was sort of in quicksand and it was sort of stuck. On the one hand there was an idea that the project could pick up again, but as time went on, there was a sense that the window of opportunity here was perhaps closing.

The project, if a layman looks at it, it looks completely wild, almost impossible. But if you really analyse the project, we are not crazy and knew what we were doing. If you have a superficial look, you see all these slopes and ask "how would you do that?" but only 30% was sloped and much of it was actually quite flat and conventional in that way, that was all carefully orchestrated and part of the development of the project was to deal with those things.

It would be interesting if you could find it, we built a full scale mockup in a warehouse, part of the sloped surface, and we had the librarians at the time, we installed bookshelves, and we had a special cart that was designed that could break itself, and we had the librarians check it out, from a completely functional point of view, from a pragmatic point of view, could this work? They were completely supportive, the group of people involved. Like every project, it's important who the client and client base is. As fantastic as it looked and seemed, we were turning it into something that was a real workhorse, and at the same time had a set of clients and users that were clearly very open minded and could understand the potential that we hoping for and they were willing to work with us and make it happen. That was part of the delicacy of that project, we had to have people that were willing to spend the time to understand it and study it, and also willing to understand that the project in its very nature could change and evolve and deal with reality. But again, you look at some pictures of the model, and reactions you get from people were "Oh my god, I have never seen anything like this, how the hell is this going to work?" It takes an effort to really get into the project and understand its functionality. On a superficial level, it became something that was easy to critique – that it was some sort of impossible, unpragmatic project.

DJ: When did you actually realise, you said it was a really long process? How long did you have hope that the project would get built? Was it quite quickly after the elections in 1993 that it happened, or did it take a while?

CC: It took awhile, can't say precise dates. The elections happened, but there was this sort of inertia; it took about a full year to understand that the process was getting slower and slower and resources were also disappearing. By the second year it was pretty clearly understood that it was going to be on the backburner at least for some time. Our contract, on the other hand, was there, if they were ever going to build a library there, it had to be OMA that would do it. Somewhere in the back of the mind was a mindset that the school simply needs a new library if it wanted to be state of the art. It was a necessity, not just a glory project, something they needed to stay as a cutting edge contemporary school, so at some point in time they would have to do this, but at some point it just sort of faded into the background.

DJ: (...) Do you remember special details or ideas from earlier projects, from the changes before that you took over or looked into in particular. I am talking about the detailing phase, and any ideas that came into that. Or did you feel that everything have to be reinvented for this project?

CC: It was definitely not trying to reinvent everything at all, but you know part of it, the sheer scale of the project necessitated a certain approach to what you would call detailing, and obviously we never got to the "detail phase," I see you found some of the so called façade details, if I recall, those were part of the competition package in fact, or soon after to give a sense to the approach but also to give a sense of the technical feasibility of what was being proposed. In terms of the design process, yes we were thinking and sort of pushing those things, but they weren't really central to what was necessary in the process, but again (...) just the sheer scale of the projects, if you look at the floor to floor heights of the project, the scale of the building itself, and the (...) basic conceptual interest that affected me was the equivalent of a vertical plaza or street. Partly had to do with simply the amount of time, explains the rawness of it, we (...) hadn't reached certain moments of developments of it, but some of the rawness was actually sort of a desire, almost a necessity , when you look at the projection one level it seems to be dominated by the slabs, the geometry and organisation of the slabs, like I told you in my notes, almost like an x-ray through the building, the difference between a section and an elevation was not much, it is a kind of section, it's a library so you need to keep the wind and rain out, and deal with the environment, so how do you do that? So again in that time and in that moment you see the solutions and opportunities that we came up with, already there is the beginning of a difference, so the orientation of the view begins to have some effect in terms of what the elevation should be, but yes there was a sense of trying to dins a language that had to do with a scale, so the idea of a very delicate façade, a British high tech approach, something that we knew we didn't want and dint make sense, it had to have an appropriate scale and language that could continue some of the ideas that we were mining in the design.

DJ: Are there specific issues that were solved in later projects that came up with the ramps or the façade [at Jussieu] that could be important details that could be looked at from later projects of OMA that were realised?

CC: That's difficult to answer, for me personally, because I was driving the design of those things, it did give me an encyclopedic knowledge, I worked with different consultants, and became a certain master of glass facades and worked as a consultant on

other projects. At that time in the 90's there was some pretty phenomenal advancements taking place in terms of glass, (...) from the point of view of manufacturing, and how one could use those elements in a project.

If you look at Educatorium like we were talking about before, it's a completely different project, (...) that was finished in 1998. It went through an evolution, which had to do with a lot of things, and changed due to budget and technical issues. At least in terms of the interest in material development, some of that was already sparked in Jussieu, and that that would be really important, not a separate aspect, but an important part of its manifestation, and the idea that you are inspired by theory and conceptual issues, but also inspired by a piece of glass sitting on your table and what that could become.

DJ: I have two different main versions of the façade; there must be many different versions. I found this drawing in the archives, which was one of the few façade studies, and it shows a different approach from the competition. In my opinion it looks like more of a collage of different techniques of arranging or mounting the glass onto the façade. It is always clear in all the drawings that it would be on different levels so it would not be one continuous façade. But could you identify this drawing as one done before the competition and was rejected, or was it a later study?

CC: I don't specifically remember this one, but I could say for sure this is after the competition, because I know we didn't do this unwrapped version. You see in this drawing how it goes underground? That was the change after the competition that was based on some height limits; we had to push it literally into the earth. That was a post competition moment. It's a very rough drawing; I must say I do not remember it.

DJ: It is not a very well conserved drawing.

CC: You see the black elements? That happened during the competition, I remember that quite specifically, I remember Rem saying we needed to create some sort of solidity for the project, because everything was transparent and it was about the slabs, so by introducing these black elements, it gives a sort of stronger 3-D definition to the volume, almost like these shards of glass in the corners. It was also partly pragmatic, because in essence they were meant to be a dark glazing to keep out the sunlight. We already understood that even though it was a library, it was not all about daylight and there was an interest in introducing areas with a different disposition; it was the beginning of thinking about videos and eventually computers as being an important part of what this space would need in terms of moments of darkness.

DJ: I think (...) as an isometric drawing, these dark areas are shown as if they are are wrapped surfaces. So the surface you walk on as if it is wrapped through the wall, which is what you did at the Educatorium, there it was rounded, but here it is folded with a sharp edge. There was one drawing on the second panel of the competition, where the black parts are part of a continuous plane in a way, as opposed to the other parts which are kind of immaterial.CC: I haven't looked in detail at the project in some time, but what you are reminding me of, we were already beginning to look at some different systems. Using glass fins in some places was already coming into play, and it was never a separate issue to be developed, they were seen as an integral part to the experience. As you have already said, it was also a very deep building; if you were standing in the middle of a floor, you were very far away from the façade, as opposed to being up against it, that is a completely different experience, so the materiality of the façade was very important. Of course the project was stopped before some of these things got fully investigated.

But there is a certain legacy so to speak in a lot of OMA projects, the interest of the skin and how it is supported, it is a thing you will find in many of the projects as a sort of important innovation, and surely if you look at the Educatorium, down in the cafeteria and look at the façade looking West, it is 8m tall and has exterior glass fins - that is pretty unusual to do that. Not only the scale of it but also to put that on the outside, you don't see that very often, so that was very much about being pushed up against that surface and how that would physically manifest itself , and the beginning of this idea of how important that was to the experience. So having a steel frame compared to a cable supported glass compared to glass to support the glass, you quickly understand how different those things were and how that affected the choreography of the space.

[Referring to black isometric drawing on screen] That image you have now, that exploded axonometric, that is a classic image. That was done during the competition.

DJ: Yes, it is on the panel also, it is glued across a plan. There you see the wrapping around the corners.

CC: It is a very beautiful image, and it really encapsulates in that moment in time what the project was about, you can almost see yourself as an ant crawling up this thing. The circulation and movement through this space and through the building was completely important. This internal derive through the project was a major driving force.

DJ: I told you already that we are working on this reconstruction; we are calling it "dressing up someone else's children." Earlier, I almost thought we have to keep it all naked, like baby Jesus, an artist would never dress baby Jesus. But when we make some renderings, there needs to be a way to put in the glazing. So when I saw this sketch, I thought, it might be more the intention to use different structures on one façade, on one side of the building, instead of only one. In the competition and in the article in Baumeister, it seemed that there would be two facades with one type of façade, and two others with another type. But with this sketch, it seems like it is more of a collage. So I was wondering what you think, as a hypothetical design decision, where perhaps the blue [referring to a blue shaded moment on the drawing] would be the glass shingle area, and the other areas would be something else. Or would it be one decision taken for the façade that goes over the whole façade?

CC: Honestly, neither. I wouldn't call it a collage, because that is not what it was. There are two things you would really have to think about and deal with in the reconstruction. You would have to put the building in its physical context; a lot of these moves are based, the west elevation, hypothetically would have been looking across this open space, this mall towards Paris, towards St. Germain, towards Notre Dame, and I think you could see some other monuments in the distance, so that was the face of the building for Paris, and that was an important part of how the decisions were being made in terms of the elevation. If you look at the opposite façade it's actually pretty close to an existing building, pretty generic and ugly, and it had a different response so to

speak, so to invest in hyper-transparency in that direction wouldn't make sense because you wouldn't get anything out of it. So that is an important part of your reconstructions, you would have to simulate the environment because that is what it was. Some places were really close to another building like the parvis where that transparency creates continuity, and in other places we wouldn't want it, so the façade would become more translucent.

But then you have to flip your thinking like we did. Some of it was thinking about it from a purely interior choreography so to speak. So it's a library and some of what you imagine is that some people just want to be concentrated and not distracted, so we would create translucent areas where you would get daylight but you don't have a crystal view [outside], but it would make a much more insulated condition on the inside that we thought was appropriate, where you could really stick your head in a book and not be distracted. So the decision making was really being driven by the external and the internal. Not a random collage.

DJ: So it would be a lot of situation based decisions.

CC: Yes. This collage annoys me [referring to drawing on screen]. It's nice to look at it in that way, because we would also look at it that way ourselves, but I think you should also put it back into a cube, and then put it back into its actual site and see if you can find some correlations between its immediate site and see why there is a translucent corrugated material on one surface and a different material somewhere else, that would be very informative for you.

DJ: We are also really trying to put it in context. I saw some of the old computer renderings, and of course that is very different from what we do now. I am going to the site in a couple of weeks to take some pictures for the background.

CC: Does a digital model still exist?

DJ: Yes. We got a digital model from OMA, from the design phase, but it must have been built based on the plans around April 1993. It is a Rhino model and must have been built later. We used that for five Sketchup images [showing images on screen].

[Speaking about the entry interior] This is how you would get from the par vie into the building, and the ramps going down from the one library. [Referring to next drawing] This one is going downwards into the lower part, and it is going down quite a bit, this looks towards the Seine, but goes quite a bit lower.

CC: That was part of the change, when we had to push it down, you see the lowest level it has basically one elevation which was towards the Seine, North, so we had to cut into the landscape, this very steep slope of landscape that cut up towards the building from the ground level. That was quite a big change for the project from the competition.

DJ: What I am interested in for my research is the interior/exterior relationship. We found Notre Dame as a view, and we were quite happy about that. You mentioned it from the design process, but it was not really documented at all.

CC: Yes of course. It's Paris, there is no way you can not deal with it, it's one of the most exciting and unique conditions of that place. Even that amphitheater in the foreground, in the original competition project, because the building was higher, we were able to look over the buildings, there was sort of like a wall along the Seine, so that amphitheater was just above the roof level, and the idea was whether there was a lecture or whatever would be taking place there, you would be able to look down and through to the rest of the city of Paris, and likewise from the city, there would be a perspective looking into that space- so there was meant to be this sort of literal contact between the city and what was taking place in there. In the background you see that stairway leading up to the roof itself, and the roof was meant to be this giant belvedere basically for various kinds of events and parties and spontaneous things; it was like taking a plaza and lifting it up into the sky so that suddenly you would be in this floating urban space surrounded by Paris.

DJ: It somehow reminds me of the Centre Pompidou but goes much further. Centre Pompidou is very much dealing with this edge and displaying this big escalator as a border, once you are up the escalator, that is the special effect of the building, it is just one moment. But here, this "diving out" of the city is taken into the whole building, so it is always there and there are different ways of looking at it and turning it around. There is a picture of a Gordon Matta Clark project (Conical Intersect, 1975) next to the Centre Pompidou and somehow it always reminded me of this kind of dealing with your project, you are cutting these big holes; it's almost an antithesis to the way the Centre Pompidou acts towards the city.

CC: That is smart of you to pick up on that. What I recommend you do is try and look at the project in different ways, don't just look at the plans separately but put them on top of each other, you may find some other relationships, the way that the escalators, the choreography pouf the escalators how they interact how you get from one to another, and if you stack up the slabs, you may discover some other synchronicities that are taking place.

DJ: I know there was even a drawing on the Jussieu competition board, a wire frame overlay. I have also seen it was done for the Seattle library. [Referring to new drawing on screen] This superposition drawing. It is like a wireframe model.

CC: [Referring to Superposition drawing] That was actually drawn by hand, I can remember it was the morning of the last day, we were finalising the panels and this was the space left over. So I just asked this one guy, "Could you make this superposition drawing?" This guy jumped into it and I said, "everyone just leave him alone and let him work on this!" Four hours later we had this drawing, it was a beautiful piece. But when one starts to study it, one begins to see certain correlations that are beginning to be setup. Even structurally, certain things are very rigorous where cuts are being made and can't be made.

You mention Matta Clark, maybe that was a kind of inspiration. The world of art was always a major way to communicate with Rem; we would show an art image or talk about an artist and immediately we would get it. The views internally, to see vertically through the different levels of the project, was an interest, so in that sense it's not a parking structure. We didn't want something that would be experienced floor by floor by floor, but as something that would be experienced as a continuous project. Therefore these vertical views as well as vertical movement was an important part of the project. Other simple things

that you can see in this image [referring to interior rendering on screen], just how daylight would come deep into the building, because when you are in the middle of the floor plate you were pretty far away from the elevations, so these cuts became a way where you could cascade daylight into the depths of the building.

(...)

