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# A Scenario-Based Design Pack for Exploring Multimodal Human–GenAI Relations

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# A Scenario-Based Design Pack for Exploring Multimodal Human–GenAI Relations

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## Abstract

Generative AI technologies are reshaping everyday environments by enabling multimodal interaction. As their ubiquity and agentic capacities grow, there is a pressing need to understand how these systems reshape human–computer interaction in relational, social, and systemic terms. We introduce a scenario-based design pack for investigating Human–GenAI relations. Grounded in assemblage theory and structured around a three-stage process—Prepare, Make, Reflect—the pack supports the prototyping, analysis, and critical reflection of emergent sociotechnical configurations. We evaluated the pack across three deployments: an ACM workshop (n=22), a multidisciplinary design session (n=20), and a university HCI class (n=260). Participants generated scenarios that surfaced relational issues of power, agency, visibility, and care. We contribute the design pack alongside an exploratory framework to advance relational enquiry into multimodal Human–GenAI relations, support


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more inclusive and socially responsive GenAI practices, and complement FATE approaches by grounding fairness, accountability, and transparency in lived, multimodal configurations.

## CCS Concepts

• **Human-centered computing**; • **Interaction design process and methods; HCI theory, concepts and models**;

## Keywords

Generative AI, Scenario-Based Design, Human-AI Relations

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## 1 Introduction

Generative AI (GenAI) technologies are increasingly embedded in everyday systems across domains such as work, education, healthcare, entertainment, and the home. With capabilities spanning language, vision, sound, and content analysis and generation, these systems enable new forms of multimodal interaction and are reshaping how people engage with technology [1, 5, 6, 12, 15, 33, 35, 38, 39]. As GenAI becomes increasingly embedded and agentic, it is shaping human behaviour more directly and profoundly than previous technologies [15, 23, 26].

Traditional HCI interaction methods often focus on fixed user roles and discrete tasks. These approaches are limited in their ability to engage with systems that evolve over time and act within broader sociotechnical configurations [16, 19, 30–32]. Assemblage theory offers a way to analyse these entanglements between people, infrastructures, and environments by treating them as interdependent, dynamically configured components [1, 16, 17, 19, 22, 30].

Recent HCI work has called for more relational approaches to engage with these entanglements [16, 19, 30–32]. For example, Özçetin and Wiltse [30] examine how Terms of Service agreements act as infrastructural artefacts that preconfigure human–technology relations, distributing agency across human and non-human actors as part of a co-constructed performance. This perspective moves beyond user-centred design by recognising that the boundaries between humans and machines—and the agency each exerts—are becoming increasingly entangled.

In response to these calls for more relational approaches, we introduce a scenario-based design pack that supports the investigation of multimodal Human–GenAI relations. It builds on established scenario-based design methods in HCI [4, 8, 10, 27, 40]. The pack guides participants through multimodal AI scenario creation and reflective discussion. We evaluated the pack across three deployments with different groups: an ACM workshop (n=22), a multidisciplinary design session (n=20), and a university HCI class (n=260). In each case, participants used the pack to explore how GenAI reconfigures roles, redistributes responsibilities, modulates visibility, and reshapes practices of fairness and care, providing insights into how relational configurations can be surfaced and critically examined to inform the design of more inclusive, accountable, and relational Human–GenAI interactions.

This paper makes three contributions:

1. A scenario-based design pack to support relational exploration of Human–GenAI interactions.
2. A framework, informed by assemblage theory and developed through three deployments, to configure and analyse Human–GenAI relations.
3. Design implications to support inclusive and socially responsive approaches to multimodal GenAI practice, complementing FATE methods.

### 1.1 Safe and Responsible Innovation Statement

Our work supports responsible and inclusive multimodal GenAI interaction through a scenario-based design pack used across research, education, and practice. The pack enables lived scenario creation and guided analysis to surface fairness, accountability, transparency, and ethics. It helps examine how generative systems distribute power, shape agency, and impact diverse communities—supporting more inclusive and accountable GenAI configurations.

## 2 Background

This section situates the assemblage lens and provides a brief background on scenario-based design in HCI.

### 2.1 Assemblage Thinking for Relational Technology Design

Assemblage theory has gained traction in HCI as a way to understand how technologies operate within fluid, relational configurations of people, environments, infrastructures, and institutions. It offers an alternative to linear user–technology models by foregrounding distributed agency, emergent relations, and dynamic interdependencies [16, 17, 19, 22, 31]. Prior work has used assemblage thinking to examine smart voice technologies [11], sociotechnical entanglements in mobile media [26], and infrastructural artefacts such as Terms of Service agreements [30]. For example, Frauenberger [16] argues for an entangled view of HCI that recognises human–technology relations as co-constituted, situated, and shaped by wider sociotechnical conditions. This perspective extends design concerns beyond the interface, shifting attention to how roles, agency, and responsibility are continuously negotiated across systems.

Assemblage theory is particularly relevant to advancing research at the intersection of multimodal AI and social interaction, as it helps reveal how agency is distributed across systems, infrastructures, and interfaces—beyond what is visible at the user interface. It foregrounds the relational conditions through which people and GenAI systems form configurations and engage in meaning-making, decision processes, and communicative action.

In our work, we use assemblage theory to frame GenAI not as a discrete tool, but as part of a shifting sociotechnical mesh. This framing informs the design pack, guiding participants to explore how GenAI mediates relational dynamics through multimodal interaction across diverse contexts.

## 2.2 Scenario-Based Design as Methodological Foundation

Scenario-Based Design (SBD) is a well-established method in HCI for exploring interactions through situated, narrative accounts of technology use [9, 10, 40]. Scenarios help frame design problems, articulate emerging possibilities, and examine how people and technologies relate over time. They are particularly effective when working with technologies whose behaviours and roles are still being defined, such as GenAI systems [4, 27, 36]. SBD has been applied to support a range of design approaches, including value-sensitive design [27], participatory speculation [14], and responsible innovation [31]. These applications demonstrate that scenarios are generative and critical, as they provide a way to examine how technologies shape agency, reinforce or disrupt social relations, and participate in sociotechnical systems.

