AI as Friction for Reflection Support in Ideation

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Abstract

Generative AI tools for creative work tend to be designed around the goal of removing friction, on the assumption that smoother iteration and faster output translate into more value for the designer. We argue that this framing, however, leaves out something important about how design ideation actually works —reflection-in-action. The act of accepting, rejecting and reworking candidate ideas is not only a path to a final outcome but is also how designers develop the rationale that allows them to think with their ideas and to communicate them to others. This becomes particularly important in group ideation, where ideas need to be expressed and explained to others to allow the group to extend, reject or combine them further. We suggest that AI in design ideation might be more usefully thought of as a friction agent for reflection rather than as a smoothing agent for output. This reframing opens up a different role for AI in design ideation, one that supports designers in building and carrying rationale rather than substituting for it.

CCS Concepts

• **Human-centered computing** → **Interactive systems and tools**; • **Applied computing** → *Arts and humanities.*

Keywords

Reflection support systems, Ideation, Human-AI Interaction

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1 Introduction

Generative AI tools for creative work tend to be designed around the goal of removing friction [3]. Faster iteration, lower prompt cost, smoother output and easier disposal of unwanted candidates are commonly treated as overall improvements [1], on the assumption that less friction means more creative throughput and therefore more value for the designer. This framing is intuitive, but it overlooks the crucial part of reflection in design ideation that matters in practice.

In design ideation, the act of accepting, rejecting and reworking ideas is not only a path to a final outcome, it is also how designers build the rationale that allows them to think with their ideas and to communicate them to others. When AI smooths this process away, it can leave designers with many candidates and rather little account of why any of them should be preferred or their relation to the underlying problem. This becomes particularly visible in group ideation, where designers depend on articulable rationale to defend, contest and combine contributions, and where artifacts that arrive without their underlying reasoning struggle to integrate into the group's evolving understanding of the problem. Building rationale and bringing it into a group can be demanding in practice, and the conditions under which a designer is invited to do this kind of work shape how well they can later take part in the group's thinking.

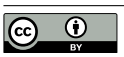
Our position in this paper is that AI in design ideation might be more usefully treated as a friction agent for reflection rather than as a smoothing agent for output. By introducing structured pauses that invite designers to articulate, monitor or commit, AI could support the reflection-in-action through which *rationale* is built, instead of bypassing it. We outline what this reframing could involve, drawing on previous work on metacognition, group cognition and our own work on human-AI interaction, and surface the questions it opens up for the workshop community.

2 Rationale as the Currency of Design Ideation

Design ideation is commonly described as a movement between divergent and convergent thinking, where designers generate many candidates before narrowing toward the ones worth pursuing [6]. While useful, this framing tends to focus attention on the ideas themselves and less on what designers build alongside them. Through the very act of accepting, rejecting and reworking candidate ideas, designers also develop a rationale, that is, the reasoning that explains why a candidate is worth keeping, dropping, combining or pushing on [9]. This rationale is not a by-product of ideation but part of what ideation produces, and it is what allows a designer to return to an idea later, to recognise when a seemingly new direction is in fact a recombination of older ones, and to know which constraints are load-bearing and which are open to negotiation.

In individual ideation, weak rationale tends to have mostly internal costs. A designer who cannot reconstruct why they made a particular choice may struggle to revise it deliberately, and may end up retracing the same exploration without learning from it. While these costs are real they are often hidden, but become structural in the moment the designer enters a group setting. Group ideation can be understood as a coordinated, synchronous activity that depends on a continually constructed shared conception of the problem [8, 13]. This shared conception is not built out of contributions alone, but rather out of the accounts designers give of their contributions.

Two aspects of this rationale work seem worth to distinguish. The first is the building of the rationale itself, which involves connecting ideas to others that have been considered, reflecting on its



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strengths and limitations for the given purpose, articulating its pros and cons relative to similar but rejected directions, and locating it in relation to the underlying problem or goals it is meant to address. The second is the expression of that rationale in a form that others can engage with, which includes choosing an appropriate level of detail, suitable means of expression, and the references or framings that help collaborators understand the reasoning rather than only the surface idea. Those aspects help make idea rationales stronger and easier to communicate in group ideation, though they can be challenging in practice across levels of experience. Understanding the target domain, with its internal references, underlying norms and established ways of seeing, can be demanding for novices and experienced designers alike, since each project tends to bring its own particularities. Communicating one's own rationale is similarly difficult in any group whose members do not know each other well, since collaborators arrive with their own perspectives, prior ideas and background knowledge. While this is often a productive source of discussion in design ideation, it also carries the risk that team members end up talking past each other, particularly when rationale is thin or has been left implicit.

Both aspects come with their own challenges when ideas move into a group setting. A contribution whose rationale cannot be articulated is difficult to defend, contest, combine or evolve with others, which means that a designer entering group ideation without rationale enters it without much of the means to participate fully. The material that designers bring with them: The materials designers bring with them carry their own limitations, since artifacts such as post-it notes, sketches or single images are by design reductive carriers [7]. They are easy to produce, move and rearrange, but they tend to strip away most of the reasoning that produced them. A post-it shows what the idea is, not why it is there. When the underlying rationale is strong, designers can supply the missing context in conversation, so that the artifact serves more as a handle while the designer carries the rest. When their rationale is weak, the artifact often has to stand alone, and the group ends up negotiating around objects that no one fully owns or mislead conversations all-together. Ideas may then be adopted, dropped or merged based on how well they read on a wall, rather than on the reasoning behind them. Supporting design ideation is therefore not only a matter of helping designers produce more ideas, but also a matter of helping them build rationale they can reflect on and share, in forms that others can engage with as more than surface artifacts.