DJ: From these drawings we were much more trying to construct it and how it would be built. That was the first approach. Now I am thinking about placing floor plans and sketches into the model. So it would almost feel like you are walking through a sketch than walking through a building, because that part would basically be an assumption that is really difficult to make – I foresee so many technical issues, how can you make so many different sizes of glass, maybe to keep it in a sketch state would be where it has to be. It is difficult to walk through the sketch, but bringing the sketch into space might be a better solution.

CC: It depends on what you are trying to achieve, for me to try and turn it into a detailed project, necessarily you are going to suddenly have to make all these decisions by yourself. So you can be a sort of archaeologist. But in archaeology there are two schools, one is that you are preserving what you find and that's it, you don't try and reconstruct something based on your own interpretations, when I was in Crete, I was in Knossos, and I met British archaeologist, and he actually reconstructed, based on his own ideas, what he thought this palace looked like. On the one hand it's beautiful and excellent because it's great to be able to walk into an actual room and an actual space and get sense of what it was like compared to a pile of broken stones, but the critique is that it is a simulation of something and not what it actually was.

So in your case I think it has to do partly with what is the essence of your thesis and what you are trying to deal with and talk about, but I am not sure trying to reconstruct a guard rail is the most important thing. Try and make a distinction between what is your own reconstruction compared to what the archives actually show you. In this image there are no guardrails, you could try and imagine what they would be based on other OMA projects, maybe you can have a layer you turn off and on, one layer based on the actual material and one based on your own interpretation. In an academic environment it might be desirable to keep those things separate.

DJ: Yes, I think we could reduce more. The initial intention was what it could have been, but then getting into the space, we realised this was a great tool to analyse the space and the drawings, and that is actually my main interest. Studying the spatial qualities, really visualising the space from the inside and outside, and what are the views and where the horizon becomes wider, and those things can remain quite abstract.

CC: At this kind of arrested development stage of the project, let me tell you what was on my mind and what I was thinking about. The project as a piece of the city; some of it is literal, the views are surely worth looking at and thinking about, but also as a piece of the city or a piece of the street, I think you want to think about circulation and how you move through this project and how it connects to the rest of its environment, that would be crucial, and if you look at the dispositions, if you look in this image, the amphitheater is obviously a fixed element radically cutting through the slab, and that is something that is not going to change, and likewise that staircase in the background, if you look at it from the point of view of what are the fixed elements in the architecture vs. the program at that time it was laid out, the distinction between what is permanent and what is provisional is important. In this project, a lot of it is furniture and bookshelves, those things we understood could be moved around and would be moved around, so it's not a big loft; it's not a big empty warehouse. There are some very specific moves in there; it's important to focus on your interpretation of why did we make a slope here compared to another place that is flat and scrutinise it and look for relations there. That would be quite interesting.

There were many things that we still had to get into, like lights, how are we going to light the space, I think there were some early studies of this that we were starting to look at - how we could begin to introduce lighting fixtures, because there was a strong understanding that this project had two aspects, it had daytime and nighttime. At nighttime it would be this glowing beacon to the rest of the city, so that in our minds how that daytime/nighttime aspect would contaminate the project and emanate from the project. Artificial lighting, things like mechanical systems, how are we going to ventilate the spaces without having ducts, all these things were being thought about and developed. But in terms of a fully fledged building, I don't think there are any representations anywhere of that.

This is maybe where Educatorium becomes useful to look at. I am not a mind reader; I can't retroactively say whether this happened or not, but in the basic conditions, there are some similarities. In the Educatorium, with the exposed concrete slab you will see certain approaches to solutions for how I introduced lights or sprinkler systems or mechanical systems. As a basic setup, you could argue that there were some similarities to Jussieu, because yes, there would be an interest in having concrete slabs as a ceiling, etc. As a technical and spatial issue, maybe you could take some clues from Educatorium, the kinds of solutions we came up with in that project might apply here, but I don't know if those are really the most important things you are trying to reconstruct here.

I think there were some images [of Jussieu], some renderings done in a nighttime perspective.

DJ: I have not seen those.

CC: They were important, because then the x-ray effect becomes quite literal. You know glass reflects; I was already quite aware that in the daytime we were going to get a lot of reflection on a lot of the facades, and so on the one hand that's the reason they were pulled in from the edge of the slab in many cases. I was aware you could get glass that was 80% transparent, but it was very expensive, they use it in retail. All these pretty precise understandings of the behavior of glass we had in place, but surely it was understood that at nighttime the building could explode to the outside in a completely different way. I think I talk about it a bit in the article I wrote in the German magazine.

DJ: You also describe the effect of the black areas at night that you would feel like you are flying across the city, a mirror to the inside. Was that a specific material you were referring to there, was it normal glass, or was it just normal mirror glass?

CC: I think it was just an understanding of glass, a lot of architects think glass is just transparent or whatever, but the reflections in it and from it are as important as seeing through it. If you imagine a transition from the so called "black glass" to the transparent glass, at least in my mind, that is the phenomenology, the difference would be so completely different. In the black glass, there you have the opposite effect, so in daytime you could see through that black glass to the outside, but at nighttime with artificial illumination inside it would function almost like a mirror, you wouldn't be able to see outside, it would be the reflection of the interior. Glass has always been a very seductive material for me. That was some of the understanding of that, flipping of inside to outside, the idea that the interior of the library would be reflected in the window so it would look like it was floating outside.

DJ: The street motif, I realise there is a very different way a Paris Street is functioning and I am trying to compare it to a Manhattan Street, of course with Koolhaas and Manhattan, is that also represented, the way a Paris street feels in an urban setting. What is Parisian about the design of the interior?

CC: That is hard to say, since I am from L.A. and Rem is from Holland, I think you have to look at Albert's projects, I think Rem is quite a fan of his work. I had never seen it myself, I was not aware of it until I went there. (...). I suspect he had a real respect for Albert and his project. If you look at the old school, so to speak, also this kind of reinvention of the Parisian Haussmann structure. So you have the par vie, essentially the kind of street, and then a sequence of courtyard spaces, you might even look at the original drawings that Albert did, which were never completed. If I am not mistaken, he invited a bunch of artists, and each artist was going to design each plaza separately, sometimes a landscape, sometimes something else, some very exciting ideas there, it was kind of urbanism basically, it was really ahead of its time. After talking about it with Rem, it was a very inspiring project, so the library itself, we were thinking about Paris, Landscape Urbanism, etc. but we were very much thinking about what Albert had done there. I am trying to remember the other projects, but I think Nouvel tried to plug into Albert's project and reconstruct moments of it. Obviously we didn't do that, but we were very aware of it, and almost sort of retroactively help its performance.

DJ: It's funny you mention it like that. It is hard to say, but I almost thought of it as the opposite, as a big objection against this way of dealing with the city. I almost saw it as a small misunderstood version of Corbusier's plan for Paris, but maybe because I have been reading about all these users from Paris, desperate about this complex after all these years.

CC: Its concept and its reality didn't quite mesh up in my interpretation; even though all the elements were there it was very powerful as this re-imagination of the city. (...) one of the problems of the project, the idea that the parvis was the plane of appearance, where people would circulate from one class to another. I did this early analysis of the UCLA campus to the Jussieu campus, they had a similar number of students at the time, but the American UCLA campus was almost ten times the size. So it's amazing to understand the density of the Jussieu campus. But the critique was that the par vie is almost empty; you go there and the wind would be blowing through it, it would be cold and rainy, there would be nobody there. The way it turns out, the students and the people that work there they don't go down to the par vie then walk across it then go back up again; they just stay in the building, and walk through the corridors on the four or five floors above. They never come down unless they are leaving the building. It was maybe a misinterpretation of how people would actually use the building and circulate through the building, but that never happened, that was the short circuit in the project. It is a sort of lifeless place and instead of being filled with people walking around and animating it, it's just this empty concrete space that seems dreary and lonely. If there was a way to force people down and out of the building [it might work], but it simply didn't work the way it was thought to work. So we were aware of that in our project and we didn't want to add more of the same, but nevertheless, if you deconstruct the building, it is a pretty fascinating project.

DJ: It is really amazing when you are there – normally you would think the par vie would open to the city, but it is actually not, it is a very well controlled, safe gates elevated above street level everywhere, even at the entry side, and I read that people think Albert would have opposed that, but it is not known, because he died before the decision was made.

CC: It would be exciting if you could find the early drawings about it.

DJ: (...) It's a good piece of information that there is some kind of basic respect for the architecture, because I always found it very critical, but perhaps that is more my critique of modernism than of Rem.

I was just wondering what your present work situation as an architect is, as a last question?

CC: It remains a roller coaster ride. At this moment in time, it's still pretty tight here, especially in the states. I think one of the legacies of that project is that I still have some strong connections in Europe and tend to go back and forth a little bit. In the last few years, most of the work I have been doing has been more urban design rather than architecture (...). We are doing projects out of Copenhagen and out of the south of Sweden, planning some larger urban areas. (...) competitions have been sort of a mainstay in terms of staying active in the larger scale architectural level. (...) one of the most successful ones was (...) in Guadalajara, for a library; we didn't win, but we were in the top three. Very different project (...).

Jussieu was a sort of big moment, at least in my career. It really opened up my eyes, and it was also a kind of turning point in my career, moving into more responsibility for the projects and working with Rem in a different way more closely, it's always going to be a sort of important moment in my career. Otherwise, I also teach from time to time, (...) here at USC in L.A., and (...) at the Berlage institute.

A.1.1.2 Second Interview Christophe Cornubert [123]

The second Interview was lead entirely via Skype with Cornubert in Los Angeles and Jauslin in The Hague in 6 of March 2014 and video recorded[124]. Beforehand a draft version of the Pro-Construction renderings (for section 4.6.) where sent via email.

DJ: We did these renderings, just after the interview, I sat together, with the renderer, and we finished those visualisations (...) it's more or less at the stage of the design when you had to stop working on it, so it's not showing solutions for technical problems etc.

CC: I'll start with view A.

DJ: The view is around the side, along the other university building. There was a swimming pool in the competition project.

CC: In the landscape?

DJ: We (...) put in because it disappeared from any later representation of the project, when it became clear that it was not going to happen.

CC: Jean Nouvel muscled his way into the park. The pool was a placeholder.

To see it after all these years is interesting.

DJ: With the façade, we tried to work on different transparencies. Black acrylic glass in the model, had a hard time figuring out what that would look like from the outside.

CC: If you just imagine black tinted glass, looking at this image, graphically, it would want to be blacker than the gray shown. If you imagine, based on the rendering, visually it would still have a certain reflectance to it. Rather than a foggy field, it would be more reflective so there is some kind of life to it. It gave the overall building a graphic quality, especially from a distance. The project looks very silver, very high tech. In a way, you are close, but again, the Educatorium, there is a certain roughness to that; that would be desirable here.

DJ: I went to see Casa da Musica in Porto. It was quite interesting to me. I realised, in almost every OMA building, there is a lot of improvisation in the detailing. We went to a specific room, halfway through the project, the architects decided it should be something completely different than it was before, it was for air conditioning and then they made it a concert room as well, and all the materials changed. That is the part that is incredibly difficult to simulate, this process of improvisation during fabrication of the building, especially during early OMA buildings, maybe that's not how they work now.

CC: You wouldn't really see that anyway in terms of this view, the exterior. Perhaps if the slabs looked a bit more like concrete. The curtains, I think that works. You saw that collage, we made it in 6 hours or something, it was an emergency and we had to create that because no one could understand what the façade would look like. (...)

It was literally collage layers with a photograph of the model. The façade was made out of pieces of plastic, so it was three dimensional. Some pieces of plastic were overlaid on top of the photograph.

I happened to look through the latest AA files recently here, and there was an interview with Mies van der Rohe from 1959. He was talking about one of his houses, and he proposed to have raw silk curtains. The client wanted fancy yellow curtains, which were 7 dollars a square foot as opposed to the raw silk which was 2, so, as Mies said, that took care of that.

Overall this looks good.

DJ: Let's talk about View B. In B it's more about the urban setting. You see more of the building because of the night rendering. You also see the surroundings. Of course these things are too perfect, coming out of the computer.

CC: Having Notre Dame [in the background] is really excellent. In some of our original images, we quite literally had some of the monuments in the background. Even some of the design moves, some perspectives inside the building meant to have these grand moments. For example, there is Notre Dame, filling the field of view.

You got it right; the building would become extremely transparent at night.

DJ: What we did, we realised that there is not a lot of structure inside, so what we did was put in pieces of floor plan like it was used in a competition as well, but I realised that in the competition drawings, there were these pieces of black and white collaged city. This one, a lot is imaginary. From the standpoint of the city you see a part of the city that in the end, you wouldn't see from the building, because as you explained, the building had to be pulled down a bit from the competition. This is more a publicity picture.

CC: It's ok, from the roof, you would have this height. Classic Parisian, Haussmann height. You would have a similar panorama, capable of seeing the city skyline from the top floor.

123 Abbreviations are marked with ...

124 1h 07min 39sec InterviewChristopheCornubert20140306.mov

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DJ: I took that picture actually, on the top of the building adjacent.

CC: In the foreground, where it dives down, where did you get that from?

DJ: Basically it was constructed from the section, but of course, you cannot have the people walking there.

CC: In a way I don't mind it, but to be honest, I don't believe that was the design. You know what it was? We had a lot of trouble trying to figure out what to do. Obviously sinking those floors, what would you be looking at? A retaining wall or something. I had just come back from this trip to Germany. In classic OMA fashion, what do we do? What about Salsa Sea, the winter palace in Potsdam. It has this incredible vertical glass house. That was actually the analogy I used.

DJ: From the inside that is what you would see?

CC: It was never really that developed, but if I remember, we were going to have some way to have a synthetic landscape behind glass, where the landscape was plunging down, rather than a retaining wall. There was some kind of green quality, perhaps a vertical green house, so you would see a charged artificial landscape on the outside, rather than a blank piece of concrete.

DJ: Indeed it would be quite dominant from the interior. You have a lot of views in that direction.

CC: I think the mapping of the carpets inside is quite beautiful. Every time you saw that pattern it meant it was some kind of staff functional space, that was the code. Maybe you would consider mapping some sort of texture where it plunges, that might help give a sense that something else would be happening there. Some vertical greenhouse

DJ: We also had a hard time figuring out all the entries. We have three on that side currently. It was not very clear, because it changed at different design levels where they would be. Is it possible there we so many different ones? Can you clarify?