In this work, we adapt SBD to investigate relational aspects of Human–GenAI interaction. The design pack offers a structured format for creating multimodal scenarios using visual and textual prompts, speculative artefact-making, and guided reflection. It supports the configuration of GenAI relations—helping participants explore how these systems may shift roles, surface bias, redistribute responsibility, and reshape communication within sociotechnical settings. The scenarios foster relational thinking early in the design process, enabling researchers to move beyond model and interface optimisation and consider how the introduction of multimodal GenAI might shape social relations more broadly.

## 2.3 Complementing FATE Frameworks Through Design Practice

Responsible AI development is increasingly shaped by frameworks for Fairness, Accountability, Transparency, and Ethics (FATE), which offer audits, guidelines, and principles to evaluate systems [13, 18, 24, 25]. While these frameworks are essential for identifying and mitigating harms, they are typically applied during implementation or retrospectively, with a focus on technical performance and compliance. As such, they offer limited support for early-stage design activities where sociotechnical configurations and assumptions are still being shaped.

Recent work in HCI has called for more proactive, design-led approaches that embed relational reflection into the design process, especially for generative systems [17, 19, 22, 27]. Our work contributes to this space by enabling participants to explore and reconfigure issues such as power asymmetries, bias, responsibility, and social visibility through situated, multimodal scenarios. This method complements FATE frameworks by supporting relational thinking at the outset of design—before models, datasets, or interfaces are developed and deployed.

# 3 Design Pack Development and Structure

We developed a scenario-based design pack to support structured exploration of Human–GenAI relations. The pack was created over a six-week period by the authors and refined through two testing sessions. It was designed to scale across workshop and educational contexts, while maintaining a focus on how GenAI systems play roles, mediate relations, and responsibilities as their generative and agentic capabilities are integrated in everyday settings.

The development process was informed by prior work in scenario-based design [8, 10, 27], speculative methods [8, 14], and relational approaches to HCI [1, 16]. Drawing on these works, we created a method that helps participants move beyond user-centred framing and instead attend to the ways GenAI systems operate within sociotechnical assemblages.

The pack is structured using the common three stage stages in SBD, Prepare, Make, and Reflect. These guide participants through the construction of speculative scenarios, the production of multimodal artefacts, and structured reflection on the social and systemic implications of their designs. The design pack is available in the supplementary materials of this paper as a slide deck, and includes facilitation guidance for a 2-hour or 4-hour sessions which have been validated across three deployments.

## 3.1 Prepare

Participants begin by engaging with two thematic entry points that frame the scenario activity: *Evolving Relations Between People and AI* and *From Interactional to Systemic Perspectives.* Each theme is paired with a set of provocation questions (Table 1), designed to prompt reflection on how GenAI may reshape interpersonal roles, institutional dynamics, and long-term societal effects. Participants select a familiar technology or setting and explore how the addition of multimodal GenAI capabilities could reconfigure its function, interactions, and the distribution of agency within emerging assemblages.

To structure the scenario, participants draw from a set of ingredients commonly used in scenario-based design. These include: setting and situation (e.g., locations, policies, environmental conditions); actors (e.g., human participants, GenAI systems, or non-human agents such as pets or landscapes); agendas (motivations and intentions of the actors); props (objects or tools that mediate interaction); pervasiveness (how the technology scales and integrates into everyday life); systemic effects (social, cultural, and environmental impacts); temporality (how relationships and configurations shift over time); and relationship dynamics (e.g., trust, dependency, disruption, augmentation).

Participants sketch their initial scenario on a worksheet in the slide deck, assign it a working title, and note any contextual details that shape the situation. This structured yet open-ended process encourages participants to think relationally from the outset—focusing on interactions and the broader conditions and consequences of GenAI deployment.

## 3.2 Make

In the Make stage, participants develop their scenario into a more detailed artefact. This may include visual elements such as storyboards, annotated sketches, or diagrams, alongside textual components such as short narratives or role descriptions. The goal is not to refine interface design, but to externalise how the scenario unfolds: who acts, who responds, and how GenAI mediates relations. This stage emphasises low-fidelity making with tangible materials as a form of inquiry. It allows participants to explore technologies and relational configurations from new perspectives, surface implicit assumptions, and examine how roles and dynamics shift before any technical implementation is proposed.

**Table 1: Themes and provocations to support multimodal GenAI scenario development.**

| Themes | Description | Provocations |
|---|---|---|
| Evolving relations between people & AI | The profound impact of GenAI capabilities presents the potential to redefine relations between humans, machines and the environment. Given the rapid addition of these capabilities into everyday life, it is timely to explore the role of design in creating possibilities to examine these relations. | What roles should GenAI-enabled technologies play to contribute positively to the human-technology relationship?<br>In the human-technology relationship, how shall our technologies age with us? |
| From interactional to systemic perspectives | Scenarios can vividly capture depictions ranging from interactional to pervasive scales, illustrating technologies' short and long-term effects in a sociocultural, ethical, and environmental context. | How can we design GenAI-enabled technologies that reveal their ongoing societal and environmental impacts over time and encourage reflection and action?<br>Considering the societal and environmental trajectories, should GenAI-enabled technologies prepare us for, or guide us towards particular futures? |