3 The friction-removal trap of AI

Yet most current generative AI tools for creative work tend to be designed around an implicit goal of throughput. Prompts are answered quickly, candidates are generated in bulk, and rejection is made about as cheap as acceptance. In many ways this is a feature, since designers can produce many candidates in a short time. From the perspective of rationale, however, it can become a problem, since designers may move through long sequences of generation and selection without having to articulate why one direction matters more than another. Some of our own work points in a similar direction, where designers given richer means of expression, such as multimodal prompting [11] or pen-based composition-as-prompt [12], often prefer interactions that are more demanding rather than less, which suggests that fluency on its own may not be the goal designers themselves are optimising for.

The risk, then, is not only that AI takes over labour that designers used to do. It is also that it reduces the reflection-in-action through which rationale is normally built alongside the artifact. With less of this in-the-moment reflection, the resulting rationale tends to be thinner and narrower in scope, and recent empirical work suggests that even basic recall of one's own contributions can suffer in mixed human-AI workflows [19]. The consequence is not necessarily that ideas become worse, but that potentially interesting ideas may struggle to find their place in the wider ideation narrative of the problem. Without the connective reasoning that ties an idea to what came before and what it is responding to, a contribution can feel disconnected from the shared conception of the problem the group is constructing, and may be set aside or merged on the basis of how it presents rather than what it is doing in the design space.

4 Friction as scaffolding for metacognition

To support reflection in design ideation more meaningfully, it helps to be precise about which kind of reflection we consider. Schön's distinction between reflection-in-action and reflection-on-action is useful here [14]. Reflection-in-action describes the live monitoring and adjustment of one's own thinking during an activity, where a designer notices something unexpected and reorients in the moment. Reflection-on-action describes the retrospective sense-making that happens afterwards, when a designer looks back at what they did and tries to understand it more systematically. Both are forms of metacognitive engagement, in the broader sense of monitoring and exerting control over one's own cognitive processes [5, 10], and both produce different kinds of rationale, the in-action kind being situated and tied to specific moments of choice, the on-action kind being more synthesised and easier to communicate later [14].

The argument we would like to make is that reflection-in-action is where the rationale of design ideation is most directly built, and also where current AI tools tend to be least supportive. Existing reflective creativity support tools have largely focused on reflection-on-action, by helping designers document, revisit and visualise their process after the fact [15, 16]. These tools are valuable, but they leave the in-the-moment work often rather unsupported, and in some cases encourage designers to defer reflection to a later stage. Some recent work has begun to investigate how AI itself could support reflection in the moment in human-AI co-creation [17, 18], though this remains a less developed area. AI sits inside the creative loop, where the in-action reflection happens, which makes it well positioned to support that reflection rather than to bypass it, provided that the interaction is designed to invite articulation rather than to resolve it on the designer's behalf.

We consider AI as friction an interesting concept to address this. With friction we mean a structured pause that invites the designer to articulate, monitor or commit (aligned with [4]), rather than an obstruction that simply slows the interaction down. Some illustrative mechanisms might give a sense of what such friction could look like in practice: An AI agent might ask a designer to briefly articulate why an idea is being rejected before it leaves the canvas, so that the act of dismissal becomes a moment of reasoning. It might also surface a contrast or a counter-example rather than

another continuation, so that the designer has to position their current direction against an alternative. It could also hold back a generation until the designer commits to a direction, so that a prompt becomes a small act of intention rather than a reflex. Or it might reflect back patterns in what is being accepted and rejected over time, so that the designer can become aware of their own implicit criteria. These are sketches, not proposals, and the broader point is that AI is uniquely positioned to introduce such moments inside the loop, where reflection-in-action would otherwise be most easily skipped.

We would like to highlight that we understand friction not opposed to flow but is rather a structured pause that converts process into rationale, and the boundary between productive friction and disruptive obstruction is something that needs to be designed and studied carefully [2]. The in-action reflection that friction supports is also what later forms of reflection rest on. Rationale that is built moment by moment is what reflection-on-action can later draw upon, and what allows the resulting artifact to travel into group ideation together with the reasoning that produced it.

5 Open questions for the workshop

Several questions remain open in this framing, and we would like to bring them into the workshop discussion. The first addresses whether and how friction can be supported in practice without disrupting the very process it is meant to enrich. *How much friction is productive, and how would we know?*

- Where does the boundary lie between a structured pause that invites articulation or reflection and an obstruction that slows the designer down or causes frustration?
- Is the trade-off between creative flow and reflection as sharp as it is sometimes assumed, or does productive friction work with rather than against flow under the right conditions?
- How might friction-for-reflection be evaluated, given that its benefits tend to accrue over time and across the solo-to-group transition rather than within a single session, where session-level metrics such as task completion or output quantity may not be relevant?

A second set of questions concerns the shape that friction should take when ideation moves from individual work into group settings, where rationale has to travel as well as be built and developed further. *What should friction look like in groups, and for whom?*

- Could AI play a role in helping designers carry their rationale forward into group ideation, perhaps by acting as a kind of translator between an individual's reasoning and the shared narrative the group is constructing?
- Group ideation involves different participants moving in and out of leading and following roles, so uniform friction across collaborators is unlikely to be appropriate. What might adaptive friction look like, and how could an AI agent decide who to direct it toward, and when?
- How might friction support the group's shared conception of the problem itself, rather than only individual rationale, for instance by surfacing divergence between collaborators' implicit criteria?

These questions reflect what we see as the most interesting design space opened up by treating AI as a friction agent for reflection rather than a smoothing agent for output, and we look forward to thinking through them with the workshop community.

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