CC: Were they in the sections?

DJ: Yes, but I believe it was from the competition stage. It was actually difficult to find where each entry would be. I think it would be fascinating actually to have so many different entry levels, which of course, normally the building has only one ground level, but since this building is almost all continuous ground level, it's quite logical that it would have multiple entries.

CC: Well, it was quite literally two libraries. That was the first big move, to stack them on top of one another. Somehow, vaguely in the middle, they were close in square meters, at the meeting of these. That is where most people are coming into and out of the project, two or three levels. It wanted to be as connected as possible, it would be this kind of functionality, and you might walk through the building sometimes to get to another part of the campus. A logic of the parvis itself, a network surface, a street but also this circulation surface. But it didn't really work that way, because we discovered that people would circulate within the building above itself, instead of going down, walking and then going up again, that was the mystery of the parvis, it always seemed sort of vacant. We extended the logic of the parvis itself as a connector, the buildings to the west and south, were disconnected from the campus, you had to go down to the parvis and walk through this no mans land. So this was a kind of connection machine. That part works quite well. (...)

DJ: View C. We had to improvise a lot on detailing. We had a problem with the columns; we mirrored the columns so they would look nice in the rendering. I don't know that it was possible for the columns in this project.

CC: To be honest, I think the idea was to use steel and then we would pour concrete inside the steel columns, because then we could use just the steel tube as a way to move air through. Sometimes purely structural, sometimes with a mechanical function. Obviously we never got to that level, thoughts about finish. I don't recall it being a mirror finish.

DJ: It's something we chose as a way to not call attention to them, but OMA buildings from that time, it likely wouldn't be a detail that would be used.

CC: I don't think the lights would be surface mounted; they would be flush with the ceiling. I can't imagine having little tubes coming out like that. It would have been flush in the concrete. I mean, it's a daylight view; it's a little jarring to see those lights, if you could get rid of those if possible.

Concrete might have been a little warmer than what is shown. The scale of the little amphitheater, it seems smaller than what I remember, but I hope you got it right from drawings. The idea was that someone could be standing at the bottom and give a lecture.

DJ: (...) How would it have worked? If someone were giving a lecture, was there a glass wall behind, or was it open. (...) I was wondering, you have that opening, the speaker would fall down!

CC: Who cares about this level of detail [laughter]? We of course would have had some railing or glass.

DJ: The more you put in realistic stuff, the more it gets complicated. It's a basic design and you begin to ask too many questions.

CC: You would have to think of this almost as a ruin, something between a parking garage and a ruin.

What is going on in the skylight above? It almost feels like you are looking at the ceiling, because you can't see a definition of the façade very well.

DJ: In the drawing it was a huge opening, we were not sure how it would work with the climate, so we put glass.

CC: It feels too ephemeral up there. The way you can see into the lower level is quite nice. Looking down it's well done, but likewise the idea was that you would see up, so if there was a level of activity up there, right now it's a bit lost.

DJ: It's actually the roof there, but yes, you imagined that people would walk on the roof as well.

CC: Technically speaking, the lights are not helping the situation. Like you said, adding details isn't necessarily desirable, keeping it more primitive, it will in fact be a better rendering of the concept. Don't try and fill in too much realism or detailing.

Overall the materials are quite nice; I can see the glass tub of the elevator at the lower level, which was a nice feature we were working on.

One other thing, that column is coming down in the middle of the amphitheater; you almost want it to disappear. It's difficult to say what would have developed. I think it's possible, I remember that moment and the proximity of the concrete almost touching the column, looking at leaving that for future development, it was not ideal, we didn't quite get to that level, we probably would have gotten rid of it

DJ: Image D. We did another surface here because it's quite steep. This is the part of the library where everything is a ramp. So I found that treatment of concrete with a brush at the Kunsthal. I don't know if that is the original finish, or if it was applied later.

CC: I think it's nice. It almost feels like the street or the sidewalk.

DJ: You always imaged the building as having an endless inner street.

CC: I think that's great. It's part of a roughness that was intentional at the time.

Here the lights don't bother me so much, they work as a pattern to the surface, and here I don't mind them. As with Educatorium, the idea would have been to use the lighting as stenography, the development would have been moving to different levels, the lighting strategy would probably change, as a way to help emphasise these different worlds stacked on top of each other.

DJ: This is in the lower part. The part we were just discussing, you could have imagined these as terraces or glass houses?

CC: On the right side looking through the glass?

DJ: That was a very interesting perspective; this was more about the spatial development. I was amazed by how often one would turn direction as they walk through the building.

CC: When we had to redesign the lower levels, the whole bottom section of the building, I redesigned in one night. Started at 10 and by morning it was finished, 50% of the building was redesigned.

DJ: But I realised it's not an idea like the Guggenheim, a spiral, but you always have ramps, one going left down, and then changing direction, and often several connections between the different levels, so there are many options moving through the building.

CC: What became important, as soon as we had to push the building down, then of course suddenly you had 3 facades where there was no view. We started with a design where we were looking out on all 4 sides. That diagonal spiral, it wasn't random, but it reorients the main perspective towards the south. That became important so you're not oriented towards blank walls. That was what created that geometry was to shift the space towards some kind of view, some kind of condition. That's how that came up, that's even why the furniture is aligned in particular directions, so you can see through the shelves towards these views.

A couple details: there was this almost Piranesi vision. Right now, all the surfaces are the same, sort of silverish. If you could tweak the tonality a bit, so you could understand different levels? If the lower level tone could be shifted darker or lighter, so you get this stronger sense of layering. So you sense more each level distinctly. Currently they blur together because the material all appears the same. Emphasis of stacking the different levels through different tone would be important.

DJ: So you would have made changes throughout the levels, rather than emphasising continuity everywhere? Detailing the lamps is another example.

CC: Yes. This is trying to reconstruct something from a long time ago, the state of mind, you can imagine, the concrete slab between the floor and the ceiling would have been a powerful consistent element throughout. Of course it was about this continuity, but it would have also been about creating some specificity so that each level would have a certain character and a certain atmosphere to it.

And so of course some of that would have come naturally – as you descend it would change because you suddenly don't have views out. That would have been an obvious architectural shift. So whether through lighting, furnishings, certain materials that were introduced, I'm quite sure that would have been a kind of goal. Also the idea programmatically that some areas are for research work, other areas were meant to be more social, lounge spaces, that would have been part of ultimately a kind of difference. So yes, maybe even lighting would have been radically different, to emphasise the perspective seeing these different levels.

You could experiment with this, it could be purely Photoshop, changing contrast or color temperature of lights slightly, nothing too dramatic, you are capturing the layering pretty nicely here.

My only other comments, would be, on the upper left, I see the escalator, I can't orient myself exactly where I am, there is horizontal circulation up there, you might consider seeing crowds of people up there, perhaps a mob of students coming out of class.

It would have a kind of urban character, like walking down the Champs-Elysees, you get crowds of people. That was the idea, that there would be this street that would be punching through the middle level of the building. We were talking about this idea before with the ramps, so hundreds of students coming from one class to another, this becomes the freeway for them, then it becomes more quiet as they filter into the building. I think that contrast would be interesting, instead of always seeing the same amount of people. It seems sort of quiet in there, if you could introduce some sort of loud moments, it would be desirable. That was the spirit of the project.

DJ: A student protest perhaps?

CC: Well, exactly [laughter]

DJ: It's funny, On Monday I went to the faculty, they were hanging up some posters from the early 70s, they were doing a theater show about the 70s in Delft, so they were hanging up these protest posters, and they were wearing their costumes from the theater show. Of course that was so weird because there is this space with a big amp theater which you could perfectly imagine being occupied by a big crowd of protesting students, but of course our students never protest like that.

CC: Just get some May '68 scenes and your all set.

A.1.2 Appendix to Chapter 5 Learning Centre

A.1.2.1 Informal Interview Yumiko Yamada[125]

All Interview about Learning Centre where taken during a press viewing of the building 2 days before the official opening in Lausanne on February 17th 2010. The interview occasion was set up inside the building itself. Before the official session I (**DJ:**) asked the following few questions[126] to project architect Yumiko Yamada (**YY**:) at the Japanese garden in a small courtyard about some gardening issues, rocks and trees with some journalists (Q:).

YY: Actually this is by a Japanese garden designer, and he designed this. He flew to Japan to find all these rocks and came back.

Q: In Switzerland they don't have rocks?

YY: Aii - no, only in Japan (laughter)

DJ: Has he learned it really as a craft - because I think it is a traditional craft?

YY: You know, if you make a Japanese Garden in Switzerland I think he's the only one.

(...)

Q: It's yours? (referring to the design)

YY: No it's not, it was really a late decision.(...) I didn't go to his place but apparently he has lots of rocks.

DJ: Didn't you work with plants, trees or other in the beginning of the design as well?

YY: Yes, we had lots of plants.

DJ: They are out [of the project] now?

YY: Yes. In the end we thought that it would be better to have these gravel surfaces than to have plants. You know if you don't have plants you have less maintenance.

Q: So it was not your own decision?

YY: You know, it was a convenient development. Sometimes you just get to a different thought, which for sure is all right.

125 Transcript of voice recording 2min 51sec SANAAInterviews000.amr Lausanne 17.2.2010

126 Although in informal setting, the statements of YY where made at an invited press meeting with official accreditation of the author as a representative of MARK Magazine (Jauslin 2010 in Mark No.11). Consequently no additional written authorisation was asked for the publication of the transcript of the audio recording.

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A.1.2.2 First Interview with SANAA[127]

The 'official' press interviews[128] where set up as round table discussions with Kazuyo Sejima (**SA**) and Ryue Nushizawa (**NA**) and project architect Yumiko Yamada (**YY**). The round tale was set at Café Klee for a group of Asian journalists (**Q2**, ... , **Q5**).

Q2: So what is the difference of the feeling of the site, Because now it's finished and built. (...)

NA: ... after completion you mean.

SA: But still the landscape[ing] is continuing now. (...) Now they are making the surroundings (points at construction works outside)

NA: The impression of the site? (...)

SA: Before it was a little bit far form the buildings.

NA: This area used to be parking. And here started the existing campus. Now there is still construction going on but it's gonna be more continuing (waving his hand through space from campus to lakeside) between here and there.

Q3: (...) The design of here is very fluid. When you were in the design stage did you expect a lot of difficulties in constructing the place? A lot of things had to be made up. How do you think about that at the moment?

NA: We have been working together with the structural engineering people from the very beginning. We know that of course this is one of the biggest issues. How we can create such a three dimensional shape. But i was not worried so much because the discussion between the engineering people, the architects, and the client has been [going on] all the time.

Q3: Another question is about the original design and what now you see is there any changes or is there any differences? Say for example any compromise. Because of the structure issues, because of construction constraints or ...

SA: Let's say we could keep the concept but there's so many things we changed a little bit (...). But the direction is always the same, but of course ... the curve for example. Somewhere we decided the curve but we precisely ...

YY: ... you know because of the structural organisation you had to make it higher or lower or bend it here more or ...

NA: ... I think there are many people who asked us about the competition scheme and this one now realised which one do you prefer more. But I think of all, this is the one (looking around). This is like a kid: during competition phase this has come up with a kind of a baby shape and then we raise them up and it's real. This became like this and we love both, but this is the one. This is not a thing that we can compare.

SA: Like a continuous development

Q4: (...) you always pay much attention to the relationship between the architecture and the surroundings. So in this project how did you fit the project into Lausanne – a city with a long history – how did you fit it?

NA: I think that really the landscape shape of this building – to have more smooth continuity between architecture and the surroundings. You can see that they have a big street there, Avenue Piccard, this can directly come into the building without any boundary.

We also learned very much from Lausanne because they have many beautiful examples about how to deal with the topography

SA: To Lausanne we went a lot of times, there we walk and see ...

NA: ... they have a beautiful way of using the hill – a beautiful way of using the terraces or lake, lakeshore. This is where we learned very much.

Q4: (...) as we see you have used white color and glass in this project and also you used these two elements in many of your previous projects so i just want to know what do the two elements mean to you? (...)

SA: (...) this is a huge building but we give it courtyards and then give it an elliptic space with light and also white is a very basic color which, if many people come the building is a kind of base for the people and also the white color spreads the light everywhere. Homogenous space.

Q5: (...) In (...) interviews (...) you said that your design philosophy is that architecture is a link between people and the city.

SA: [Laughs]

NA: When a project happens in the city, the relation between the city and architecture must be very important, one of the most important issues that the architect must think. We .. normally ... architecture can just solve the program requirement by the

127 Recording 11min 44sec SANAAInterviews003.amr Lausanne 17.2.2010

128 The statements of SA, NA and YY where made at an invited press meeting with official accreditation of the author as in the previous interview. Consequently no additional written authorisation was asked for the publication of this interview.

client but I think when architecture happens in the public area it's not enough just arranging the program in the box. We must think about how architecture can propose to the city or to the public. How the architecture can change the atmosphere that we all share. Maybe that's one thing that we are always thinking on with every project.

Q5: Compared with previous times would you like to say that the role of architects today has changed a lot?

NA: But also in previous times the architect should have a responsibility to the public I think! He always did. But maybe recently the architect is not the one person to think about the architecture - now there are not only architects because we must think about a lot of things. With this building also many engineers joined to realise it.

Q1: Are there projects about public spaces that you would like to do very much in the future?

SA: School.

Q1: What kind of school would you like to make?

SA: Asian (laughter). But this is more for the children - an elementary school or so.

Q1: How is your idea about that?

NA: Kids always start using the space in a way that we have never imagined. In a way this is very exciting to think about.

Station. In a station there are a thousand people coming all at once and then disappear at once - I think that's nice.

Q3: You know many Japanese Architects had many projects in China.

NA: I am amazed by the Chinese development. We are all, very much. We once or two times joined a competition but unfortunately we lost (laughter). But some day we will go to China.

Q3: We are looking forward and wish you good luck by then.

A.1.2.3 Interview with Ryue Nishizawa[129]

Between the 'official' press round tables I asked few questions more specific to my research to Ryue Nushizawa (NA) next to the bar[130] of Café Klee at learning centre

DJ: (...) I am Daniel Jauslin, a researcher at TU Delft. I am writing for Mark Magazine and I am doing a PhD on "Architecture with Landscape Methods". So I am very interested in architects that propose landscape as a subject for their architecture. I was just wondering if you could elaborate on that. And if we can make an interview like a short discussion. So, when you talk about parks or landscapes, what are the references you have in mind?(...) When you designed this building what kind of park would you think of?