**Table 2: Eight reflection questions to support multimodal GenAI scenario analysis.**

| **Reflection category** | **Question** |
|---|---|
| Actors and power dynamics – drawing attention to roles, visibility, and voice [29, 37]. | Looking at the actors in your scenario, what roles did they play in relation to one another, and which roles were explicit or implicit in their relationship?<br>How would the dynamics change if the main actor was a child (8 years old), an elderly person (80 years old), a domesticated pet, or even a plant? |
| Technology mediation – exploring the system's agency and its role in shaping experience [21]. | Does your technology with GenAI capabilities exhibit agency beyond its functional or technical capacity?<br>Would you consider it a social agent capable of interacting with and influencing other social agents? |
| Systemic effects – examining longer-term and place-based implications [27]. | Imagine your scenario in a country vastly different from the one you originally imagined. How does the technology operate differently in this place, and how do those changes affect the human-technology relationship?<br>What would happen to the relationships between humans, non-humans, and everyday objects imbued with GenAI capabilities if the technology were to fail (e.g., malfunction, become unavailable, or produce unintended results)?<br>What implications might this have for someone who has grown up coexisting with this technology? |
| Design process – encouraging reflection on design decisions and assumptions [41]. | What are some of the considerations that you would bring to designing for human-technology assemblages after completing this exercise? |

### 3.3 Reflect

The final stage invites participants to reflect critically on the scenario they have constructed. Each group engages with eight structured questions, drawn from established HCI literature, and organised into four reflection focus areas (Table 2). The questions are not designed to evaluate the scenario as "good" or "bad," but rather to surface who benefits, who is affected, and how values and agency are distributed within the configuration. Follow-up prompts encourage participants to explore how their scenario might evolve if key actors or contexts were altered—for example, by shifting socio-cultural settings, introducing failure, or varying human age or ability. This stage supports participants in stepping back to critically examine assumptions, enabling articulation of design considerations for creating GenAI systems that are relational, inclusive, and socially responsive, rather than mostly optimised for task performance.

## 4 Three Design Pack Deployments

The design pack was deployed in three distinct contexts to evaluate its adaptability, generative capacity, and relevance across varied audiences. Each deployment followed the same three-stage structure—Prepare, Make, Reflect—but differed in duration and participant background. These variations allowed us to assess how the method performed in research, professional, and educational settings.

### 4.1 SIGCHI Workshop (n=22)

The first deployment was conducted as a full-day in person SIGCHI 2024 workshop. Participants included HCI practitioners, interaction designers, professors and doctoral students with experience in speculative and AI-related design. Working in groups of 3–5, participants completed the design pack as a largely self-guided process. Each group produced multimodal scenarios, paper sketches, tangible artefacts, and written reflections. Structured group discussions concluded the session, providing insight into how participants interpreted and configured GenAI relations.

### 4.2 Multidisciplinary Design Session (n=20)

The second deployment was conducted as a two-hour in-person session with mid-career professionals from diverse fields, such as law, engineering, sustainability, policy, and IT. Facilitators delivered an introductory lecture included in the pack and provided a copy of the pack to each group to support self-guided exploration. A midpoint check-in was held to invite sharing, followed by a reflective discussion at the end. This session enabled us to evaluate how the pack facilitated engagement across non-HCI domains and supported scenario construction to surface diverse, interdisciplinary understandings of multimodal GenAI.

### 4.3 HCI University Class (n=260)

The third deployment was conducted in a large undergraduate and postgraduate HCI course. Over 260 students engaged with the pack across two 90-minute sessions, working in small groups. Teaching assistants introduced the pack and delivered an initial lecture to frame the activity. Each group received a copy of the slide pack. At the end of each tutorial, groups presented their scenarios to a peer group, with some choosing to share more broadly with the class. This deployment demonstrated the method's scalability and adaptability within an educational setting, supporting both guided and self-directed exploration of Human–GenAI relations.

### 4.4 Two Scenario Examples

The following two participant scenarios illustrate the types of relational configurations the method enables. They show how the design pack helps surface and examine Human–GenAI relations across contexts. Additional examples are included in the Appendix.

**Scenario one - The AI-Babysitter:** This scenario is set in the near future when tech workers will have company smartphones enabled with networked AI agents that keep watch over them, both professionally and personally. It tells of Solara Tech employee Clara Matthews trying to attend an interview at a rival tech company without her current employer finding out. Fearing Solara Tech will punish her for talking to its competitor Z Corp, and knowing her phone is enabled with AI agents that survey her, Clara seeks out the services of an "AI nanny." On her way home from work one day, Clara spies a paper flyer on a telephone pole advertising an AI babysitting service. In this underground gig-economy service, low-paid workers offer to mind people's phones while these people go offline. The AI babysitter tricks the AI agents on the client's or "liner's" phone into believing they are still with their owner by mimicking the owner's human behaviours (for example, by using playback-generated voice recordings). Passing her smartphones over to her assigned AI babysitter, the scenario ends with Clara heading into her interview at Z Corp feeling a mix of anticipation and relief at being off the radar, if only momentarily.


**Figure 1: A future where people use corporate AI agents, and the fear of surveillance that comes with it results in an underground economy of AI Babysitters.**

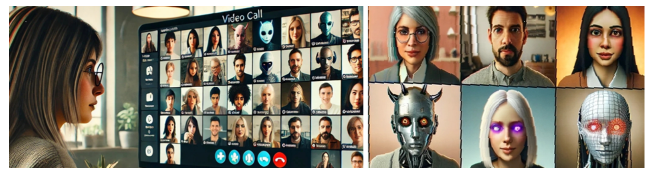


**Figure 2: Depiction of a virtual session where both human and non-human avatars engage in discussions. Right: Different avatars acting as a devil's advocate, introducing ideas that participants may be reluctant to share openly.**

**Scenario two - The Devil's AI-dvocate:** This scenario is set in a creative agency in a European city that is experimenting with the use of GenAI to enhance decision-making processes within their team. The agency faces challenges due to a lack of diverse opinions and power dynamics that prevent lower-ranking colleagues from expressing controversial viewpoints. To address this, they introduce anonymized online discussions using AI-avatars that act as devil advocates during meetings. During video call meetings, employees log in via a secured platform that verifies their identity. Once in the meeting, each participant is represented by an avatar that conceals their identity and voice. An additional avatar, controlled by the GenAI, participates without the other team members knowing who the AI is. As discussions unfold, the AI contributes diverse opinions and insights, learning from the group's reactions, discussion styles, and decision-making processes. The agency aims to use this setup to reduce confirmation bias, encourage members to voice their opinions more confidently and promote diverse viewpoints. However, there are concerns that this approach also leads to a lack of individual recognition for ideas, reducing the incentive to contribute to the discussion and causing colleagues to hold less respect for one another.

