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Exploring Materiality and Novel Formats for Scholarly Expression**

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# Diversifying Knowledge Production in HCI: Exploring Materiality and Novel Formats for Scholarly Expression

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**Figure 1: Knowledge cannot be entirely captured by text, examples of data-physicalization and shape-changing interfaces [13]; brainstorming with Lego, tangible white-box prototypes [10], and using paint as a data form [11]**

## ABSTRACT

This one-day studio aims to catalyze discussions and experimentation around non-textual academic documentation methods. With the understanding that human knowledge transcends written words, we aim to explore innovative ways to present and disseminate research outputs in diverse forms and of varying materiality. By bringing together researchers, practitioners, and academics from different disciplines and backgrounds, we seek to challenge the status quo of textual output and envision a future where knowledge production embraces the multisensory nature of human data.

## CCS CONCEPTS

• **Human-centered computing** → **Human computer interaction (HCI)**.

## KEYWORDS

futuring, knowledge production, pictorials, tangible, process, research output

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## 1 PROJECT DESCRIPTION

Human knowledge and our histories are not confined to the written word – we produce and collect data in various forms - imagery, objects, oral traditions, music, dance, and film - demonstrating

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that the world of human data is multisensory. In academia, and by association with HCI, we have predominantly relied on the written word to validate and document all disciplines [9] – although this is now changing [1].

We propose to extend beyond this tradition and explore the potential of non-textual academic documentation that reflects the diverse art forms and research outputs across multiple genres. This project aims to encourage the development of knowledge production via diverse formats in the TEI, and wider SIGCHI community. These formats can involve artistic outputs, such as poetry, dance, sculpture, games, audio, music, textiles, etc., that are accessible and easy to share across the community. This approach could also help in addressing language barriers, and make research more accessible.

We acknowledge that many conferences are now accepting alternative formats, but there is a lack of consistency across these platforms. Through this project, we aim to address this gap and raise awareness about different formats and the value they can bring to the community. We also hope this project will provide support for researchers, practitioners, academics, and students, to engage more with these formats, moving the 'culture' from a traditional text-paper-based format to a more shareable, diverse, and potentially accessible output.

## 2 BACKGROUND & THEORY

Historically, human societies have recognized the power and richness of multisensory information, which extends beyond the mere boundaries of written text. Our ancestors have long engaged in visual art, oral storytelling, dance, and music to convey stories, emotions, experiences, and knowledge. Yet, as our societies developed, the academic realm began to heavily favor textual representations for the dissemination and validation of knowledge, leaving a gap between the richness of human experience and the ways we document it.

In the realm of HCI, this preference for the written word can be linked to traditional academic practices, which emphasize the documentation of methodologies, results, and theories in textual

forms. This has shaped the structure of conferences, journals, and other dissemination platforms, solidifying the dominance of written documents. However, as alluded to by Blevis in 2015 [1], the tide is beginning to shift, with a growing recognition of alternative forms of knowledge expression in academia (such as NordiCHI's Critiques Track, or TEI's art exhibition, including performative works).

The potentials of non-textual academic documentation encompass a spectrum of diverse art forms [12] and research outputs that mirror the diversity of human expression. Artistic outputs such as poetry, sculpture, or dance [4] for example, can evoke emotions and perspectives that might be challenging to convey through traditional prose [2]. Games, as interactive mediums, offer opportunities for experiential learning, enabling participants to inhabit roles, confront scenarios, and derive insights through direct engagement [5]. An example is the use of game design thinking to explore data interactions (going beyond visualizations) via playfulness [14]. In this case, playful components of games can be borrowed to explain complex datasets. In terms of publications, games can be understood as artifacts, and with that, they can become the core of the publication, instead of the text itself. An example is the article published by Jesper Juul in CHI Play in 2021, in which the author invites the reader to play a game before/during reading the paper [6]. Similarly, audio and music can be leveraged to capture the nuances of oral traditions, offering a sonic dimension to the understanding of certain cultures or phenomena [3].

Moreover, there is a pragmatic angle to consider. As the world becomes more interconnected, language barriers increasingly pose challenges to the dissemination of research. By embracing more visual, auditory, or interactive forms of communication, we can make strides towards transcending these barriers, allowing knowledge to flow more freely across linguistic boundaries [7]. This can be also helpful for authors to share work-in-progress ideas and collect feedback quickly. Similar to a sketchbook, authors can submit parts of their process.

However, it is important to recognize the inconsistencies in accepting and evaluating non-textual academic outputs across platforms. For these alternative forms to be accepted, there must be a robust framework for their evaluation. Standards of rigor, validity, and relevance must be adapted or redefined to cater to these diverse formats.