NA: What kind of park? You mean, specific? I don't think that we have a specific reference when we are working. [We are] just having this image of park, more vague, more general. There is no direct [reference].

DJ: How would you describe the value of the landscape concept for your work as an architect?

NA: Landscape, you mean landscape....

DJ: you said this building is a landscape, a park ....

NA: ... yes, yes: landscape is a very important, interesting concept for the architecture or for the architect I think. All the projects must have a landscape between the architecture. And landscapes are very free, [as in] freedom, and very open and they change during the year. Landscapes are very beautiful to me.

DJ: And you are also talking about that you want to do architecture for the people, to have an approach to the human. Does landscape help you with that?

NA: I think so, I think so. [In] most of the projects we are trying to create harmony between the architecture and [humans]. Landscape is a very good concept to integrate architecture and surroundings. This [Rolex Learning Center] is one of those landscapes.

DJ: I think you've been encountering this subject and working on this subject in other pieces of your work, but is this building different than others? Did you discover something new about architecture while you where designing this building?

129 Voice recording 5min 44sec SANAAInterviews005.amr Lausanne 17.2.2010 continued 0min 55sec on SANAAInterviews006.amr

130 As in the previous, no additional written authorisation was asked for the publication of this interview.

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NA. Yes, this kind of three dimensional movement is for us very challenging I think, because we have never done it before. So we learned very much about how topography or geography creates very different rooms compared to a square cluster shaped building. You can create a degree of privacy by creating a topography.

Like the top of the space is surrounded by hills to create a [space] different from the bottom part. When you are standing in the middle of hills you get a kind of private, different feeling. I learned very much from the landscape concept.

DJ: (...) I am wondering (...) in this building [about] the sense of orientation. Now the sun is shining but this morning it was kind of dull - I once was here in the evening - did you work on that or what did you ...

NA: This building is totally transparent, you also can see the lake and the mountains and then the campus on the other side. You can always see all around yourself and on the larger map

DJ: So you are working with the external views as a reference for the orientation?

NA: Yes

DJ: Are you expecting how people are going to use the building or do you think there is going to be a surprise in that. I think there is a big tension there?

NA: There will be a big surprise [conversation is interrupted]

NA: We expect to see how people use the space in a way that I didn't expect [laughter] This is a little bit of a contradiction.

A.1.2.4 Second Interview with SANAA[131]

The second round table[132] was set at Café Klee for a group of of English speaking journalists, one from Architectural Review (**AR**), John Gendall (**JG**) from Metropolis Magazine, others did not introduce themselves (**Q,Q1 ... Q5**) with Kazuyo Sejima (**SA**), Ryue Nushizawa (**NA**) and project architect Yumiko Yamada (**YY**)

AR: (...) I came to see you in Japan. We were talking just now with Sejima about your engineer Sasaki and she explained that you always 99% of the time you work with him, because he understands what you want so well and you teach each-other and you help each-other

NA: This is just because he's a genius.

AR: That makes sense. Nobody less then genius. (...)

Q1: The very first building that you designed I looked at was the women's dormitory. I wrote a review of it around 1989 or 1990, how do you think that your work has changed since that time? (...) What is your feeling about architecture for human beings and what they needed then. You did take care of all their needs: cultural, psychological, everything ...

SA: That building is much much smaller than this building. 1,200 square meters and the function is also not so comparable but there is a space ... people can find some space . That is a dormitory, some kind of private space but there are also some spaces where also people who come from far away can join and come together and this is a public space and there are some spaces used privately but this is mostly public space. But at that time I only think [thought] about y and z - two dimensional relations - but here, more gradually I think, or we think [...about the common space] we think about the relationship to the outside not only the inside program but also three dimensional relations in architecture.

Q2: Was it important to you to keep the perimeter orthogonal?

NA: We have worked very much on this issue, we tried to have a more funny shape (draws a flower on a napkin) but finally when did this and this is a very good solution

SA: because this is kind of a border

Q2: yes it has an edge. And that allowed you to have more generous courtyards within that rectangle

131 Voice recording 30min 39sec SANAAInterviews006.amr continued 0min 55sec 17.2.2010

132 As in the previous, no additional written authorisation was asked for the publication of this interview.

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FIG. A.2.2 Ryue Nushizawa (NA), Kazuyo Sejima (SA) Yumiko Yamada (YY) at Rolex Learning Centre in Lausanne 2010

NA: If this building were more in the middle of the campus the shape would be much different. Now we have very much open space around. So we have tried this kind of thing to keep it open.

Q2: Keep the edges fairly simple. They are much more urban or responding to a campus condition, aren't they?

Q1: In a way this is a kind of a small scale campus

NA: Yes

Q1: well, like a park landscape, and you say, "Ok where are the people? They are in the next door scene they are in the park over there." So all this is a very flowing space.

JG: You mentioned the human experience in your presentation this morning, the relation between the human and the architecture, and I wonder if you can address the sense of orientation within this space. What is within this space and also this space and the campus behind?

NA: One thing that we feel is important with this project is keeping it transparent. Transparency. Here, anywhere you can feel the lake and the mountains on this side and then the campus on the other side and you can really easily orient yourself with that. Keeping the transparency gives you a sense of orientation.

SA: On one hand, we wanted one big space but also the building had many layers (floors) before, but at the end we thought it's better to make some meeting place that would have just one floor. So that means it would become big, and even if we use glass, this would become a very deep space. Then the floor had to become higher and then you would see through (noise).

Q1: You described the way people meet not on a straight line but only in curves. Will you come back to the building – will you return to the building and see it occupied?

SA: Monday we will (...) But maybe Monday there are not so many people because it is the very beginning here

Q2: Where will you sit, where will you be? (...) Maybe you will be moving around, observing a bit?

SA: It depends on the weather or the condition of the body

Q1: I think next week it will be interesting to ask how many people will be here it is very difficult to ...

JG: Is there a capacity? (...)**SA:** Once we decided a one story building so then that means that the footprint would become very big. So we wanted people to be able to come everywhere, but people would only be able to arrive at the edge of the building. But

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that space is very hard [?], so that means if we make two hills you could immediately come across the center of the building, so also inside people always come here [central bar, where the interview took place], that's the interesting concept of the EPFL building or between the building and the outside. And sometimes it's better you know if it is a completely flat building you cannot see the underside and also above you can see the lake from this level [points upwards]. There are many things that in the end we thought that this works for organisation.

NA: The EPFL People wanted to have a floor higher up for the restaurant but we did not want to make this multi-story building so we thought to connect the ground floor and the upper floor.

Q3: So the client wanted the café or the restaurant?

NA: The restaurant is upstairs and the library with the beautiful books over there.

DJ: You mentioned that the entry is in the center. Is this the first time you realised a building where the entry is in the center?

NA: I don't know if this is the very first in the world.

DJ: But of your projects?

SA: When the competition started it was at the completion of the Kanaza Museum. In Kanaza Museum we had a different site, smaller than this, but we made four or five entrances because the site is the center of the city and we realised people arrive everywhere and sometimes the right section of the gallery is a little bit far.

JG: There are a few buildings where you enter underneath, and the surface where you enter is very important. How did you decide on the quality of the environment you would achieve underneath? I mean the concrete is very shiny so it spread the light – it's very good – but when you compare with the building by Zaha (The Wolfsburg Museum) where it feels more like caverns.(...)

NA: Wolfsburg. Hmm it's different (...) I didn't understand the Zaha part.

RG: I was just making a connection because her building is, what is the same is you walk under the building and it is described as a public space but it can be quite oppressive quite sort of dark and not very welcoming; here it seems brighter and the form is softer.

SA: Because people from the city when they pass from Monday, I always thought it's very important the people who come see the EPFL are also in the architecture inside. Normally a courtyard is an outside space but it's completely surrounded by the glass but it is a very isolated place, but here only the courtyard on one hand is on the ground and on one hand it's up, that means that there is always a very good connection – there is a very good connection to the inside but also there is the connection to the surroundings. So you get right into the inside but also see to the outside. In the competition project in the very beginning we wanted to make some public space below, with pilotis (noise...) and then finally we found the right way.

Q4: You said earlier on when we were with the others (interview with Asian Press) that you were interested in designing a school building in the future for children. In what way do you think that this building could be influential to school buildings or school architecture? What elements are innovative and very fulfilling for a school building? Or what is it in this building that triggers the desire to build a school?

SA: There is always classrooms. You know that school buildings have classrooms. But this is not a normal school building.

Q4:: It would be interesting on Monday (opening to the public 22.2.2010) to see a small child.

SA: They will be running. (laughter)

Q4: It's interesting about a school that if you make a hill, than the children will climb the hill.(...) I guess that children would prefer to be in a building like this. Also for a child the world is seen as transparent, without boundaries and without hierarchy. Can you say something about your attitude towards hierarchy? Architecture traditionally is so obsessed with order and hierarchies. You are very democratic in your approach...

NA: Of course, we're very democratic. We don't give such a strong order for the programming or the spatial organisation. I think one thing that we trust in is that people can create the space based on architecture. Architecture can become even more ... wonderful by users, by being used. That's why we tried to build a kind of a virtual freedom for the space not to be a pyramid building.

SA: If you are on a hill or behind a hill there is another space. A more open or a more quiet space. So that's how we made the hills so that even in one big space people would have some private spaces.

JG: Did the client have a preference to where the librarians, the researchers, and the cafe staff (would be)? Have they been competing for private space?

SA: Yes. Many (of them). (...)

DJ: was the surrounding landscape like the Mont-Blanc and the lake important to you? Did that influence your decisions in the building?

SA: No (laughter).

DJ:: Can you actually see the Mont Blanc from the building.

YY: (translates question into Japanese)

SA: Yes, a very big one. And also if [you] enter the building from the ... space you can see it.

AR: Before the competition this area was occupied with cars. Did you design the landscape on the site?

SA: No, I'm not the landscape designer. But in the competition we also proposed (a landscape design) and this concept they kept.

JG: would you have considered trees within the courtyards or was it unfeasible because of the car parking?

SA: Underneath ... yes also the weight was a big problem because of the costs. (...)

DJ: This has been very challenging for engineers and builders?

SA: Yes

DJ: Was there a point where you started to doubt if you over-stressed them or were you sure that they would ...?

SA: Yes we were sure, but we cannot speak French, so sometimes the communication became complicated and sometimes some people doubt, but sometimes the language is difficult. The project is really coming from Japan.

DJ: And did it help you that you already had been building in Switzerland?

NA: We have done one office building in Switzerland. (...)

SA: They are only two, there was one before but every time we had a new experience.

JG: (...) I met the people from your office who built your new museum in New York. I am always amazed how you have one maybe two people from your office in any given location. How often do you communicate with them? When you are generally, I presume, in your Tokyo Studio?

SA: Yes (...) Until the construction starts we keep working or we ask for bidding, but when construction starts we go onto the site and in Tokyo there is few people. So for this it is Yumiko but sometimes in a very dense period few more people move here and also Tokyo will help.

NA: I or Sejima come to the site once a month. And another one would come to our Tokyo studio.

Q2: You had the same engineers for the Essen project? (...)

SA: We had one Japanese and also one from Germany, Bollinger and Grohmann from Frankfurt. (...)

Q2: How often did you meet with the structural engineers?

SA: Apart from the Japanese engineers? In the very beginning we would fly to Frankfurt sometimes because of some problems.

NA: Later on there was one engineer partner firm here (in Switzerland, Santini ,...) as well.

Q2: Were there changes on the construction site or could you build it as you planned it from the beginning?

SA: Hmm. We change a lot but we could ...

NA: When we came on the construction site they proposed many different ideas.

JG: But it was always that concrete structure, that never changed?

NA: Initially we had a concrete slab and a light steel construction for the roof but then did it in wood.

SA: The straight part is steel as we proposed but the curved part was cheaper in wood.

NA: And with less (heat) expansion.

SA: (...) The construction company decided that. Of course a curved structure is more expensive, but not if you use wood. Actually now the straight part is still cheaper.

Oh then, we are finished?

JG: Yes thank you very much.

Questioners: Thank you.

A.1.3 Appendix to Chapter 6 City of Culture

A.1.3.1 Interview Peter Eisenman[133]

I led this interview at Peter Eisenman Architects office in New York on March 25th 2014 in presence of the transcript writer Andrew McGee. Although questions where prepared Peter Eisenman (PE) starts the conversation[134] right away on the previously agreed topic of City of Culture in Santiago de Compostela.

PE: First of all, the project I have been involved in, Santiago is not the only example of the kind of work I thought that I was doing. It is to deal with a different kind of relationship of architecture to the ground. If we go back to the modern architecture and modern sculpture after Second World War, you realise that sculpture moved off the pedestal to occupy the ground in a different way than it had before. So you get things like Robert Smithson Spiral Jetty, Michael Heizer, any number of these people who are dealing with the sculptural object as no longer moveable, for any number of philosophic or commercial reasons – there is no longer a market for the spiral jetty, you can make pictures of it, you can make drawings of it, but you can't have the thing itself.

Architecture on the other hand, before the war, moved itself off the ground, because the ground was the privy of architecture – you had to have a site, you had to build on something – whereas sculpture didn't have a site, it was not site specific.

What architecture became with Le Corbusier and the Maison Dom-Ino, the iconic work of 1914, was to move architecture off the ground, onto pilotis. It didn't matter where you were - hillside, flatland, river, whatever - because the whole notion was to be site non-specific. So after the war, architecture no longer had the same kind of energy about public ground or public space.

One needed to find a new relationship of the object to the ground, not in the way that sculpture had done or how architecture had done it in the 19th century, but in a wholly new way. The traditional relationship to the ground was what people called the figure-ground relationship – it's well documented.

My first houses had nothing to do with the ground. Then I realised through my psychoanalysis that I had made several, what I would consider errors in my career, and had been too much psychologically in my head. As Manfredo Tarfuri said in The Meditations of Icarus, I tried to look too much into the heavens.

