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Editorial: Language in design

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Editorial: Language in design

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Abstract: The role of language is central to the practice of designing. Language plays a central, critical, and rhetorical role in all aspects of design including collaboration, research, problem understanding and framing, modeling, decision-making, creativity, and marketing. This theme track re-examines the role of language in designing, asking questions about how the latest developments in technology will change practices of language use in design processes, including how meaning and value are embedded in design products and processes. We present in this track 11 papers that focus fundamentally on language—as it is represented by human as well as artificial intelligences—and its role in understanding and constructing design processes and design practice.

Keywords: Design Process; Design Practice; Language; Artificial Intelligence

1. Introduction

Language is critical to the way that the field and practice of design is shaped, and by extension shapes the way that we operate within it, impacting reflective and reflexive practitioners (Schön, 1983) and the habitus of mind that designers use to evaluate their own work and the work of others (Crouch and Pearce, 2012). Contemporary design discourse raises many questions about our fundamental assumptions relating to equity and access, but there is less examination about the role that language plays within this discourse.

Meanwhile, developments in artificial intelligence (AI) in the last few years have seen huge growth in large language models (LLMs), which effectively represents human language and potentially human knowledge, human reasoning, and human values. Recent deployment of LLMs in various domains have raised questions regarding the role of language in the exploration and representation of knowledge and of values; questions that will have a large impact on how we go about designing. The papers presented in this theme track help us re-examine the role of language in designing, asking questions about how the latest developments in

technology will change practices of language use in design processes, including how meaning and value are embedded in design products and processes.

2. The language of design*ing*

Since Donald Schön first described the reflective practitioner, the examination of how designing is communicated, constructed, and reflected upon has grown increasingly vital to design education and practice. This grouping of papers explore how language is used to describe, collaborate, situate, and better understand design action through systematic evaluation.

In "*Grand Narratives of Value and Their Relationship with Desig*n" Gulbanser-Diaz and Hepburn argue that the grand narratives of value that emerge from sociological, economic, and linguistic narratives offer an entry point into examining value structures within design, especially related to the language and narratives that surround them. They conclude that a critical understanding of value and how it is evidenced in design practice is needed to move the design discipline forward.

In *A Designer's Lexicon: An Ethnographic Exploration of Language in Design Practice* Sabatelli evaluates language in design practice. They use an ethnographic approach that examines the use of writing as a discursive and reflective tool to support and encourage different modes of practice for design students, arguing that "writing and designing both represent a kind of dialogue" (p. 1) that shapes design intervention and action. They suggest through their study that studio instructors and professional partners can develop students' writing skills through activities that are authentic and useful, using the types of writing that already occur among the students as a starting point, and pinpointing instances of writing that advance the design process. While in this case language is recorded through written and visual text, language as a spoken and conversational tool is equally as impactful as a rhetorical device used for negotiation and collaboration.

In *Significance of Everyday Group Conversations in Defining Design Problems: Affordances of Group Chat Room for Discursivity in Design Process* Lee argues that sometimes language can act either as an invitation or a barrier between designers and stakeholders, especially when institutional language is centralized because "the goal-oriented talk of design-based settings may limit the communicative capacity of stakeholders, specifically when exploring and defining design problems" (p. 2). The paper looks specifically at the nonlinear nature of group conversations through a messaging app to better understand how these interactions can support an awareness of different viewpoints and decision-making for a complex design process.

In *Modelling Reflection in Descriptions of Design Practice using Linguistic Inquiry* Kulkarni et al. evaluated the written reflections of students in relation to grades to better understand strategic patterns between the language used in these reflections and overall student per-

formance. Their study represents "initial steps toward developing a linguistic characterization of design students' reflective writing, which has the potential to benefit both design students and design educators" (p. 3).

Finally, in *The Mentor Archetype: Female Character Design Trends in Contemporary Feature Film Animation* Sá at al. examine the way that female *characters* in film animation embody or represent certain *archetypes*, and how those *archetypes* have been represented over time and in media. Through a systematic evaluation of animated films, the authors look closely at the visual and aesthetic representation of the mentor/teacher archetype in contemporary animation and find patterns related to age, visual representation, and character role.