Moving towards a more inclusive paradigm of knowledge dissemination not only aligns with the multisensory nature of human experience [8] but also addresses practical challenges in the modern academic landscape. By advocating for diverse research outputs, we aim to bridge the gap between traditions of multisensory expression and contemporary academic practices, fostering a more holistic, accessible, and enriched landscape of knowledge sharing. This also pushes the research and ideas around the materiality of interaction design [15].

### 3 LEARNING GOALS & OUTCOMES

All who attend should leave with an understanding of the range and scope of materiality in interaction, and ways in which we can collaboratively legitimize alternative methods of knowledge production and archiving.

#### 3.1 Establishment of a Dialogue and Network:

Initiate meaningful discussions about the future of knowledge production and establish a network of interested stakeholders. This network will strive to explore innovative approaches to improve research dissemination using advanced technology and skills.

#### 3.2 Exploration and Promotion of Alternative Modes of Research Communication:

Highlight the necessity for 'alternative' outputs, conferences, and libraries, and discover ways to work with SIGCHI to pioneer and sustain these changes. Develop alternative submissions to SIGCHI-sponsored conferences and beyond.

#### 3.3 Formation of a Working Group:

Facilitate the establishment of a working group or network focused on these objectives, with the goal of gaining momentum and supporting continuous work in this area.

#### 3.4 Engaging with Textual Forms of Dissemination to Further Project Goals:

The future of knowledge production and material output is at present, speculative, so we anticipate documenting our experiences, and embedding multimedia content where possible in the form of a publication. For example, an ACM Interactions Article, Medium blog post, video and/or audio content.

## 4 MATERIALS TO BE EXPLORED

We will be using tangible materials such as Lego, Plasticine, paper craft and prototyping, sketching, stitching, making, and other types dependent on participant expertise and interest. The idea is that we will showcase the range of materiality inherent in HCI and TEI specifically, giving everyone an opportunity to creatively engage with the ideation and brainstorming stages of the studio. Remote participants will be given a list of 'home-fidelity prototyping' materials that they can use to engage with the content.

## 5 SCHEDULE

The studio duration is one full day during the ACM TEI conference (around 6-8 hours). The schedule is flexible and will align itself with the main conference start/end times and breaks.

### 5.1 Morning Session

(3.5 hours)

- Introduction to Diversifying Knowledge Production (15 minutes): Welcoming participants and outlining the goals of the workshop. Emphasizing the importance of moving beyond traditional textual outputs.
- Keynote (30 minutes): Marianna Obrist – Invited Guest in the field of multi-sensory design.
- Embracing Multisensory Research Outputs (45 minutes): Exploring the history of diverse knowledge expression methods. Discussing the value of incorporating art forms, music, games, and more in scholarly communication.

- **Interactive Brainstorming: Re-imagining Research Formats (1 hour):** Collaborative ideation session on potential alternative formats. Encouraging participants to think outside the box and propose innovative ways to communicate research outputs.
- **Showcasing and Evaluating Non-Textual Formats (45 minutes):** Presenting case studies of successful non-textual research outputs. Facilitating a discussion on the strengths and challenges of these formats and how the process of evaluating these can be standardized.

## LUNCH

### 5.2 Afternoon Session

(3.5 hours)

- **Hands-On Workshop: Creating Diverse Research Outputs (1 hour):** Guided activity where participants experiment with creating non-textual scholarly expressions. Participants collaborate to craft prototypes that reflect their own research projects.
- **Participant Sharing and Feedback (45 minutes):** Participants present their prototypes and share their experiences. Group feedback and reflections on the potential impact of adopting diverse formats.
- **Panel Discussion: Navigating Implementation Challenges (1 hour):** Panel of experts discussing practical considerations for integrating diverse formats into academia. Open dialogue on addressing potential barriers and developing best practices.
- **Synthesis and Moving Forward (30 minutes):** Summarizing key insights and takeaways from the workshop. Collaborative brainstorming on strategies for advocating and implementing diverse research outputs.
- **Conclusion and Networking (15 minutes):** Wrapping up the workshop and thanking participants. Encouraging ongoing collaboration and exploration of alternative research formats, followed by network formation.

## 6 DELIVERY & ACCESSIBILITY STATEMENT

We intend to deliver this TEI studio in person, with a corresponding online event at a later date, to widen participation. This is to allow for engagement with those unable to travel for any reason. Text on slides will be at a readable size (minimum 20pt on PowerPoint), and speech will be in clear, understandable English. Closed captioning will be activated if available, and shared with in-person attendees as required. Imagery in any digital materials will contain Alt Text and use appropriate color contrast. Demonstrations will be clearly outlined, easy to follow, and appropriate time will be given to all attendees. A virtual whiteboard platform will be used collaboratively for in-person and remote attendees, with zoom-in up to 300% without loss in quality. Keyboard navigation will also be supported. Attendees will have time for support, questions, and comments, regardless of in-person or online delivery.

## ACKNOWLEDGMENTS

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