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Doctoral Dissertation Proposal · Florida International University

AUTOMATION ↔ AGENCY
Inferential Discovery and Design Adaptation in Generative Workflows

TOPIC INTRODUCTION

This dissertation examines how designers' relationship to their work in progress shifts within generative image and video workflows. As iteration increasingly incorporates generative and neural computation, designers adapt to visual inference throughout their work. Here, an inference a designer finds becomes an inferential discovery as the designer determines what it means for the continuation of their work. The dissertation's central object of study is the designer's response to inferential discovery, observed at the point of decision.

RESEARCH QUESTION

How does a designer's relationship to their visual work in progress shift when inferential discovery can recur across a generative workflow?

PURPOSE

The designer's response to a discovery establishes conditions for the continuation of their work. Design adaptation develops through situated judgments whose consequences become part of the work encountered in subsequent decisions (Suchman, 1987; Hutchins, 1995; Kirsh, 1995). The possibility of recurrent inferential discovery makes this an inquiry into deciding under abundance.

SIGNIFICANCE

The proposed comparison relates computational conditions to the judgments through which work proceeds. Studies of vision–language models show that model responses can depart from supplied visual evidence when visual and linguistic information conflict (Deng et al., 2025; Nooralahzadeh et al., 2026). Research on persistent 3D state addresses spatial consistency in generated environments (Garcin et al., 2026), while work on image editing evaluates the coherence of intermediate sequences generated between specified initial and final image states (Sheng et al., 2026). Rezwana and Maher's (2023) framework describes how participation, contributions, and communication are organized in human–AI interaction during creative work. A study of students' reflections on AI-supported design identifies forms of judgment concerning reliability, appropriateness, and agency distribution (Naik et al., 2025). Research on knowledge work examines reported critical-thinking effort and its association with task-specific confidence in oneself and in generative AI (Lee et al., 2025).

Yuan et al. (2026) connect computational conditions to situated judgment through a detailed account of GAN-based artistic practice. In their case, uncertainty enters dataset preparation, interpretation of model behavior, and organization of subsequent work. Selected outputs become potential artworks or inputs to further training, so the artist's response affects the conditions under which later work is produced. Yuan et al. develop conception, comprehension, and linearity as analytical concepts for describing how opacity becomes consequential in creative practice, and propose a documentation system to record and reflect on decisions and adaptations over time. This dissertation develops that inquiry by examining the designer's response to inferential discovery across different production conditions. The comparison examines what continuation requires and how a decision shapes subsequent work.

Christian and Griffiths (2016) argue that concepts from computer science can clarify the structure of decisions even when a strict numerical analysis or ready answer is unavailable. The proposed vocabulary describes the forms continuation takes, what a kept change does to later work, and what counts as coherent enough for what comes next. The terms will be developed and revised through the cases to enable designers to describe and compare these situations in shared language.

These distinctions bear on how designer agency is understood under increasing automation. A reduction in direct control over a result does not necessarily diminish agency; the designer's decisions about whether and how that result enters subsequent work also require examination. By following those decisions and their consequences, the dissertation investigates how agency is exercised and constrained as inferential discovery recurs.

RESEARCH DESIGN AND METHODOLOGY

This dissertation develops a vocabulary and a comparative method through staged cases of visual work across different production conditions. The cases will follow the designer's response to inferential discovery as the work moves between operations in the ordinary course of the workflow.

The Inference Resolution Map (Figure 1) is already populated; its placements will be reviewed against two working axes for comparison. Determination concerns how the designer's supplied direction governs the production of the result. Editability concerns the extent to which the working state remains available for direct revision. Recurrence of inference is recorded separately. Each placement remains provisional and identifies the operation and aspect of the work under consideration.

The case records (Figure 2) will link each decision about continuation to the provisional map placement for the relevant operation and aspect of the work. At each decision point, a record will document what was supplied, what was found, what the available evidence supports, what remained directly revisable (Figure 3), what the continuation required, and what the designer did. Following these records through the workflow will support examination of how an earlier decision shapes subsequent work and whether further discovery leads the designer to reconsider that decision.