And so I started to become interested in the ground. That was in 1978. I began to involve the ground in a different way; not as just a site, but as a conceptual ground for a figurative urbanism, a non figure-ground urbanism. Projects like Cannarregio, Wexner Center, Checkpoint Charlie, Aronoff Center, Long Beach – the list goes on – were doing this, and in a sense this culminated with the Holocaust memorial in Berlin, and then in 1999 with Santiago de Compostela City of Culture. This was talking about how the ground can, as it were, erupt to reveal building.

I am not really interested in landscape; I have to make that confession right away. I work with landscape architects, and have great respect for people like Laurie Olin and Hargreaves and others. When I have worked with landscape architects, we have brought them in right away so the flora was combined with the forma, to create flora- forma, and it was very important to incorporate landscape into the work.

DJ: In the competition you call it the figure-figure as opposed to figure ground. Which I think would be related to Colin Rowe.

PE: Let's take the icon that it's really related to –one is the Noli map of 1748, and one is the Piranesi Campo Marzio map of 1762, which I call figure-figure, as opposed to Noli which is the figure-ground. If you look at what they did in 1978 with the Roma Interotta competition, this took the Noli map and put things into it - it was really a figure ground exercise. The ten projects of Cannarregio were something different - what I would call the beginning of the figure-figure operations – and changed my whole attitude about what I was doing and why.

DJ: It's interesting that you relate this to psychoanalysis; there is a quote by Freud, which looks at the city of Rome and reminds us that the city is piled up, a series of layers, which is very similar to the drawing again by Piranesi.

I was wondering, if you make the logical conclusion that figure-figure is important, what happens to the ground, why is it not ground-ground?

133 Video recording 1h 27min 33sec EisenmanInterview01DJ.mov New York 25.3.2014

134 Peter Eisenman, being apparently a very concentrated and well prepared speaker, almost no abbreviations (marked with ...) where necessary to the full transcript

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FIG. A.1.3.1 Peter Eisenman (PE) and the author (DJ) during Interview at Eisenman Architects New York 2015

PE: Well it's not a dialectical relationship anymore. Figure-ground is dialectical. Figure-figure implies that the ground is figural and not dialectical and not receiving a figure, but active. When we talk about figure-figure, the second figure - or the first figure for that matter - is the ground. Ground is figure-figure if you want, that is what the implication is.

DJ: That already answers half of my questions. [laughter]

PE: Well, I've written about it, I've talked about it, I'm not deviating from anything you would expect.

DJ: So how did you get involved with the City of Culture?

PE: There was an international competition. Rem [Koolhaas], [Jean] Nouvel, [Daniel] Libeskind, the Spanish architects, some local Galician architects, Steven Holl. And anytime there is an international competition with those kinds of guys, your energy goes up; you like to compete, and those were as good as any. So we went in to the competition and what we did was to figure what all these guys would do and think of something radically different - that's what you have to do, you have to play poker when you are playing for a high stakes competition.

We knew we could beat some people because they are not competition architects – competition architects are Nouvel, Libeskind, Koolhaas, etc. – they were the ones. We knew that Rem would do some kind of object, as the others, it was just figuring out what they were going to be.

But we had no buildings; we just had ground articulated, just cuts into the ground. We had a beautiful wood model – it was very seductive because you don't see any buildings. You just see molded ground.

What we figured – not only was our competition Daniel, Rem, and Jean Nouvel – but our competition was Frank Gehry, because what [then president of the Xunta of Galicia] Manuel Fraga wanted, was something to compete with Bilbao – and he said what he wanted was something that would do for Galicia what Frank's building had done for Bilbao.

But what he wanted was a city of culture, something that would keep young Galicians home. There was a tremendous out movement, an emigration from the area. There is no influx of modern economies to this region, and there is no secular culture, and it's a very poor area.

Fraga's idea, and it was a very good one, was to make an international place where Galicians could be proud of being on a cultural map, on a pilgrimage map. Had he not lost one seat in an election, he would have finished and realised his goal. Before the PP de G (Peoples Party of Galicia) moved out of power, he had secured all the contracts – the project would have been finished. The Socialists were very much against it, the Ultranationalists were against it. Socialists for me are always against cultural projects. They want bottom up rather than top down.

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Clearly the idea was a good one or else it wouldn't have attracted the quality competitors, and clearly our strategy resonated with the competition but also the politicians in Galicia. We had a very good relationship with Manuel Fraga. He was very involved in everything that went on and his cultural minister Perez Ruella, and the present mayor of Santiago, was also involved as the head of the foundation at the time, so there was this enormous energy that allowed this thing to move as quickly and as well as it did. It's a beautiful piece of work, very well made, if you have been there.When compared to Moneo's Prada museum, it's 1/3 the cost, it's 1/3 the cost the Valencia museum, it's not an expensive project, by many standards, very inexpensive, and yet it has a certain architectural quality that did what it set out to do, which was to put Galicia on the map.

DJ: Why is it so big, was that part of the competition strategy? Yours was the largest footprint and a proposed extension to the original competition brief was also included in your proposal.

PE: Initially the library was set up for 250,000 books. We designed our first library for 250,000. The cultural minister came while it was under construction and asked how many books it would hold and we said 250,000, and he said, "that's ridiculous, I want 1 million books, and I want it four times this big."

You don't say, "I'm sorry, screw you," so we made it for 1 million books. But they don't have a 1 million books.

At first it was an opera house with a thrust stage and a proscenium. How many seats do you need to run opera? Well, we had the minimum number of seats that everybody in the world said was 1800. Why do you need opera? We were against opera; there is no culture of opera in the region.

I think you are asking the wrong questions - the question is not that it's too big, it's why did they want opera in the first place? For a music hall, you could get by with 1200 seats because the cost of production is less, but to sustain an opera house, 1800 seats are minimum. And I'm never sure how many seats we ended up with because we were always modifying it. It was the consultants going back and forth with this thing.

It isn't big, you can say it is, but it isn't. It's ambitious – six cultural buildings.

But if you think of it, what tourist goes to a library? Maybe they go to the library in Oxford. Maybe they go to the British museum in London; maybe to the Library of Congress or the Smithsonian; I don't think they spend much time in the New York public library. I don't think tourists spend a lot of time in a library.

An archive building, which was one of the things they wanted, doesn't seem like a cultural winner. There are really only two museums for tourists, maybe also the theater building, so the idea of attracting tourists to me was fraught with problems of what we were supposed to design, and yet in the first years of the first four buildings, they have had 3 million visitors. So it seems to work even in bad economic times.

I don't know any architect that decides to tell the client that it's going to be bigger; maybe Rem. No architect tells the client that. I have never been with a client that has wanted to make it bigger. Architects don't decide the size of things. A lot of what looked bigger in ours was nothing but landform, nothing but sculpted land.

[Points to wristwatch laid out on the table]– If this is the figure and this is the ground, what we tried to do was make all of this look like this, but this is still all we had, that was the clock. A watch is figure ground; we were trying to make this disappear as an intact figure. That is what architecture is about, the blurring of the figural edge that is the outline of the building. So what you are looking at is merely ground that we have taken and lifted up.

The largest part, the tunnel, is 50,000sqm of underground service. It's amazing, so there are no roads or trucks, and it is an amazing engineering work. It could be a bomb shelter for 200,000 people, that is big.

In order to keep the site without the markings of loading docks and roads, etc. that is something we needed to do and that they were complicit with. That was the first thing we built, the underground service connection, and it is really quite extraordinary to see.

DJ: Was it an important project for you?

PE: What do you think?

DJ: I think it was the most important.

PE: I don't know that is was the most important. It is important. You have to judge projects in terms of breaking ground in one's own project.

The prospect of doing six buildings at the same time and not messing up was important. The number of architects you have seen to have commissions for many buildings and have done the same thing, we wanted to go away from that, so we thought of ourselves as a jazz sextet, where there was improvisation and movement.

If you really understood what was happening from building to building, you would see relationships of what was happening in terms of subtlety and sophistication and demand for your attention, and that is the big part of the project, how much close attention is necessary to fully understand what you are looking at. This syncopation between buildings was something I never had to do before, and the test of the project is does that work or does it not.

Say you design a house – I thought at one point in my career I would never do anything but houses – after doing 6 or 7 houses it becomes clear it is a problem of scale, you can't just bump up the scale of little houses and engage with an intermediate scale. Jim Sterling once said that Americans are very good at designing houses, but once you get to an intermediate scale, they just

blow up little house ideas into museums. I wanted to avoid that and I wanted to tackle the intermediate scale, which I did for a number of years. After a while one gets tired of doing art schools and museums. There is no typology there.

So the challenge is, with large scale buildings, the idea of doing a six building complex, we were really happy to do that, and of course if there hadn't been this recession we would have finished by now – it will be finished someday, we are talking about finishing the music theater soon.

What you have to understand is the difference between financing buildings in Europe and the US. One of the richest merchants in the world lives in Santiago – but not one penny is given to public works. Who funds the Guggenheim and the MOMA? Trustees and private investors. But in Europe, they don't know how to privately finance public works. So that is one of the reasons why it didn't get finished, there is money in the system, but it is not the culture to think that way.

DJ: You relate a lot to the old city of Santiago in the project.

PE: I do with all my projects. The relationship to the history of the site is very important. It's not just the literal site, but the site that is virtual. We saw the site in several different ways - we saw the actual medieval city, we saw the city as a cartesian city - all of these are overlays onto the structure - the topographical city, the virtual city.

If Piranesi said he was doing a plan of Rome, then I was doing a plan of Santiago, because Piranesi's plan had nothing to do with Rome; maybe 10% was in that place, but it was basically a pure invention by Piranesi. (The Piranesi Variations at Venice Biennale 2012 see Chipperfield 2012 p.64)

To me, doing architecture like this is an invention of the ground. My first European project, Checkpoint Charlie in 1988, was called Cities of Artificial Excavation. The whole nature of artifice and layers, where notion of topography, the medieval city, the neoclassical city, the baroque city form a layered history of the site, that is something we have always done, and if we didn't have a layer to put onto the site, we invented one.

DJ: Is that layering through the idea of geology or archeology, the presence of time?

PE: It's artificial excavation, invented archaeology. Piranesi thought he was an archaeologist. He made the distinction between antiquarian, which is a humanist idea, and archaeologist, which is a more scientific idea. This idea moves from humanism to a new sensibility in the late 18th and early 19th century. Before, when people went to Rome they were antiquarians; later they became archaeologists like Piranesi. So in one sense, I am an archaeologist. I just received an award in Rome a few weeks ago from the institute of archaeology, for my work on Piranesi, so you can call it whatever you want to call it.

The Enlightenment had a different idea of history than humanism. In my work you can see the shift from a humanist idea to the enlightenment idea to the modern idea to the postmodern idea; each has a level of energy about what the site is.

DJ: Spatially, what was your impression of that old city? Did this trigger ideas about you dealing with space differently?

PE: Yes. First of all, Galicia gets a lot of rain so it has a lot of heavy arcades. Our building has a lot of arcades. If you look at one of the buildings, you'll notice glass that is cantilevered out from the wall, and if you go into town, you see these glass balconies that stick out from the upper floors of buildings. So yes, these things connected. Without being literal or nostalgic, it tries to do what those things did, not the same style or form, but what they were doing to bring light into a climate that is very cloudy, rainy, and wet. I had never done arcades before project, and I had never done stone buildings before.

DJ: I have found something and I wanted to check with you if it was a pure coincidence - when I was walking around I saw this Noli map in town of the ground floors, and I found two directions in the plan in the main square and I tried to overlay them on your plan.

PE: Oh yes, the main square is absolutely overlaid onto it. The four things are absolutely a trace of what exists in the old plan.

DJ: Is it the square, or the negative of the cathedral?

PE: I don't think it's a negative of the cathedral; I think it's the square. That's my sense if we looked at it carefully. I believe in the site plan, these elements here, they come right out of the square of the cathedral, those elements are from the cathedral. If you overlaid it, you would find these things.

DJ: Is it possible that the axis of the cathedral and palace intersect? Do the grids intersect?

PE: Yes absolutely. No question. We tried to pick out those different grids, having relationships to the Medieval, the Baroque, the Cartesian.

DJ: What about the grid sizes, did you pick them right away; did they change as the project progressed?

PE: That had to do with the engineering, there are many different scales of grids here, it depended on what we needed for the four or six buildings, and the rest evolved from there. It certainly moves from a larger scale to a smaller scale grid, you can see the large scale in the parking all the way down to the small scale in the pavement. If one is interested in complexity as the necessity of close reading, then this certainly is a complex site plan, and they carried it out absolutely to the way we wanted it done, they followed every line. That's because the president Fraga said we are going to do this project, and we did!

DJ: I think when I first saw you present the project, when Kurt Forster was still the director of the biennale, I remember that it was also meant as a transferium - big busses would stop here and people would walk into the city. During my visit, I did not see this realised.

PE: It isn't. The pedestrian ways will be realised eventually, but none of the connections to the highway currently exist either. This interchange here, the whole connection to the autostrade is very important; you go from there to the pedestrian city.

Yes, of course that is frustrating. But you don't ever get everything you want to do. We got a lot done, the landscape was done by Laurie Olin, and you know landscape is a very fragile occupation and it usually suffers because it's last, and there is no money left. We tried as much as we could, certainly in the paving and some other elements.

DJ: I think in this project, perhaps because of its importance, there have been a lot of reactions. Some people have talked about your obsession with architectural form. There is a quote that says all architects are formalists; they just find different ways to lie about it. Do you agree with that?

PE: Well, look, yes of course. For example, Rem is the greatest formalist of all. Yet he seduces the world by other means. I try not to do that, if you are not interested in form, you are not an architect, you are a sociologist. Some people are interested in form as landscapers - the planting of trees and grasses, herbs and flowers – and that's a real science and an art.

If you are not interested in form, don't be in landscape, don't be in architecture. You can tell - we teach undergraduates at Yale - and there are people that are tone deaf to making form. They may be brilliant, and can solve algorithms and speak Latin, but they can't make a form, and so they are not going to be architects.

Architects are people that learn how to see like an architect, and seeing like an architect is different than someone who works in finance, or as a sculptor, or a composer of music. A composer of music can look at a score and see the music better than he could if listening to the music. Architects can look at a plan and understand a building better than if they go and visit the building, that is harder.