## 5 Thematic Analysis of the Scenarios

To understand how participants engaged with Human–GenAI relations, we conducted an inductive thematic analysis of the materials generated during the deployments. This included 60 completed scenarios incorporating written narratives, visual sketches, speculative artefacts, and participant reflection notes. We also collected facilitator field notes, photographs of outputs, and video recordings of group discussions.

An initial series of collaborative synthesis sessions among the authors, conducted over six weeks, used data from the first workshop to conduct inductive thematic coding and develop a preliminary coding frame, following Braun and Clarke's methodology [7]. This frame was then applied to analyse the subsequent two deployments, with open coding used to identify additional themes and enrich existing ones.

This process resulted in five themes, derived from 249 coded units, that describe how participants interpreted, configured, and problematised multimodal GenAI within everyday social and systemic settings. We summarise the themes below, illustrating each with quotes drawn from participant scenarios and discussions.

### 5.1 Theme 1: Accountability and Cultural Adaptability (51 units)

Participants frequently reflected on how accountability becomes distributed across GenAI assemblages, complicating attributions of responsibility and transparency, particularly in workplace and healthcare settings. A participant noted: *"People could just pass their mistakes off to the AI—like, 'that was its idea, not mine.'"* Another scenario raised questions around shared accountability: *"How do we understand responsibility in a doctor–AI assemblage?"* Participants also highlighted cultural variation in how agency and privacy are valued, with one noting: *"In China, giving agency to the AI is less desired, but sacrificing privacy for health aid is preferred."*

These reflections reveal how GenAI reshapes immediate human–technology relations and also interacts with broader cultural norms around responsibility, agency, and acceptable trade-offs.

### 5.2 Theme 2: Intuition and Empathy in Decision-Making (55 units)

Scenarios involving care and health contexts prompted participants to consider how GenAI might disrupt human intuition and empathetic practice. One participant reflected: *"The AI could diminish healthcare workers' intuition and group collaboration."* Others raised concerns about the redefinition of relational care: *"Replacing a family member's care with AI changes what family does and means."* However, some participants also saw potential for GenAI to augment care practices: *"AI could help people interpret and dialogue with their own health data."*

These reflections illustrate tensions between technological support and the preservation of human-centred values, highlighting how GenAI systems can simultaneously extend and erode relational practices of care and decision-making.

### 5.3 Theme 3: Spatial Dynamics and Generative Capability (23 units)

Participants reflected on how GenAI systems reorganise social and spatial boundaries. In one scenario, a participant described their ambivalence toward technological reliance: *"She felt naked without her gadgets, but there was also a sense of freedom."* Others raised concerns about the extension of GenAI into private data spaces: *"How much of her biometric data is used and shared beyond her family and doctors?"* The blurred spatiality of GenAI-mediated interactions in group settings was also noted: *"It's a room full of avatars, and you don't even know which one is the AI."*

These reflections show how GenAI challenges traditional distinctions between private, social, and public domains, creating configurations of presence, agency, and exposure.

### 5.4 Theme 4: Configurations of Care (74 units)

Participants surfaced multiple framings of care that extended beyond efficiency or convenience. In one scenario, a participant described the AI's influence on medical decisions: *"It's like having a second opinion across the equipment and carers."* Another scenario prompted reflection on the AI's role in child development: *"If your kid grows up with the AI spoon adjusting itself, do they still learn to listen to their body?"* Participants discussed the trade-offs introduced by embedding GenAI capabilities into everyday routines, noting how ongoing engagement could reconfigure dependencies and shift traditional practices of care. These reflections suggest that GenAI can both extend and displace care, depending on how relational roles are configured over time.

### 5.5 Theme 5: Shifting Roles and Dependencies (46 units)

Participants highlighted the ambiguous agency of GenAI systems—functioning both as helpers and as sources of confusion. One participant reflected on this tension: *"The AI made the child feel better, but the conflicting advice confused the parent even more."* Others discussed how anonymity mediated by GenAI complicated transparency and inclusion: *"It was freeing to speak through the avatar, but it also meant no one knew whose ideas were whose."* These dynamics reveal how GenAI reshapes roles and dependencies, masking or redistributing agency in ways that affect trust and responsibility. Requiring careful design that fosters trust while making agency legible within relational configurations.

## 6 Extending the Design Pack via The "GenAI Relations Framework"

Informed by scenarios and reflections across deployments, we developed a framework that extends the design pack to support exploration of relational dynamics in Human–GenAI interaction. Grounded in assemblage theory, the framework foregrounds how people, technologies, infrastructures, and norms form shifting configurations as multimodal GenAI systems are introduced. These are treated not as fixed structures, but as emergent assemblages: distributed, dynamic, and open to reconfiguration. The framework supports both analysis and ideation by attending to how agency is distributed, proximity negotiated, and visibility modulated. It consists of three dimensions surfaced across participant engagements: Generative Capability, Spatial Proxemics, and Awareness of Relation by Others. Together, these offer a structured way to configure, interrogate, and reimagine how GenAI systems mediate and reshape social and systemic relations.

