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(Re-)Thinking Empathy's Materiality in HCI

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Abstract

The EmpathiCH workshop series has, over three iterations, unpacked how empathy is conceptualized, measured, and used in HCI, identifying both its potential benefits and notable pitfalls. Despite these discussions, the diverse roles of empathy in research and practice remain fragmented and under-theorized. This fourth iteration seeks to consolidate perspectives by situating empathy within a *sociomaterial* framework. We propose exploring three dimensions—*technology*, *social practices*, and *context*—that shape how empathy is conceptualized and applied. The workshop will combine an interactive, discussion-centric format enabling participants to share experiences, debate perspectives, and collaboratively analyze cases across these dimensions. Outcomes will contribute to co-developing a sociomaterial taxonomy for empathy in HCI, offering conceptual clarity and practical guidance for design. Participants will engage

in critical dialogue, connect with peers, and contribute directly to shaping the future of empathy-centered approaches in HCI.

CCS Concepts

• **Human-centered computing** → **HCI theory, concepts and models.**

Keywords

Empathy, Empathy-Centric Design, Sociomaterial Perspectives

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1 Motivation

Although empathy is widely recognized as essential for human interaction, the lack of consensus in scholarly discourse across disciplines regarding its definition, characteristics, application, and manifestation requires critical scrutiny [18]. Cuff et al. [8] describe empathy as a multidimensional construct consisting of cognitive and affective dimensions, defining empathy as the ability to recognize and understand another person’s situation and feelings, as well as to respond emotionally to them. Despite its multi-dimensional underpinnings and versatile applications, Genç and Verma [18], in their scoping review on empathy, reveal that within Human-Computer Interaction (HCI) empathy is often confounded with emotions and affect, which reveals only part of the picture. Within HCI, empathy manifests as an interactional quality in intelligent interfaces and as a design principle shaping researcher-participant relationships. Applications span diverse fields including *a*) medical and health [2, 34, 40, 69, 79], *b*) education [3, 78, 80], *c*) politics and bridging racial divides [50], *d*) gaming [3, 19], and *e*) design [16, 18, 29, 65, 67, 68, 77, 85]; and technologies including *a*) virtual and mixed reality [3, 40, 53, 76], *b*) mobile and wearable devices [25, 43, 60], and *c*) conversational agents and LLMs [7, 15, 17, 32, 62, 63, 66, 69, 70]. These manifestations extend beyond traditional socio-technical intersections [5]—they are *constitutively co-constructed*. Empathy’s technological and design applications cannot be separated from the socio-cultural contexts that realize and shape them. Consequently, motivated by sociomaterial perspectives [33, 44], this workshop will critically examine empathy’s role and manifestations in technological development and reproduction (e.g., LLMs displaying empathy towards users) as well as within research and design practices (e.g., researchers’ empathy directed towards target users/communities to understand their needs).

Sociomaterial perspectives (or *sociomateriality*) examine how technology, work, culture, and governance are entangled within organizations [33, 44], such as in automation’s integration with human workers [20]. Drawing from these perspectives, we propose that empathy’s role in technology development and design requires critical scrutiny. Empathy is employed to understand target users and communities [16, 29, 65, 68, 73, 77, 85]. However, researchers’ intentions to empathize—shaped by their dispositions, assumptions, experiences, language, narratives, and meaning-making—significantly influence design outcomes, yet risk disregarding or rejecting the lived experiences of those they design for [4, 71, 72]. Implicit power relationships between researchers and communities often presuppose attributes about those very communities, yielding technologies that misalign with user needs and face poor adoption [4, 14]. Simultaneously, empathy is designed as an interactional quality within technologies, co-producing diverse empathic forms and affordances that shape users’ perceptions, experiences, and decisions [7, 17, 47, 51, 53, 61, 64]. This entangled nature—empathy as both tool and material—necessitates systematic rethinking. This workshop bridges the gap between myriad empathic systems and coherent frameworks by examining empathy’s role, affordances, materialities, temporalities, and manifestations through *sociomaterial perspectives*, working toward a taxonomy for meaningful and responsible empathy research in HCI. Our scrutiny of empathy

within HCI parallels previous reflections on the materiality of interaction [23, 81].