The drafted vocabulary addresses the evidential standing of a discovery, the forms continuation takes, and what counts as coherent enough. It will be applied to the records: terms that discriminate will be retained, terms that do not discriminate will be revised, and further terms will be developed where the records warrant them.

Comparison within and across cases will examine how the designer's responses and the requirements of continuation vary with determination and editability. The evidence remains task-bounded and interface-level. Where the available evidence does not support a more specific account, 'underdetermined' remains a warranted description. The analyses and figures will be developed from these records.

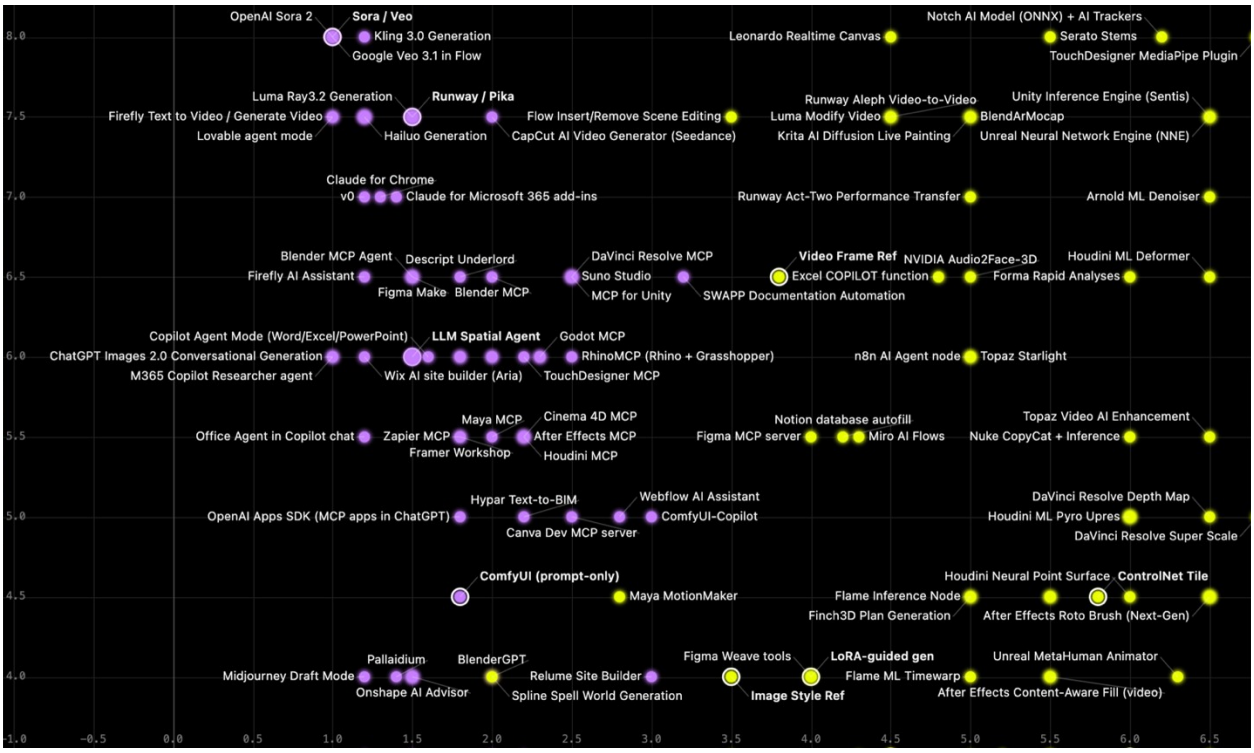

Figure 1**. Inference Resolution Map prototype.** A partial view of the populated map. The displayed coordinates belong to the earlier placement scheme and remain provisional pending review against determination and editability.

Figure 2. Miro research workbook. The workbook brings an example's visual material and versions together with spaces for the designer's account, decision record, later reflection, and vocabulary development. The unfilled fields show the structure prepared for recording the staged cases.

Figure 3. Direct revision within a composite. A generated figure is selected for transformation in Photoshop. Placement and scale remain directly revisable while the designer assesses the figure's relation to the work in progress.

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