**Dimension One - Generative Capability:** Explores the spectrum of GenAI's generative ability.

**Scripted** ——— **Semi-scripted** ——— **Dynamic** ——— **Spontaneous**

At the *scripted* end, GenAI uses predefined responses, such as structured health advice based on fixed protocols. *Semi-scripted to Dynamic* responses adapt to context while staying within established frameworks, balancing flexibility and reliability. At the *spontaneous* end, GenAI generates open-ended, unpredictable outputs, often in unstructured explorative conversations.

**Dimension Two - Spatial Proxemics:** Focuses on the proximity between humans and GenAI.

Intimate ——— Private ——— Social ——— Public

At the *intimate* space, GenAI handles personal data (e.g. health or emotional) with tailored sensitivity. In *private* spaces, it interacts within small groups such as a family, managing shared but contained information. In *social* spaces, GenAI mediates or participates in group interactions. At the *public* level, GenAI operates openly, leveraging aggregate data for societal or community.

**Dimension Three - Awareness of Relation by Others:** Explores how visible Human-GenAI interactions are to others.

Known ——— Partially Known ——— Obscured ——— Unknown

At the *known* level, all actors, such as colleagues or family, are aware of the Human-GenAI relationship. In *partially known* relations, only select actors, such as collaborators, are informed, while others remain unaware. At the *obscured* level, the relationship is intentionally hidden, with the AI operating in the background. At the *unknown* level, only a primary person is aware of the AI's involvement, ensuring privacy but potentially complicating trust and accountability.

## 6.1 Using the Framework to Analyse and Develop Scenarios

We demonstrate the framework using the scenarios from 4.4.

**The AI-Babysitter:** a worker hires a gig-economy "AI babysitter" to mimic her digital presence while attending a job interview, evading surveillance by her employer's AI systems.

- Generative Capability: Scripted. The GenAI simulates routine behaviour using voice playback and presence mimicry, raising concerns around authenticity, authorship, and deception.
- Spatial Proxemics: Intimate. The AI is embedded in the user's smartphone—an intensely personal device—yet operates across personal, organisational, and institutional domains.
- Visibility to Others: Unknown. The GenAI's presence is concealed, deliberately obscuring agency from systems and supervisors. This relational opacity challenges norms of accountability and power.

This scenario makes visible how delegated agency to the AI babysitter and hidden operation configure assemblages for workplace surveillance, illustrating dynamics where power, multimodal AI, and norms co-produce surveillance relations.

**The Devil's AI-dvocate:** a GenAI system participates in team meetings by contributing dissenting viewpoints through an anonymous avatar, encouraging diverse perspectives.

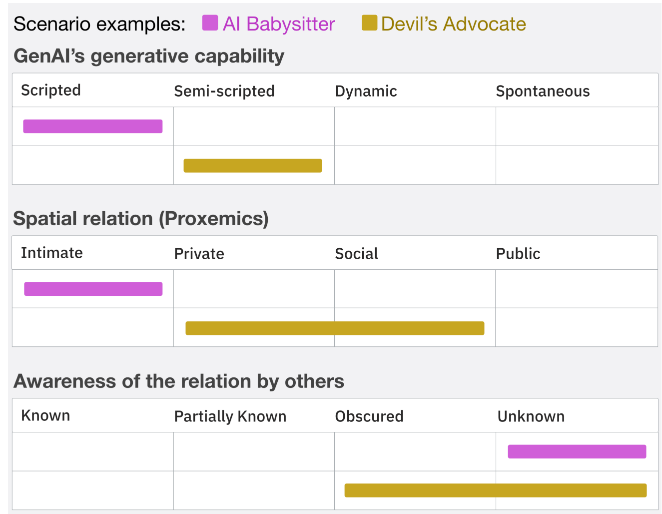


**Figure 3: This image presents two scenarios developed by participants mapped along the framework's dimensions.**

- Generative Capability: Semi-scripted. The AI balances provocation with fluency, learning from meeting dynamics while masking its identity.
- Spatial Proxemics: Private–Social. The AI operates in workplace meetings—shared, rule-governed spaces where relational trust and group identity shape interaction.
- Visibility to Others: Partially Known to Unknown. While participants know an AI is involved, they cannot attribute specific statements, raising issues of epistemic trust, recognition, and authorship.

This scenario raises questions of voice, identity, and social legitimacy. By diffusing agency across humans and AI actors in a social work setting, it provides novel configurations and raises questions about fairness of avatar access, transparency in social settings, and accountability for statements made by an AI whose identity is intentionally concealed.

In these scenarios, the framework surfaces *what* GenAI does and *how* it participates in—and transforms—assemblages of people, technologies, and environments. By examining the three dimensions and associated questions (Table 3), it offers levers for configuring agency, relational exposure, and accountability. Using the framework alongside the design pack supports FATE efforts by enabling researchers to explore how transparency is modulated through visibility, how fairness and voice are enacted or suppressed in shared spaces, and how accountability shifts when GenAI operates covertly or with unclear authorship. This approach surfaces critical questions early—before interfaces are built or models deployed—positioning scenario-led exploration as a complement to audit-based evaluations traditionally used in FATE research.

# 7 Discussion

The design pack enabled participants to generate nuanced, situated accounts of how GenAI might reshape everyday interaction. It proved adaptable across audiences and surfaced systemic, relational,

**Table 3: Outlines questions and opportunities for human-GenAI configurations via the framework's dimensions.**

| Dimension | Questions | Design Opportunity |
|---|---|---|
| Generative Capability | - Does the AI's output reinforce or challenge existing social roles or expectations?<br>- Who benefits, who might be marginalised, by the way GenAI generates content?<br>- Can people understand and challenge the logic of the AI's responses? | Adjust generativity (scripted → spontaneous) to probe how different roles, values, or power asymmetries are shaped, reinforced, or challenged in context. |
| Spatial Proxemics (physical AI) | - Who is included / excluded from the interaction due to the AI's physical or social positioning?<br>- How does location affect fairness of participation?<br>- What power or control is afforded by proximity? | Reconfigure spatial placement (intimate → public) to test how physical or networked proximity affects care, inclusion, and transparency. |
| Awareness by others | - Who knows the GenAI is present—and who doesn't?<br>- How does disclosure (or its absence) impact accountability, trust, or ethical use?<br>- Are power relations obscured or clarified by the AI's visibility? | Prototype different levels of visibility (known → unknown) to explore how transparency affects user trust, responsibility attribution, and perceived fairness. |

and ethical dynamics often overlooked in early-stage design. This section reflects on its contributions and future work opportunities.