Previously organized scholarly discourses, particularly in the form of workshops at previous CHI conferences—**CHI’22** [37], **CHI’23** [14], and **CHI’24** [11]—have presupposed the role and stature of empathy in the design process, with their focus on *Empathy-Centric Design*. They brought to light *a*) the diverse applications of empathy in HCI (e.g., gig workers [39], parenting [87], architecture [57]), *b*) the challenges and in some cases the lack of validated instruments to gauge, assess, and communicate empathy of target users and communities and that of the researchers [13, 14, 18], and *c*) challenged the dominant and individualistic conception of empathy by extending it beyond the individual [11, 18]. Critical perspectives have also emerged regarding the overuse, misuse, and misinterpretation of empathy [10, 30, 42, 45], or misusing empathetic HCI agents [12]. The dialogic nature of the previous workshops provided more incisive but qualitative comments on the “term” empathy: its various definitions, complex operationalization, variability across subfields of HCI, and the need for a framework to help traverse the topic—which we aim to explore in the current workshop. Meanwhile, we have grown an engaged and dedicated research community, with a steady influx of new members¹ and the introduction of a podcast series *Conversations on Empathy-Centered Design*² to better understand the role and challenges of using empathy in HCI.

Building on the discourses and inquiry from previous workshops, this workshop consolidates these interwoven yet epistemologically diverse perspectives through exploration, analysis, and synthesis grounded in sociomaterial frameworks, ultimately developing a taxonomy to guide empathy’s role in HCI research. Specifically, we create a cohesive overview connecting diverse topics—empathy and social behavior, user experience, affective computing, design, AI, and XR—encompassing their definitions, implementations, and assessments through three themes: 1) technologies, their empathic affordances and materialities, 2) social practices of empathy in design and research, including varied actors’ roles, and 3) empathy’s context, situatedness, intentionality, and temporality. Through discussions of challenges, opportunities, ethics, and critical considerations grounded in *sociomaterial perspectives*, we develop a comprehensive conceptual lens or taxonomy. Using the thematic breakdown (Section 1.1) and *two-phase* program (Section 4), we structure ongoing empathy research in HCI for academics and practitioners.

1.1 Sociomaterial Perspective on Empathy in HCI

In this workshop, we adopt the *sociomaterial lens* [33, 44] along with its constitutive dimensions of *material* (i.e., technology and its productions), *social* (i.e., actors who exercise and use empathy), and *context* (i.e., where empathy is exercised along with the inherent intentionality and temporality of its manifestation). In this way, we aspire to examine how empathy is or might be defined, interpreted,

¹As assessed through increasing registrations on our Slack platform.

²Conversations on Empathy-Centric Design: <https://empathich.com/conversations/>.

and applied along those dimensions, how empathy is assessed, conceptualized, and applied temporally, and how empathy manifests in practices or in technological productions.

1.1.1 Empathic technologies, their materialities, and affordances. The inherent materiality (the 'technological' form) and material agency (the ways in which technology acts in practice) of technologies strongly shape their affordances, which in turn condition how they are, and can be, used in social contexts in the first place, and the types of empathic interactions they enable. The essential role of materiality in understanding empathic technologies is clearly exemplified by analyzing today's emerging technologies, such as Large Language Models (LLMs) and Extended Reality (XR).

Technologies simulating empathy: LLMs are increasingly sophisticated at mimicking human behavior through language. Because language carries emotional meaning, these systems can recognize and generate affective cues, sometimes outperforming humans in empathy-related tasks [69]. LLMs demonstrate cognitive and affective empathy by understanding users' context and affective behavior and adapting outputs accordingly [17]. This focus on empathic technology is evident in patient care—where conversational agents communicate diagnoses, provide medical advice, and offer psychological support [2, 34, 69, 79]—as well as in automated customer support [28, 84] and human-robot interaction [6, 48, 49]. However, empathic interaction is bidirectional: interacting with empathic systems impacts users' emotional states, affecting perceived system capability and directly influencing emotions (e.g., generating guilt, lowering anger) [17, 38]. This raises critical ethical and practical questions concerning their simulation.

Technologies mediating empathy: A large body of research investigates how technology enables or enhances empathic interaction between humans in remote or virtual scenarios [9, 26, 54]. XR technologies—particularly VR—have been leveraged as empathy-mediating systems through their immersive, spatial, and embodied materiality. By providing virtual simulations and embodied experiences, immersive technologies enable technologically mediated perspective-taking, the essential mechanism of empathizing. Such attempts span medical, psychological, educational, and religious fields [46]. For example, VR perspective-taking lets participants experience discrimination from marginalized groups' viewpoints, increasing empathic concern and prosocial attitudes [27]. VR has also been explored where humans already use simulated perspective-taking to develop transferable empathic skills safely, such as fiction reading [21], showing how technological immersion can deepen character identification and enhance empathic responses [52]. When designing such technologies, increased empathy is often assumed purely positive; yet immersive materialities, while affording powerful perspective-taking, risk oversimplifying complex experiences, raising concerns about authenticity, agency, and the ethics of representation [46]. LLMs and XR exemplify two distinct productions of empathy emerging from their material agency: disembodied linguistic systems afford *empathic simulation*, while immersive embodied systems afford *empathic mediation*. This raises open questions for designing systems that increasingly simulate or mediate empathy:

- *How do different technological materialities shape human perceptions, attitudes, decisions, and experiences of empathy?*
- *Which aspects of these materialities pose risks, and which afford novel forms of empathic interaction?*

1.1.2 Social practices of empathy in design and research. This dimension covers empathy's role and manifestations in research and design practices.