I go to the opera sometimes, I have a bad ear but I enjoy it. There are people there that have a very honed sense of the music, and know when a note has been missed or a mistake has been made – I can't do that. But conversely, some of these people think they know something about architecture because they have grown up and seen churches and music halls and offices and houses, but really they don't know anything about architecture.

Honestly, you have to be involved in form. The great architects have always been involved in form. It's not a social practice, it doesn't make the world better, and that's not what it's supposed to do. It's supposed to make the world better in terms of its cultural aspirations and undertakings.

Why do I read literature? Because I cans see reality better through fiction than I can just by living. You cannot live life in a full way if you don't read, hear, or see, if you don't participate in culture. And that's what architecture does, it participates in culture. And anyone who says differently is wrong.

DJ: Is that part of your motivation to study other architects?

PE: You absolutely have to. The great philosophers wrote about other philosophers, the great literary figures wrote about other literary figures. I think learning about other architects is incredibly important, learning the discipline, the precedents. I don't think you can do something out of nothing; if you don't know anything, how would you know what to do, or what's possible to do?

That's why I teach. My course at Yale, we start with Brunelleschi, Alberti, Bramante, all the way to (Giammbattista)Piranesi (1720–78). To me, architecture began with Alberti. He was the first architect to ever write about space. No one had ever mentioned the word space until 1460, Alberti talked about an idea of homogenous space. Every architect since then has been trying to kill daddy, and every architect has been trying to find a way to do better than him, and if you don't know about Alberti, how can you do better? I think that history is important.

DJ: When form is so important, what is the relationship of program and form?

PE: What good is program if you can't put it into form? I think its [expletive]. Rem talks about program, but in the end, do those programs necessarily give you that form? No, that's his invention. Anyone that tells you they are interested in program you should be wary of.

DJ: I had this idea that in landscape we have a completely different view of the program, it's like a picnic, you can have the picnic anywhere, because in the garden it doesn't matter where the picnic is going to be.

PE: But there are certain rules to a garden that you have to follow. Is it an English garden? A French garden? What is it you're trying to do? Trying to imitate nature, imitate architecture? You have to have an idea first what you are going to do. I don't give a damn where the picnic is. If it's a great garden, people will go there. This is like saying where are the toilets, where is the mechanical room? Nobody cares in the landscape where to have a picnic.

Program, there is no program for most buildings, that defines form in any case. What defines form is precedent. What is the form of a museum? The content, the art to be exhibited, but in the end, is the architecture the background, or is the art? Most painters think that architecture should be the background, and I don't necessarily think that's the case. I think architecture is why we go into buildings, and if it's not interesting, we don't go, no matter what the art is.

Not every museum can have great art. We go to Bilbao despite that it has no collection; we go to the Guggenheim despite its modest collection, to see the architecture.

DJ: In some of your writing you write about the diagram, and I read that as a kind of conventional way of treating program and the process, is this something you have left behind?

PE: A diagram is not a diagram of program. That's where Rem and I disagree. To me, a diagram is this: You start with nine-square or four-square, two basic architectural diagrams: the void in the center or the solid in the center. Look at the two Brunelleschi churches in Florence, Santo Stefano, the void is in the center. Santo Spirito the column is in the center. It's a four-bay church, and you very rarely see that.

Corbusier has this at his Maison Cook; the columns are in the center, as a rebellion against the French architectural establishment. Who occupies the center? The object or the human subject? My diagrams are tectonic, not programmatic.

DJ: In the project are there important views into the city or anywhere else?

PE: Never. I'm not a post card architect. Ideas don't come from views, views happen. I don't take photographs; I look at plans, sections, and elevations. I'm not a tourist when it comes to architecture, I'm a conceptualist. I conceive of a total experience that may have views.

I'm not an itinerant person. The people that take pictures are not interested in the big ideas of the projects, they are interested in remembering the feeling of being there. I am interested in overcoming that feeling. The excess of reason that overcomes feeling, that should be in all of my buildings, and then that gets into something really crazy, and things start to pop.

What is the excess of reason? When you have gone over the hill and you have lost control. Reason out of control. That's what makes Berlin work, it's supposed to be this regulated field, but there are these elements that disrupt it, pillars tipping, ground tipping. It's reason gone mad. To me, I'm interested in reason when it goes mad.

DJ: I think Walter Benjamin said that the true view of the city is surrealism.

PE: Walter Benjamin also said that people view architecture in a state of distraction. I am trying to get over distracted attention. The view is distracted attention. You have to get over something and being able to say this is pretty, and I want you to ask, what the hell is this? And the answers are there; you could take this thing apart and understand it as something if you pay close attention to it. We are a society of no close attention, people cannot concentrate for very long, they lose their focus, and I'm interested in correcting that. I agree with Benjamin, people wander around the city distracted, they have no sense of the physical environment; to me architecture becomes even more important today than it has ever been.

People have no appreciation for the here and now, the being of the present. And this project is about countering that.

DJ: Are you up to anything new?

PE: I'm not doing anything new. When you reach a certain age, you cannot be an enfant terrible, you cannot be an avant gardist, you just have to be your age. They can't take my history away from me, and what I have done, and what I am doing.

DJ: Anything we have missed regarding the project?

PE: You're the one asking the questions. Are they the questions I would ask? I don't know. I tried to explain to you why I am not interested in landscape. As an extreme view, you might have someone that starts from the other side, the other extreme.

I am not interested in landscape or urbanism. [Charles] Waldheim to me is a real problem, ultimately I'm not interested in phenomenology, and materiality is part of what is dominating landscape today, not the conceptual idea of landscape. I would imagine you are more of a phenomenologist than I would hope.

I believe I stand as something of an extreme.

I am really interested in psychotherapy. In Jungian psychotherapy there are 4 strong psychological types: thinking, feeling - they are opposed –sensation, and intuition. (Drawing a cross with both hands). To be interested in landscape, you have to be interested in sensation – how things are, or intuition - that is how the garden might grow, or feeling - how people will love it.

I always give this analogy – a thinking type goes into the forest and asks "How many trees are there?" A feeling type goes into the forest and says "How wonderful the trees are!" The sensation type goes in and asks "What kind of trees are these?" And the intuitive type goes in and says "Look at the light between the trees."

I'm interested in the light between the trees. Not what kind of tree, how many trees, not the lovely bark on the tree. I'm interested in the light.

DJ: Thank you very much for this Interview. I am sure it will help me in finalising my PhD, even if it might give the Landscape topic a unexpected twist. Would you like to authorise our transcript? I can send it to you.

PE: Get the HELL OUT of here![135]

135 This statement was made by PE with the presence of Andrew McGee as a witness to the author. Consequently no additional written authorisation of the transcript from video recording was asked for the publication of this interview.

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A.2 Building Long List 1990 - 2014

TOC

A.2. Building Long List 1990 - 2014	city	country	architect	design	built	visited	last	
A.2.1. Landscape as Architecture 1990-1994								
Agadir Convention Centre	Agadir	Morocco	OMA Rem Koolhaas	1990	1990			
Punta Nave Building	near Genova	Italy	Renzo Piano	1989	1991			
Hompukiji Water Temple	Awaji Island	Japan	Tadao Ando	1989	1991			
Archery Range	Barcelona	Catalonia, Spain	Enric Miralles and Carme Pinos	1989	1992	1996	1996	
Kunsthal + Museum Park	Rotterdam	Netherlands	OMA + Yves Brunier/ Petra Blaise	1987	1992	1993	2014	
American Heritage Center and Art Museum	Laramie, Wyoming	USA	Antoine Predock	1986	1993			
Urban Design Forum Masterplan	Yokohama	Japan	OMA Rem Koolhaas	1992	1992			
Two Libraries Jussieu	Paris	France	OMA Rem Koolhaas	1992	1993	1991	2012	
Sports Hall	Halstenbeek	Germany	André Poitiers		1993			
Villa Wilbrink	Amersfoort	Netherlands	Un Studio - Ben Van Berkel Caroline Bos	1992	1994			
International Prefectural Hall	Fukuoka	Japan	Emilio Ambasz		1994	2010	2010	
Cardiff Opera House	Cardiff	Wales UK	Zaha Hadid	1994	1994			
Entrance Pavilion	Niaux	France	Massimiliano Fuksas		1994			
A.2.2. Landscape as Architecture 1995-1996								
Villa One	Côtes d'Armor	France	Dominique Perrault	1992	1995			
Chichu Art Museum (and other buildings)	Naoshima Island	Japan	Tadao Ando	1986	1995	Nov. 2010	Nov. 2010	
Water Glass House	Atami	Japan	Kengo Kuma		1995	Nov. 2010	Nov. 2010	
Igualalda Cemetery	Barcelona	Catalonia, Spain	Enric Miralles and Carme Pinos	1985	1996	1996	2015	
Therme Vals	Vals	Switzerland	Pater Zumthor	1990	1996	1996	2019	
Terrasson Greenhouse	Terrasson-la-Villedieu	France	Ian Ritchie	1992	1996			
Neuroscience Institute	La Jolla, California	USA	Tod Williams and Billie Tsien	1992	1996			
Electrical Substation	Albanatscha	Switzerland	Hans-Joerg Ruch	1993	1996	2014	2014	
Hiyoshi Dam and Community Centre	Hiyoshi, Kyoto	Japan	Norihiko Dan	1995	1996			
Fruit Museum	Yamanashi,	Japan	Itsuko Hasegawa		1996	Nov. 2010	Nov. 2010	

	short comments	Betsky 2002	Ruby&Ruby 2006	Allen McQuade 2011	Balmori Sanders 2011	Analysis publication by author
	unrealized but influential competition project		p. 32	p. 365		
	not visited, smaller office buidling, no public building. exhibition visit London 2018	Engineerd Utopias p. 54-55				
	not visited	Caves and Caverns p. 68-69	p.158			
	other project by this architect (Schottish Parliament) more relevant	Unfolding the Land p. 126-127				
	Shortlisted until 2014, Featured in Jauslin 2009		p. 25			Jauslin e.a. 2009, 2012
	not visited	Unfolding the Land p. 128-129				
	unrealized but influential competition project		p.27			
	Chapter 3		p.27	p. 466		Jauslin 2019
	not visited	Caves and Caverns p. 88-89	Embedded in the ground p. 54-55			
	not visited, private house - no public building					
	Roof Typology Very interesting Interior Architecture too conventional	Engineerd Utopias p. 48-50	p. 70			
	unrealized but influential competition project					
	not visited, smaller simple building with no eclosed spaces	Caves and Caverns p. 90-91				
	not visited, private house - no public building		p. 50 - 51			
	Carving in existing landscape	Caves and Caverns p. 74-75				
	Main Subject Materials, Spatial Landscape Experience					
	landscape architecture programme and typology, other project more relevant	Caves and Caverns p. 76-77	Embedded in the ground p. 56 -59	p. 247	Topography p. 50	
	Materials and Views very Landscape oriented but Volumetricallyless of a lanscape composition	Caves and Caverns p. 78-81				
	not visited, relatively simple spatial composition	Engineerd Utopias p. 36-38				
	not visited	Unfolding the Land p. 118-119				
	infrastructural buidling	Unfolding the Land p. 132-133				
	mainly infrastructural buidling, not visited	Unfolding the Land p. 130- 131				
	Seems interesting, longtime shortlisted					

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A.2. Building Long List 1990 - 2014	city	country	architect	design	built	visited	last	
A.2.3. Landscape as Architecture 1997-1998								
Villa VPRO	Hilversum	Netherlands	MVRDV	1993	1997	Dec. 2010	Dec. 2010	
Crystal Palace Concert Platform	London	England UK	Ian Ritchie Architects	1996	1997			
Multimedia Workshop	Gifu	Japan	Kazuyo Sejima + Ryue Nishizawa	1996	1997			
Kaze-No-Oka Crematorium	Nakatsu	Japan	Fumihiko Maki		1997			
Hydra Saltwater	Neltje Jans	Netherlands	NOX Lars Spuyrbroek		1997	6-9-1997	2010	
Baumaxx Hypermarket	Maribor	Slovenia	Njiric & Njiric		1997			
Moebius House	Naarden	Netherlands	UN Studio, West 8	1993	1998		2010*	
Central Library TU	Delft	Netherlands	Mecanoo	1993	1998	1998	2014	
Educatorium	Utrecht	Netherlands	OMA Rem Koolhaas	1994	1998	1998	2011	
Minnaert Building	Utrecht	Netherlands	Neutelings Riedijk	1994	1998	1998	2011	
Rural Holiday Houses	Jupilles	France	Francois et Assocés	1996	1998			
House in Lège	Lège, Cap-Ferretz	France	Lacaton & Vassal		1998			
Dominus Winery	Yountville, California	USA	Herzog & de Meuron	1996	1998			
Institute for Forestry and Nature Research	Wageningen	Netherlands	Behnisch, Behnisch & Partner		1998	2012	2012	
House in Wales	St. Brides Bay	Wales UK	Future Systems	1994	1998			
A.2.4. Landscape as Architecture 1998-2000								
Diamon Ranch High School	Pampona, California	USA	Morphosis	1994	1999			
Spencer Theater	Ruisdo, New Mexico	USA	Antoine Predock	1994	1999			
Hydroelectric Plant	Bieudron, Valais	Switzerland	Claudine Lorenz. Florian Musso	1995	1999			
Landesgartenschau Pavilion	Weil am Rhein	Germany	Zaha Hadid	1996	1999	2004	2012	
Maryhill Nature Overlook	Goldendale, Washington	USA	Allied Works Architecture	1997	1999			
Olympic Velodrome	Berlin	Germany	Dominique Perrault	1998	1999	1998	2000	
Kursaal Concert Hall	San Sebastian	Basque Country, Spain	Rafael Moneo	1989	1999	1999	1999	
Miyagi Stadium	Sendai	Japan	Hitoshi Abe and Syouchi Haryu	1993	2000			
Great Glass House	Carmarthenshire	Wales UK	Forster and Patners	1995	2000			
Museum of Human Evolution	Burgos	Spain	Jean Nouvel	2000	2000			
Dunescape	Queens, New York	USA	SHoP	2000	2000			
World Expo Dutch Pavilion	Hannover	Germany	MVRDV		2000	2000	2000	