## 7.1 Designing Beyond the Interface

Much GenAI development focuses on optimising outputs, model performance, or interface interaction. While important, this often overlooks the broader configurations in which GenAI operates—where agency is distributed, responsibilities shift, and long-term effects remain uncertain. Recent HCI work calls for moving beyond linear user–system models to view technologies as part of relational and systemic assemblages [2, 3, 20, 22, 28, 30, 32]. For example, Frauenberger [16] calls for approaches that surface the entangled nature of interaction—where people, infrastructures, and technologies co-construct meaning and shape one another's roles. Similarly, Giaccardi et al. [17] highlight the importance of "configurations," emphasising that design must account for how relations, rather than objects or users, are what gets designed. Our work responds to these calls by offering a method to surface entanglements early in design. The pack frames GenAI as a relational actor embedded in dynamic contexts, not just an input-output tool. Through scenario-building and reflection, it reveals broader implications—such as role ambiguity, systemic effects, and shifting boundaries of care and control. It provides a lightweight way to explore how multimodal systems unfold across social, spatial, and temporal scales before interface development begins.

## 7.2 Supporting Relational Enquiry in AI Design

The reflection component helped participants reason across interpersonal, systemic, and infrastructural levels. Prompts guided consideration of how GenAI might reshape care, shift agency, or blur accountability—surfacing hidden assumptions and ethical tensions through scenario-making. By supporting early reflection on relational dynamics, the method enables intervention before technical trajectories become fixed, allowing assumptions and configurations to be critically re-examined. This aligns with calls for more situated, value-sensitive design methods that foreground the lived dynamics of technology use [16, 27, 34]. It also complements existing FATE frameworks, which typically engage Fairness, Accountability, Transparency, and Ethics during implementation and post hoc through evaluations and checklists [13, 18, 24]. In addition to addressing these values retroactively, the pack enables participants to construct speculative scenarios in which power, visibility, and responsibility are actively configured—extending work on contextual fairness and situated ethics in sociotechnical systems [16, 27].

## 7.3 Method Adaptability and Limitations

The design pack proved adaptable across diverse audiences—from GenAI-familiar participants in workshops and classrooms to those with limited exposure in multidisciplinary settings. Its self-guided format required minimal explanation, demonstrating scalability and accessibility across academic and professional contexts. By grounding scenario development in familiar, domain-relevant technologies, the pack enables participants to explore how generative capabilities might reshape everyday human–AI relations. This approach supports speculative design while maintaining ties to lived experience and near-future possibilities. Some participants expressed interest in extending their concepts into mid-fidelity prototypes to examine how these relations evolve over time. While the method aligns with FATE principles, its outputs are not generalisable due to the shifting nature of AI regulation, use, and cultural context. Instead, the pack serves as a flexible tool for ongoing, situated inquiry into emerging sociotechnical configurations.

# 8 Conclusion

This paper introduced a scenario-based design pack to explore Human–GenAI relations in multimodal, social, and systemic contexts. Grounded in assemblage theory, the pack enables researchers to surface and interrogate how GenAI systems configure agency, responsibility, and care within everyday sociotechnical settings. Across three deployments with diverse groups (n=302), the pack demonstrated adaptability and generative capacity, helping participants construct scenarios and critically reflect on impacts beyond the interface—such as role ambiguity, power asymmetries, and social visibility. By embedding reflection within design activity, the pack offers a lightweight yet rigorous method for engaging with ethical and relational questions early in design. It complements FATE approaches by grounding fairness, accountability, and transparency in lived, multimodal configurations. Our work contributes the design pack and framework to advance relational enquiry into Human–GenAI relations and support the development of more inclusive GenAI systems.