3. The language of AI and LLMs in design

This theme explores the diversity of ways that language shapes and is shaped by design, with increased focus and attention on how technology and automation impact the language created, used, and interpreted. AI affords ways of evaluating the externalization of thought that is often a critical part of the reflective process. It can be used as a tool to evoke specific forms of thinking, analyze thinking expressed in language, or even serve as a material with which to think. Recent generations of LLMs have shown increased language abilities, to the extent that they give the impression of having the capability to use knowledge and reasoning (Bender et al., 2021), and even simulate creativity (Stevenson et al., 2022). On the other hand, there are challenges of misrepresentation of information, where the LLM response indicates a lack of nuance, "over-confidence" or erroneous processing of the input. These may be due to biases in the training data, the labeling process, or the fine-tuning of model behavior (Ouyang et al., 2022). Finally, a widely known challenge of using LLMs for design processes is the lack of palpable or fine control over the processing and output in response to the prompt. Two papers explore aspects of thinking and reflecting with AI.

In *Revealing User Tacit Knowledge: Generative-Image-AI helps create better design conversations* He et al. study the use of a text-to-image generation AI model in promoting reflection and in eliciting tacit preferences and values from users in a co-creation session involving designer-user dyads. They find that the generated images serve as a boundary object for users to explain their preferences to the designers, though in some cases, images retrieved via a web search were helpful in providing a more accurate cultural or historical context.

Rust et al. consider the use of metaphors in exploring the concept of "AI relationality," exploring the types of relations possible with AI technologies. In their paper titled *Metaphor Gardening: Experiential engagements for designing AI interactions*, they present a number of "prototyping journeys" in which design students explore through metaphors specific interactions with AI that reveal distinctive qualities of the technology. Using these examples, the authors introduce a reflective practice they call "metaphor gardening" to help design new interactions with AI models.

Two papers address the challenge of control in LLM outputs using two different approaches. In *An LLMs-augmented Morphological Analysis Approach for Conceptual Design* Chen et al.

address this challenge in design ideation by strategically using LLMs along with stages from Zwicky's now classic Morphological Matrix method (1948). They show through a study that their proposed approach results in increased novelty, solution diversity, and creative stimulation for the designers, who report a reduced mental demand.

In *Synergizing human expertise with AI: The role of LLMs in user research* Ganwani et al. propose an approach to augment the stage of understanding requirements for product or service design with LLMs. They use an emerging technique called Retrieval-Augmented Generation (Lewis et al., 2020), creating a vector database of interview transcripts from which requirements are to be gleaned. Designers then use an LLM linked to this database to input questions from which natural-language responses are generated based on matches found in the vector database. Such an approach aims to minimize spurious output from an LLM, though the authors themselves point out some minor hallucination-induced errors that highlight an overall limitation of LLMs in adhering to certain "ground truths".

Two other papers address issues around biases and nuance in LLM output. In *Leveraging LLMs for Reflection: Approaches to Mitigate Assumptions within the Design Process* Muhs and Stankowski highlight issues around implicit biases and propose an approach to critically interact with LLMs in a way that is designed to help the user/designer identify and examine assumptions and biases underlying an expression of a problem or statement. The paper introduces a "dialogic-reflective framework", helping designers question implicit assumptions that may underlie a given statement.

In *Exploring Human-Centered Design Method Selection Strategies with Large Language Models* Rao et al. explore the use of LLMs in suggesting appropriate design methods for a given design project comparing it to historical data of student design team projects. They find the diversity of methods recommended by LLMs comparable to those chosen by the student teams in the historical data, but note that the LLMs did not appear to recommend methods appropriate to specific design phases, leading them to conclude that the LLM output may not have sufficient nuance for it to operate as a design advisor; it was "by sheer probability" that relevant methods were associated with specific phases. Studies like these provide an increased awareness of LLM capabilities and shortcomings in ways directly applicable to design processes.

The themes that emerged through this track demonstrate the critical importance of how language, writing and communication impact the design output and process, from making more reflective practitioners, more empathetic designers, better collaborators, and more engaged citizens. They also illustrate the potential of new technologies to both shape and be shaped by language. In doing so, the papers open up a host of questions relating to how many of these technological affordances can be used more effectively within design education and practice, and raise issues about authorship, creativity and ethics. In examining language and design through the papers presented in this track, we aim to continue debates and discourse on the connection between language and design that will inform our critical assessment of

new design affordances and design practices that are discovered with emerging technologies.

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