	short comments	Betsky 2002	Ruby&Ruby 2006	Allen McQuade 2011	Balmori Sanders 2011	Analysis publication by author
	Shortlisted until 2014, Featured in Dutch Arch. with Landscape Meth.		p. 25			Jauslin e.a. 2009
	not visited, probably too small	New Nature p. 154-155				
	Other SANAA (Learning Centre Ch.4) more explicitly called “Landscape”	Caves and Caverns p. 84-85				
	not visited, folllowd prsentation by Maki in Kitakiushu 2010	Caves and Caverns p. 66-67	Embeded in the ground p.52-53			
	too small, bad maintenace by client, too many Dutch	Engineerd Utopias p. 42-45	p. 48			
	not visited	New Nature p. 164-165				
	Shortlisted until 2014, Featured in Dutch Arch. with Landscape Meth.					
	Shortlisted until 2014, Featured in Dutch Arch. with Landscape Meth.	Unfolding the Land p. 108-109				Jauslin e.a. 2009
	closed to Jussieu, Follow up project by Cristophe Cornubert see Chapter 3					
	relatively conventional building	Caves and Caverns p. 70-72	Raised Ground p-72-73			
	Houses disguised as living hedges in forest, not visited, no public building	New Nature p. 174-175				
	House merging into pine grove		Lifted off the ground p.34-37			
	mainly material and gacade concerned, not spatially a landscape	New Nature p. 158-159				
	relatively concentional buidling typology	Unfolding the Land p. 120 -121				
	not visited, private house - no public building	Engineerd Utopias p. 26-27	Embedded in the Ground p. 52 - 53		Topography p. 50	
	not visited, very interesting concept	Unfolding the Land p. 112-113	Embedded in the Ground p.56-59			
	not visited, Original ‘Landscraper’	Unfolding the Land p. 116-117				
	not visited, infrastructual building	Caves and Caverns p. 94-95				
	small project	Unfolding the Land p. 122 -123				
	not visited, probably too small	New Nature p. 162-163				
	relatively simple spatial composition		Raised Ground p. 72-73			
	compelling Image, spatially rather simple			p. 81		
	not visited	Engineerd Utopias p. 50-51				
	not visited, conventional typology solution	Engineerd Utopias p. 32-33	Inscribed ground p-182-183			
	unrealized but influential competition project		Inflated ground p. 106-109			
	not visited, temporary, probably too small	New Nature p. 156-157				
	Other choice by designer seems more relevant, Redeveloppement 2017	New Nature p. 150-151	Stcked Ground p. 86	p. 268, p. 459		

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A.2. Building Long List 1990 - 2014	city	country	architect	design	built	visited	last	
A.2.5. Landscape as Architecture 2001-2002								
Bibliotheca Alexanrina	Alexandria	Egypt	Snøhetta	1990	2001			
Private indoor Swimming Pool	Vienna	Austria	The Next Enterprise + Florian Haydn	1997	2001			
Hoehnheim-Nord Tram Terminal	Starssbourg	France	Zaha Hadid	1999	2001	2009	2009	
Hedge House	Wijlre	Netherlands	Wiel Arets		2001	2009	2009	
Pavilion Operation Manna	Rotterdam	Netherlands	Observatorium 2001		2001	2008	2011	
Osanbashi, International Ferry Terminal	Yokohama	Japan	FOA Mussavi Zaera Polo	1995	2002	Nov. 2010	Nov. 2010	
Blur Building Expo.02	Yverdon	Switzerland	Diller & Scofidio (Extasia)	1998	2002	1998	2002	
Two houses in Ponte de Lima	Ponte de Lima	Portugal	Eduardo Souto de Moura	2001	2002			
Kalkriese Museum Park	Kalkriese	Germany	Gigon/Guyer		2002		2010*	
Posbank Pavillion	Rheden	Netherlands	De Architectenggroep seARCH		2002	2009	2009	
Verkeerpost	Nijmegen	Netherlands	De ZwarteHond		2002		2010*	
A.2.6. Landscape as Architecture 2003-2004								
Braga Municipal Stadium	Braga	Portugal	Eduardo Souto de Moura	2000	2003	2014	2014	
Natural History Museum	Matsunyoyama	Japan	Tezuka Architects	2001	2003			
Asphalt Spot	Tokamashi	Japan	R&Sie(n) - François Roche		2003			
Shrine of Remembrance	Melbourne	Australia	Ashton Raggatt McDougall		2003			
Schaulager	Basle	Switzerland	Herzog & de Meuron		2003	2003	2012	
Basket Bar	Utrecht	Netherlands	NL Architects	2000	2003	2008	2010	
ITT Illinois Instutue of Technology	Chicago	USA	OMA Rem Koolhaas	1999	2003			
Dutch Embassy	Berlin	Germany	OMA Rem Koolhaas	1999	2003	2013	2013	
Seattle Public Library	Seattle	USA	OMA Rem Koolhaas		2003			
Vap Gemini Campus	Utrecht	Netherlands	De Architecten Cie Frits van Dongen		2003	2009	2009	
Scottish Parliament	Edinburgh	Scotland UK	Enric Miralles e.a.	1999	2004	Aug. 2011	Aug. 2011	
CODA Museum	Apeldoorn	Netherlands	Herman Herzberger	2000	2004	2010	2016	
Maritime Youth House	Copenhagen	Denmark	PLOT Bjarke Ingels & Julien de Smedt		2004	2015	2015	

	short comments	Betsky 2002	Ruby&Ruby 2006	Allen McQuade 2011	Balmori Sanders 2011	Analysis publication by author
	not visited	New Nature p. 168-170				
	to smaal, private project		Carved ground p. 152 -155			
	smaller sturture, no enclosed spaces	Unfolding the Land p. 106-107	Inscribed ground p. 183			
	Shortlisted until 2014, Featured in Dutch Arch. with Landscape Meth.					Jauslin e.a. 2009
	not relevant enough, too many Dutch					
	Shortlisted until 2014, Featured in Flowscapes		p.28	p. 26, 368	Topography p. 51	
	demolished, author was involved designer in masterplan		p.158	p. 288		Jauslin e.a. 2009
	not visited, relatively small		Lifted off the ground p. 40-43			
	Landscape Design (Park) dominant					
	Shortlisted until 2014, Featured in Dutch Arch. with Landscape Meth.			p. 48		Jauslin e.a. 2009
	not relevant enough, too many Dutch					Jauslin, Skjonsberg ea. 2012
	impressive but relatively simple interaction with the landscape		Exposed ground p. 160 -163	p. 82		
	not visited		Exposed ground p. 174-176			
	not visited			Inflated ground p. 118-121		
	not visited			Carved Ground p. 148 - 151		
	large and impressive but very object type building			Exposed ground p.168		
	interesting building, but rather small and subordinate to masterplan			Embedded in the ground p. 66-69		Jauslin e.a. 2009
	not visited, study building, interior with connections to Jussieu chapter 3					
	urban setting, routing dominant, some connections to Jussieu chapter 3					
	not visited, Strong connection to (older concept of) Jussieu, used as reference chapter 3					Jausiln e.a. 2009
	Shortlisted until 2014, Feature forthcoming					
	Shortlisted until 2014, Featured in Dutch Arch. with Landscape Meth.					Jausiln e.a. 2009
	Probably too small			p. 51		

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A.2. Building Long List 1990 - 2014	city	country	architect	design	built	visited	last	
A.2.7. Landscape as Architecture 2005-2007								
Casa da Musica	Porto	Portugal	OMA Rem Koolhaas		2005	2014	2015	
Museum Belvedere	Herenveen	Netherlands	Michael van Gessel		2005	2010*	2010*	
Museum of the Earth		USA	Weiss/Manfedi Architects	1999	2006			
Mercedes Benz Museum	Stuttgart	Germany	UN Studio		2006		2014	
Sportplaza Mercator	Amsterdam	Netherlands	Venhoeven CS		2006	2010*	2010*	
Petter Dass Museum	Alstahaug	Norway	Snøhetta	2001	2007			
Seatle Art Museaum Olympic Sculpture Park	Seattle	USA	Weiss/Manfredi	2002	2007			
Vulcano Buono	Nola near Napoli	Italy	Renzo Piano		2007	2014	2014	
Biblitheca España	Medellin	Columbia	Giancarlo Mazzanti & Architects		2007			
Oslo Opera House	Oslo	Norway	Snøhetta	1999	2007			
Turistroute in Eggum	Eggum, Lofoten	Norway	Snøhetta	2004	2007			
A.2.8. Landscape as Architecture 2008-2009								
The Mountain Dwellings I & II VM houses	Copenhagen	Denmark	PLOT BIG Bjatkr Ingels , J. de Smedt	1999	2008	2016	2016	
Sportpavillon Zestienhoven	Rotterdam	Netherlands	MonderschijnMoonen	2007	2008	2010	2014	
Viamala Restaurant Motorway A13	Thusis	Switzerland	Iseppi Kurath		2008	2010	2014	
I'm Lost in Paris	Paris	France	R&Sie(n) - François Roche		2008			
Hospital Dell'Angelo	Zelarino (Veneto)	Italy	Emilio Ambasz		2008	2012	2012	
Meso No Mori Crematorium	Kakmigahara	Japan	Toyo Ito		2008			
Grin Grin	Fukuoka	Japan	Toyo Ito		2008	2010	2010	
KAIT Kanagawa Institute of Technology	Kanagawa	Japan	Junya.Ishigami+Associates		2008			
EWHA Women's University	Seoul	Korea	Dominique Perrault		2008			
VillaOne	Arnhem	Netherlands	Powerhouse Company		2008			
California Academy of Scieces	San Franciso, California	USA	Renzo Piano		2008	2016	2016	
Vanke Center "Horizontal Skysrcaper"	Shenzhen	China	Steven Holl	2006	2009	2011	2011	
De Oostvarders	Almere	Netherlands	Almere Drost + van Veen		2009	2010	2010	

	short comments	Betsky 2002	Ruby&Ruby 2006	Allen McQuade 2011	Balmori Sanders 2011	Analysis publication by author
	develops public space concepts of Jussieu in different (adopted) object and view concept					
	Landscape Design (Park) dominant					
	not visited	Unfolding the Land p. 114-115				
	spatially very interesting project, rather object centered still					
	Shortlisted until 2014, Featured in Dutch Arch. with Landscape Meth.				Ecology p. 117 - 125	Jausiln e.a. 2009
	not visited, clear reference to Heizer's double negative, volumetric disctinct abstrcation of cut				Topography p. 98-105	
	Indoor Programme subordinate to Outdoor			p. 28-30, 51, 368	Topography p. 76-81	
	grand landscape concept rather conventionally built					
	not visited			Form - Artificial Mountains p.102-113		
	not visited			p. 257		
	balance between nature and artifice' Balmori Sanders p. 142				Ecology p. 142 - 147	
	According to B.I. accidential Reference to Landscape (Allen 2011)			Form - Artificial Mountains p.124-131		
	Shortlisted until 2014, Featured in Dutch Arch. with Landscape Meth.					Jauslin, Skjonsberg ea. 2012
	Mountain horizon as roofscape					
	Can not be visited, According to François Roche asked at TUD 20.10.11				Ecology p. 112-117	
	Interseting spatialy and in relation garden, but too conventionally built					
	not visited			p. 454-455		
	Seems interesting, nut maybe not his best				Topography p. 58-63	
				Atmosphere - Vast Interiors p. 306-313		
	Monumental land cut, rather conventional floorplans			Scale - Megaform p.230-237		
	Not for visit, Shortlisted until 2014, Featured in Dutch Arch. with Landscape Meth.					Jausiln e.a. 2009, 2010
				p. 31, 461		
	very interesting layout, rather conventional upper floors, LEEDS platinum			Scale - Megaform p. 214-221		
	not relevant enough, too many Dutch					

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A.2. Building Long List 1990 - 2014	city	country	architect	design	built	visited	last	
A.2.9. Landscape as Architecture 2010-2011								
Rolex Lerning Centre EPF	Lausanne	Switzerland	SANAA Sejima + Nishizawa	2002	2010	2009	2019	
Alp House	Tokyo	Japan	Akihisa Hirata		2010	Nov. 2010	Nov. 2010	
Teshima Art Museum	Teshima Island	Japan	Ryue Nishizawa		2010			
Metropol Parasol	Sevilla	Andalusia - Spain	Jürgen Meyer H	2004	2011			
Museum of Transport	Glasgow	Scotland UK	Zaha Hadid	2004	2011		Aug. 2011	
Cité du Surf et de l'Océan	Biarritz	France	Steven Holl	2005	2011			
Giant Interactive Group Campus "Dragon"	Shanghai	China	Morphosis Thom Mayne	2007	2011			
Reindeer Centre Pavillion	Hjerkinn, Dovre	Norway	Snøhetta		2011			
Ruta del Perlgrimage		Peru	AiWeiWei, Various Architects		2011			
A.2.10. Landscape as Architecture 2012-2014								
Erweiterungsbau Städel Museum	Frankfurt	Germany	Schneider Schumacher	2007	2012	2012	2012	
Filmmuseum	Amsterdam	Netherlands	Delugan Meissl		2012	Jun. 2011	Jun. 2012	
Ciudad de Cultura de Galicia	Santiago de Compostela	Galicia - Spain	Peter Eisenman	1999	2013	Jan. 2014	Sept. 2014	
Heydar Aliyev Centre	Baku	Azerbaijan	Zaha Hadid	2007	2014			
Genossenschaft Kalkbreite	Zürich	Switzerland	Müller Sigrist	2011	2014	2011	2014	
Power Centre	Gwanguo	South Korea	MVRDV	2008	?		unbuilt	
Ice Hockey Rink	Umeå	Sweden	BIG Bjarke Ingels Group	2009	?		unbuilt	
Expo City	Cairo	Egypt	Zaha Hadid	2009	?		unbuilt	
City Gardens	Aberdeen	Scotland UK	Diller Scofidio + Renfro	2012	?		unbuilt	

All Buildings that where considered in a longlist and (if noted so) visited with the scope of this reserach, but not buildings that where allready excluded form longlist before visit or literature study.