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## References

[1] Josh Andres, Chris Danta, Andrea Bianchi, Sungyeon Hong, Zhuying Li, Eduardo Benitez Sandoval, Charles Patrick Martin, and Ned Cooper. 2024. Understanding and Shaping Human-Technology Assemblages in the Age of Generative AI. In *Designing Interactive Systems Conference*, July 2024. ACM, IT University of Copenhagen Denmark, 413–416. https://doi.org/10.1145/3656156.3658403
[2] Josh Andres, Chris Danta, Andrea Bianchi, Sungyeon Hong, Zhuying Li, Eduardo Benitez Sandoval, Charles Patrick Martin, and Ned Cooper. 2024. Understanding and Shaping Human-Technology Assemblages in the Age of Generative AI. In *Designing Interactive Systems Conference*, July 2024. ACM, IT University of Copenhagen Denmark, 413–416. https://doi.org/10.1145/3656156.3658403
[3] Josh Andres, Rodolfo Ocampo, Hannah R. Feldman, Louisa Shen, Charlton Hill, Caroline Pegram, Adrian Schmidt, Justin Shave, and Brendan Wright. 2024. On the Design and Study of an Installation for Office Workers to Amplify Temporal Diversity and Connection to Nature. https://doi.org/10.48550/arXiv.2405.11772
[4] Josh Andres, Christine T. Wolf, Sergio Cabrero Barros, Erick Oduor, Rahul Nair, Alexander Kjærum, Anders Bech Tharsgaard, and Bo Schwartz Madsen. 2020. Scenario-based XAI for Humanitarian Aid Forecasting. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems* (*CHI EA '20*), April 25, 2020. Association for Computing Machinery, New York, NY, USA, 1–8. https://doi.org/10.1145/3334480.3382903
[5] Zahra Ashktorab, Michael Desmond, Josh Andres, Michael Muller, Narendra Nath Joshi, Michelle Brachman, Aabhas Sharma, Kristina Brimijoin, Qian Pan, Christine T. Wolf, Evelyn Duesterwald, Casey Dugan, Werner Geyer, and Darrell Reimer. 2021. AI-Assisted Human Labeling: Batching for Efficiency without Overreliance. *Proc. ACM Hum.-Comput. Interact.* 5, CSCW1 (April 2021), 89:1-89:27. https://doi.org/10.1145/3449163
[6] G Bell, J Burgess, J Thomas, and S Sadiq. 2023. Rapid Response Information Report: Generative AI - language models (LLMs) and multimodal foundation models (MFMs). *Australian Council of Learned Academies.* (March 2023).
[7] Virginia Braun and Victoria Clarke. 2019. Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health* 11, 4 (August 2019), 589–597. https://doi.org/10.1080/2159676X.2019.1628806
[8] J M Carroll. 2000. Five reasons for scenario-based design. *Interacting with Computers* (2000).
[9] John M. Carroll. 1994. Designing Scenarios for Human Action. *Performance Improvement Quarterly* 7, 3 (1994), 64–75. https://doi.org/10.1111/j.1937-8327.1994.tb00638.x
[10] John M. Carroll. 2003. *Making Use: Scenario-Based Design of Human-Computer Interactions.* MIT Press.
[11] Kate Crawford. 2021. *Atlas of AI: power, politics, and the planetary costs of artificial intelligence.* Yale University Press, New Haven.
[12] Andreas Dengel, Laurence Devillers, and Laura Maria Schaal. 2021. Augmented Human and Human-Machine Co-evolution: Efficiency and Ethics. In *Reflections on Artificial Intelligence for Humanity*, Bertrand Braunschweig and Malik Ghallab (eds.). Springer International Publishing, Cham, 203–227. https://doi.org/10.1007/978-3-030-69128-8_13
[13] P. Alex Dow, Jennifer Wortman Vaughan, Solon Barocas, Chad Atalla, Alexandra Chouldechova, and Hanna Wallach. 2024. Dimensions of Generative AI Evaluation Design. https://doi.org/10.48550/arXiv.2411.12709
[14] Anthony Dunne and Fiona Raby. 2013. *Speculative Everything: Design, Fiction, and Social Dreaming.* MIT Press.
[15] Christopher Flathmann, Beau G. Schelble, Patrick J. Rosopa, Nathan J. McNeese, Rohit Mallick, and Kapil Chalil Madathil. 2023. Examining the impact of varying levels of AI teammate influence on human-AI teams. *International Journal of Human-Computer Studies* 177, (September 2023), 103061. https://doi.org/10.1016/j.ijhcs.2023.103061
[16] Christopher Frauenberger. 2019. Entanglement HCI The Next Wave? *ACM Trans. Comput.-Hum. Interact.* 27, 1 (November 2019), 2:1-2:27. https://doi.org/10.1145/3364998
[17] Elisa Giaccardi and Johan Redström. 2020. Technology and More-Than-Human Design. *Design Issues* 36, 4 (September 2020), 33–44. https://doi.org/10.1162/desi_a_00612
[18] Joachim de Greeff, Maaike HT de Boer, Fieke HJ Hillerström, Freek Bomhof, Wiard Jorritsma, and Mark A. Neerincx. 2021. The FATE System: FAir, Transparent and Explainable Decision Making. In *AAAI Spring Symposium: Combining Machine Learning with Knowledge Engineering*, 2021. 266–267. Retrieved April 23, 2025 from https://ceur-ws.org/Vol-2846/paper35.pdf
[19] N. Katherine Hayles. 2016. Cognitive Assemblages: Technical Agency and Human Interactions. *Critical Inquiry* 43, 1 (2016), 32–55.
[20] N. Katherine Hayles. 2017. 5. Cognitive Assemblages: Technical Agency and Human Interactions. In *5. Cognitive Assemblages: Technical Agency and Human Interactions.* University of Chicago Press, 115–141. https://doi.org/10.7208/9780226447919-007
[21] Don Ihde and Lambros Malafouris. 2019. Homo faber Revisited: Postphenomenology and Material Engagement Theory. *Philos. Technol.* 32, 2 (June 2019), 195–214. https://doi.org/10.1007/s13347-018-0321-7
[22] Malou Juelskjær and Nete Schwennesen. 2012. Intra-active Entanglements – An Interview with Karen Barad. *KKF* 1–2 (March 2012). https://doi.org/10.7146/kkf.v0i1-2.28068
[23] Agnes Mercedes Kloft, Robin Welsch, Thomas Kosch, and Steeven Villa. 2024. "AI enhances our performance, I have no doubt this one will do the same": The Placebo effect is robust to negative descriptions of AI. In *Proceedings of the CHI Conference on Human Factors in Computing Systems* (*CHI '24*), May 11, 2024. Association for Computing Machinery, New York, NY, USA, 1–24. https://doi.org/10.1145/3613904.3642633
[24] Michael A Madaio, Luke Stark, Jennifer Wortman Vaughan, and Hanna Wallach. 2020. Co-Designing Checklists to Understand Organizational Challenges and Opportunities around Fairness in AI. (2020), 20.
[25] Afra Mashhadi, Annuska Zolyomi, and Jay Quedado. 2022. A Case Study of Integrating Fairness Visualization Tools in Machine Learning Education. In *CHI Conference on Human Factors in Computing Systems Extended Abstracts*, April 27, 2022. ACM, New Orleans LA USA, 1–7. https://doi.org/10.1145/3491101.3503568
[26] S. C. Matz, J. D. Teeny, S. S. Vaid, H. Peters, G. M. Harari, and M. Cerf. 2024. The potential of Gen AI for personalized persuasion at scale. *Sci Rep* 14, 1 (February 2024), 4692. https://doi.org/10.1038/s41598-024-53755-0
[27] Lisa P. Nathan, Predrag V. Klasnja, and Batya Friedman. 2007. Value scenarios: a technique for envisioning systemic effects of new technologies. In *CHI '07 Extended Abstracts on Human Factors in Computing Systems* (*CHI EA '07*), April 28, 2007. Association for Computing Machinery, New York, NY, USA, 2585–2590. https://doi.org/10.1145/1240866.1241046
[28] Rodolfo Ocampo, Josh Andres, Adrian Schmidt, Caroline Pegram, Justin Shave, Charlton Hill, Brendan Wright, and Oliver Bown. 2023. Using GPT-3 to achieve semantically relevant data sonificiation for an art installation. *International Conference on Evolutionary and Biologically Inspired Music, Sound, Art and Design* (2023).
[29] Ihudiya Finda Ogbonnaya-Ogburu, Angela D.R. Smith, Alexandra To, and Kentaro Toyama. 2020. Critical Race Theory for HCI. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (*CHI '20*), April 23, 2020. Association for Computing Machinery, New York, NY, USA, 1–16. https://doi.org/10.1145/3313831.3376392
[30] Seda Özçetin and Heather Wiltse. 2023. Terms of entanglement: a posthumanist reading of Terms of Service. *Human–Computer Interaction* (November 2023), 1–24. https://doi.org/10.1080/07370024.2023.2281928
[31] Johan Redström and Heather Wiltse. 2019. Changing things: Innovation through design philosophy. In *Academy for Design Innovation Management Conference 2019: Research Perspectives in the Era of Transformations, London, UK, June 18-21, 2019*, 2019. Loughborough University,. Retrieved December 10, 2024 from https://www.diva-portal.org/smash/record.jsf?pid$=$diva2:1335969
[32] David Savat. 2013. The Human-Machine Assemblage. In *Uncoding the Digital: Technology, Subjectivity and Action in the Control Society*, David Savat (ed.). Palgrave Macmillan UK, London, 63–82. https://doi.org/10.1057/9781137025012_4

[33] Jelena Schmidt, Nienke M. Schutte, Stefan Buttigieg, David Novillo-Ortiz, Eric Sutherland, Michael Anderson, Bart de Witte, Michael Peolsson, Brigid Unim, Milena Pavlova, Ariel Dora Stern, Elias Mossialos, and Robin van Kessel. 2024. Mapping the regulatory landscape for artificial intelligence in health within the European Union. *npj Digit. Med.* 7, 1 (August 2024), 1–9. https://doi.org/10.1038/s41746-024-01221-6

[34] Phoebe Sengers and Bill Gaver. 2006. Staying open to interpretation: engaging multiple meanings in design and evaluation. In *Proceedings of the 6th conference on Designing Interactive systems* (*DIS '06*), June 26, 2006. Association for Computing Machinery, New York, NY, USA, 99–108. https://doi.org/10.1145/1142405.1142422

[35] Anca Serbanescu, Mariana Ciancia, Francesca Piredda, and Maresa Bertolo. 2022. Narrative-based human–artificial collaboration. A reflection on narratives as a framework for enhancing human–machine social relations. In *PROCEEDINGS of Pivot 2021: Dismantling/Reassembling Tools for Alternative Futures*. Design Research Society (DRS), 397–408.

[36] Jiao Sun, Q. Vera Liao, Michael Muller, Mayank Agarwal, Stephanie Houde, Kartik Talamadupula, and Justin D. Weisz. 2022. Explainability of Generative AI for Code through Scenario-based Design. *27th Int. Conf. Intelligent User Interfaces* (*IUI '22*), March, 2022. Association for Computing Machinery. https://doi.org/10.1145/3490099.3511119

[37] Martin Tomitsch, Joel Fredericks, Dan Vo, Jessica Frawley, and Marcus Foth. 2021. Non-human Personas. Including Nature in the Participatory Design of Smart Cities. *IxD&A* 50 (September 2021), 102–130. https://doi.org/10.55612/s-5002-050-007

[38] Dakuo Wang, Josh Andres, Justin D. Weisz, Erick Oduor, and Casey Dugan. 2021. AutoDS: Towards Human-Centered Automation of Data Science. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (*CHI '21*), May 07, 2021. Association for Computing Machinery, New York, NY, USA, 1–12. https://doi.org/10.1145/3411764.3445526

[39] Daniel Karl I. Weidele, Justin D. Weisz, Erick Oduor, Michael Muller, Josh Andres, Alexander Gray, and Dakuo Wang. 2020. AutoAIViz: opening the blackbox of automated artificial intelligence with conditional parallel coordinates. In *Proceedings of the 25th International Conference on Intelligent User Interfaces*, March 17, 2020. ACM, Cagliari Italy, 308–312. https://doi.org/10.1145/3377325.3377538

[40] Christine T. Wolf. 2019. Explainability scenarios: towards scenario-based XAI design. In *Proceedings of the 24th International Conference on Intelligent User Interfaces*, March 17, 2019. ACM, Marina del Ray California, 252–257. https://doi.org/10.1145/3301275.3302317

[41] John Zimmerman and Jodi Forlizzi. 2014. Research Through Design in HCI. In *Ways of Knowing in HCI*, Judith S. Olson and Wendy A. Kellogg (eds.). Springer, New York, NY, 167–189. https://doi.org/10.1007/978-1-4939-0378-8_8