** visited by assitants under teaching or guidance*

	short comments	Betsky 2002	Ruby&Ruby 2006	Allen McQuade 2011	Balmori Sanders 2011	Analysis publication by author
	Chapter 4			Process - Fabricating Terrain p. 408 - 455, p. 371		
	Interior was not available for visit					
	not visited			Atmosphere - Vast Interiors p. 320-327		
	not visited,					
	Seems too simple relatively to other Hadid Designs					
	not visited					
	not visited					
	not visited					
	Very interesting projectm though rather traditional typology of landscape pavillions					
	Exceptional Solution, Limited to 5th Facade					
	for architect unsatisfactory execution					
	Chapter 5, partially unbuilt	New Nature p. 160-161	Inscribed Ground p. 196-199	p. 77	Topography p.68-75	
	an architectural lanscape' (NZZ 2014) under construction during most of the thesis, not visited '					
	mountain of courtyard and terraces,village community, also an infrastructiural buildin, urban block					
	still un-buildt					
	Status still uncertain					
	Egypt's Situation Uncertain, Baku woudl seam safer choice				Topography p. 52-57	
	Shortlisted until 2014, Featured in Dutch Arch. with Landscape Meth.					

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Original Sources for Jussieu, Paris

Contrary to the two other cases my primary source is not a building but a project. That means that the refining process of realisation is missing and I have to include some additional explanations to the sources other than the strictly bibliographical references. Since Jussieu is unbuilt, analysis is based on a project stage with selective reconstruction will be a one, based mainly on the project as published in 1995 (OMA 1995). The stage of project I use could best be dated 1.4.1993 with opening of the last known project presentation in Paris that would relate to actually building the project (Exposition privée 1. & 2.4.1993 OMAR 2949). One exception is made for the connected areas of conference center and sports park to the ground levels and surroundings. That has been taken out of OMA's project to be designed by Jean Nouvel (chapter 4.4). This part with the actual connection to the ground level is such an important element of the project and its removal

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was clearly not a decision related to the design. Her I base my analysis on competition project 10.11.1992 and reconstructions from some archived sketches. The project ground form is almost inexplicable without this essential part, that is published here for the first time except for one french book about he competition (Campus uni... 1993). Around 1.4.1993 is also when the (mostly undated) archives seam to erode. I assume it as the end of design works and also the silent death of the libraries project for Jussieu (described in 4.4). showing the exceptional sources that replace Jussieu as an unrealised project.

OMAR

The main source of drawings is the OMA Archives at Netherlands Architecture Institute (Now New Institute). They stem for the deed OMA made to the NAi in 1996 after the publication of S,M,L,XL (OMA 1995). The related inventory that I use for referencing was completed by 2004 (OMAR 1996).

These archives consist of portfolio maps that where literally wiped of the desks of architects working at OMA (or elsewhere). Most of the drawings are not dated and only handwriting analysis could reveal the author, which is difficult when up to 40 people (Cornubert in interview Appendix A1.1.1.) where involved at OMA in the project.

Most of these sketches where attributed to phases or decisions in the design according to my interpretation context or in analysis of eventual phases in the dated project drawings. Some speculative assumptions where checked in the interview with Cornubert (A1.1.1. and 2.).

Besides many sketches and design studies, the NAi Archives also contain some of the correspondence among OMA, especially fax communications from many traveling destinations of Rem Koolhaas with the design team back in Rotterdam. This form of communication is concise and clear and a gives a good idea of what was important to the design at respective stage.

Meeting minutes and archived correspondence with the client and other parties was interpreted to describe the difficulties and changes of the design after the competition, again checked with the interview (A1.1.1. and 2.).

Paris exhibition 2011

A small exhibition in Paris was conceived by OMA as a test for a larger Exhibition in London at Barbican Centre. It should show the way OMA works and illustrate that from massive amounts of drawings. The Exhibition showed three library projects OMA had designed in France TGB Competition 1989, the Jussieu Project 1992-1993 and a project for Brest from 2011 which is now being built. That exhibition “(Im)Pure, (In)Formal, (Un)Built” opened up a new access to to more documents when a selection of the NAi OMA archives. Large amounts of sketches where exhibited under a large acrylic floor in Paris. While the author’s first visits to OMAR at NAi in 2008 and 2009 lifted about 300 pages of material the preparation of that exhibition was a digital archive of 850 pages with referrals to the OMAR archive (OMA Cournet 2011) a unpublished copy of this catalogue was used for this study, provided by OMA/Cournet.

Physical Models

Today 3 Models are reported that have been built for representations of the project during and after the competition I mainly studied the largest one. - Plastics model at Centre Pompidou Paris. With measure figures (as depicted in OMA 1995 p.1314 or Attali 2001 p. 143) probably the competition model.

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- Plywood model 1:50 Scale NAi Depot in the Van Nelle Factory Rotterdam. The latest is (as depicted in OMA 1995 p.1342) the most published model. The 1:50 model was longtime in bad shape but had been repaired for an exhibition lend in Paris. For our study it was first at NAi Model Archives at Van Nelle Factory 23.12.2011.

- MDF 2009 model for Rotterdam Biennale 2009. It was rebuilt, it would illustrate the Open City concept then subject of the main Exhibition of the IABR 2009 chief curated by Kees Christianse (while the 1:50 model was either lost or in too bad shape)

At the NAi Model archives 4 Boxes of Study models, mostly at 1:500 scale where also sighted for this study. There is no reconstruction of a genealogy or chronology possible. It is in the nature of OMA's competitive way of collecting ideas that authorship and chronology get lost even during production and are not reproducible later.

Digital Model

A model that had been built by OMA at later stage in the software Rhinoceros 3D was it seams mostly based on drawings form Stage April 1993. We received it by courtesy of OMA and on a CAD File dated 20.2.2008 in the by now common software formate .3DM of Rhino. This model was generated long after the design for internal study at OMA/AMO. We used it and added some facade detailing and exteriors missing in it.

Site visits

As the Jussieu project is strongly related to both its city of Paris and its immediate context of the Jussieu campus complex it is still useful to introduce the context of the project. I lived in Paris as a beginning architect from 1996 to 1997 and am familiar with the location. I made specific site visits in September 2011 and Juli 2012, to make photographs and verify site and views for the pro-construction (chapter 4.5.7.) In a period of 20 years many changes and a major renovation project had altered the site (end of chapter 4.2.). Large parts of Jussieu University where closed for asbest removal for more than a decade. Only in June 2018 I could visit the unfinished wings of the Grille Albert adjacent to the libraries site.

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Original Sources for Learning Centre, Lausanne

Site Visits

This documentation and analysis is based on my two visits to the Lausanne site at the final building phase in November and December 2009. On the December visit during an official university event, Innovation Day, photography was strictly forbidden. Still, my own personal impression of the spaces under construction should be mentions as a source of research.

The longest visit was a two day trip with press conference coverage and a guided tour by the architects on February 15. and 16. 2010 (the week before the opening to the public). At that occasion I also interviewed the architects in a really phase of my research. I was accredited as press and published an article (Mark Magazine 26). Witnessed two speeches by the client and the architect, and a participated in a guided tour by the architects. Later interviews where denied by the architects.

Other visits followed in May 2010, in early 2013 and finally August 2015 and April 2018, that where used for validation of my findings.

Photography

Several site visits to Lausanne where accompanied by the Photographer Ariel Huber, like those to city of Culture in Galicia. We intensely discussed the contents of this thesis and of course the buildings visited. His photographical documentation can thus be seen as complementary to the text and drawings of this thesis. Several of our documentations I used 2nd cameras and the photography can be seen as co-autorship.

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Plans

The plan documentation stems form the press publication drawings by the architects issued to the registered press during the opening in 2010.

Digital Model

The 3D digital model was built up in FormZ CAD software based on the publication drawings by the author.

3D Film Installation

The 3D Film "If buildings could talk" by Wim Wenders form 2010 was visited at the Venice Architecture Biennal 2010 by the author.

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Original Sources for City of Culture of Galicia

Site Visits

My two several day visits to City of Culture in the first days of January 2014 and in September 2014. They are the main source of this study, including the plan material collected at the first visit.

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On my January vist I also followed a guided tour by the local visitors office. The date of the interview with Peter Eisenman, 25.3.2014, falls in between my two site visits.

Photography

I took few pictures in January 2014 when I first visited the project.

The documentary photography in this thesis is mostly form architectural photographer Ariel Huber, taken on our joint trip in September 2014. During the 3 day shooting we discussed all viewpoints to be documented. I worked a sa camera assistant used 2nd cameras and documented the views form adjacent hills.

Plans

The plan material in the project documentation is based on that best documented stage of development 2009 when all 4 completed buildings where under construction. This 85 pages spanish magazine publication (Future arquitetecturas double no. 19 & 20, 2009) provides construction documents and many construction building photographs. Some later changes are less significant i.e. with later change of usage. My plans in chapter 6 where composed (using Photoshop CS6) form this documentation that it split into 6 buildings. They separate drawings where joined into a synoptical plan view of the whole City of Culture for this thesis.

Digital Model

The digital model was built in CAD by myself, heights had to be derived point by point from the scanned sections and elevations. The terrain measures where derived form site plans. Building up the volumentricc topography by measuring in plans asked me to completely understand the form with my own drawing reconstruction, as it was a geomorphological study of a natural topography.

Exhibitions

The City of Culture project was known to me since I saw one of the wooden models at the 9th Venice architectural Biennale in 2004.

A photography exhibition was held at Aedes Berlin in 2010, which I consulted via the lecture recording.

On site of the City of Culture in Santiago there is an exhibition dedicated to the project and competition itself. It contains several models Including the wooden competition models (also exhibited at 9th Venice architectural Biennale in 2004).

Lectures

Many academic lectures of Peter Eisenman in past two decades would refer to this important work of his. Of three of the lectures in Europe about the City of Culture I attended one in Switzerland (ETH Zurich 2005) and I studied the recordings of two other lectures that where concentrating on City of Culture (Berlage Rotterdam and Aedes Berlin 2010).

Peter Eisenman's gave his Zurich lecture at the occasion of the presentation of the German translation of his own phd in 2005 (Eisenman 1963 / 2005). His studies of 'Formal Basis of Modern Architecture' in his own PhD in 1963 also influenced my own methodology. The bibliography is

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overarching 40 years Eisenmans own publications only in as far as they where quoted or consulted for this thesis relevant to its subject.

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At Delft I have also been working as a publishing researcher. Several editors published or co-authored previous or accompanying bits and pieces of this research. I thank Dr. David Keuning, Dr. Sang Lee, Verena Doerfler, Hubertus Adam, Tibor Joanelly, Dr. Bianca Rinaldi, Dr. Matthew Skjonsberg and Dr. Steffen Nijhuis for editing or reviewing papers and eventually publishing them in different magazines, journals and books. Steffen Nijhuis also provided good support and contributed significantly to the methodology of this thesis in his initial role as daily supervisor. Dr. Klaske Havik and Dr. Maaike Beliën supported me in developing my writing skills.

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My five interview partners – the architects Christophe Cornubert of OMA, Yumiko Yamada, Kazoyu Sejima and Ryue Nishizawa of SANAA and Prof. Dr. Peter Eisenman – were incredibly patient and insightful. Experiencing our dialogues and their critical thinking where among the most enjoyable moments of my research. Others helped in the background of their offices. Like Paul Cournet with his archival works and valuable sharing of OMA/AMO sources retrieved for the 2011 Paris exhibition. As an architect myself it was a particular pleasure to re-design and re-experience their buildings through visits, archive work, drawings and interviews. Thanks to Tamsin Selby, and Michael Mitchell and other involved EPFL staff for receiving me as a 'member of the press', also for the newspaper clippings. Prof. Dr. Kurt Forster organised an interview with his fellow scholar Prof. Dr. Peter Eisenman at Yale. Antonio Maroño, architect of the Foundation of City of Culture shared data and provided for access during fieldwork and photography in Galicia. This thesis owes a great deal to other people's intoxicating enthusiasm, and, of course, their work to promote the potential of (landscape in) architecture.

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Working and living with a PhD candidate is oftentimes an underestimated challenge – I may myself have underestimated how much this thesis would demand from my closest partners in work and life, but I am grateful:

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Now that this is done please claim more of my time.

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Curriculum Vitae

Daniel Theobald Jauslin

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Education

1991–1997 Diplom Studium Architekt Eidgenössische Technische Hochschule Zurich (Master of Science)

1990–1997 internships at 4Lignes, Remy Butler, Max Dudler, Stefan Jauslin and Miller&Maranta Architects

2011 Staatsexamen Tuin- en Landschapsarchitect (Exam Garden and Landscape Architect) The Hague

Work

1997–1999 Architect and Project Leader at West 8 Landscape Architects and Urban Planners

since 1999 Founder of Drexler Guinand Jauslin Architects Frankfurt, Rotterdam, Zürich

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Academia

2008–2013 Researcher Landscape Architecture at TU Delft with Prof. Dr. C.M. Steenbergen

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2010 Visiting Lecturer ADSL Artesis Antwerp College of Design Sciences

2010–2012 Lecturer Design Analysis Academy of Architecture Hogeschool Rotterdam

2012 Assistant to Prof. Adriaan Geuze Masterclass Wagningen UR

2012 & 2013 Expert at Design Studio, The Berlage Centre, Delft

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Landscape Strategies in Architecture

Daniel Jauslin

This thesis explores the ways in which landscape is relevant as a concept for designing architecture. Buildings that have been designed like landscapes have become a topic in contemporary architecture. The apparent distinction between architecture and landscape is questioned in exemplary theories and new designs.

The core of this thesis is three case studies of architectural designs that use landscape strategies. The analytical model for landscape architectural composition that Steenbergen and Reh (2003) developed for the European gardens is applied as in drawing analysis of these building's inner space composition. By distinguishing the landscape composition into a four layer model - ground form, spatial form, metaphorical form and programmatic form - the analysis will alter the reading of three architectural projects.

Rem Koolhaas and OMA's unbuilt Jussieu design for two university libraries in Paris of 1992 is visualised for the first time as it could have looked if built. The Rolex Learning Centre at EPF Lausanne was declared 'landscape' as architecture by its designers Japanese Architects Kazuyo Sejima and Ryue Nishizawa (SANAA) at the opening in 2010. The City of Culture of Galicia in Santiago de Compostela by American architect Peter Eisenman was designed in 1999 in a process of layering - similar to the layer model analysis of this thesis.

This thesis will interpret and compare the three architectural designs. It distinguishes design strategies, methods and landscape attitudes that are specific or commonly applied to the projects. Original drawing analysis and critique reveals unexplored potentials for landscape strategies in the architectural discipline.

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