Empathy from researchers and design practitioners towards users: To incorporate empathy in research and design practice, practitioners must grasp user emotions and societal context [35]. Designing empathic systems for specific user groups requires different approaches: a system creating empathic interaction with children, such as a social robot [75], might focus on different interaction aspects than a care-bot for older adults [6] or a system supporting emotional understanding and self-reflection. Cultural backgrounds and individual identities are also critical when developing empathic systems [7]. Designing for empathy raises questions about how designers and researchers can adopt empathic roles in the design process, and how their sociological backgrounds affect their empathic agency. Power dynamics between practitioners and target communities are especially relevant when designing with marginalized communities [4, 41, 55, 71, 74], raising questions about how designers and researchers can reflect on, understand, and regulate these implicit dynamics and their effects on design outcomes.

- *What roles should designers and practitioners consider adopting to approach the design process in an empathic way?*
- *How is empathic agency influenced by different sociological backgrounds of design and research practitioners?*
- *How should designers and practitioners approach the design process to avoid reinforcing implicit power dynamics?*

Empathy from users towards design and research practitioners: Empathy fosters connections between users and stakeholders. While designers and researchers seek to understand users, it is equally important for community members to appreciate each other's perspectives. Methods such as probes [83] and simulations [22, 59] have been used to deepen understanding of users, stakeholders, and their experiences [82]. Co-design further promotes inclusivity by bridging knowledge gaps between designers and user groups [4], potentially triggering users' empathy towards practitioners. This duality of empathy raises questions about its impact on design and challenges the HCI community to find ways to capture and productively leverage it.

- *How does empathy from users towards researchers and design practitioners shape the design process?*
- *How can we capture and productively leverage this duality of empathy as part of the design process?*

Empathy among researchers and design practitioners: While empathy is often framed as researchers' and practitioners' understanding of users, these practitioners also work within teams. Scholarship in management sciences identifies social cohesion and psychological safety as affective team emergent states—"cognitive, affective, and motivational states of teams" that are dynamic in

nature [36, 58]. Such states influence the effectiveness of team processes in achieving outcomes [24]. If empathy is understood as emotional attunement within teams, it becomes important to examine how members experience and express empathy toward each other and how this shapes design and research outcomes [56]. This raises questions about the role of interprofessional empathy—empathy among researchers and practitioners—in the design process.

- *How does interprofessional empathy among researcher and design practitioners shape the design process?*
- *How does interprofessional empathy manifest as part of an empathic design process?*

1.1.3 Context, situatedness, intentionality, and temporality of empathy. Although the aforementioned themes have been substantially scrutinized within HCI and adjacent communities, empathy’s situatedness within contexts or organizations and their intentionality in leveraging empathy remains an emerging area. This theme encompasses contexts (or organizations) where empathy is leveraged through technological interventions—such as social robots and conversational agents—to maximize short-term gains, subdue users’ conscious agency, or intentionally compromise their dignity. Lacey and Caudwell [31] discuss how “cuteness” as an aesthetic in social robots can be leveraged at mass scales to collect emotional data on users (a “*dark pattern*”). Similarly, Zhang et al. [86] and Genç et al. [17] examine how empathic conversational agents deployed to enhance engagement can simultaneously serve as instruments for manipulation, personal and material harm, or even compromising users’ fundamental rights. These examples underline the urgent need for a critical examination of the “*institutionalization of empathy*” and the ways it can be integrated with dominant scholarly discourses on ethical and responsible technologies, their governance, and the accountability and responsibility of institutions which embody empathy as a central quality of their products and services. Although recent regulations, particularly the EU AI Act, prohibit systems from recognizing or manipulating users’ emotions or empathy [1], to enforce such regulations, beyond mere conformism, requires critical scrutiny of empathy’s situatedness and intentionality, including its temporality (how soon or for how long empathy manifests or affects people’s perceptions and decisions).

- *How can we distinguish between legitimate empathic design and its institutionalized misuse?*
- *How can we disentangle the politics and economics of empathy, and delineate who profits from its use?*
- *What frameworks and tools can ensure accountability and ethical use of empathy in organizations?*

2 Organizers

Below, we introduce workshop the organizing team—junior and senior researchers and practitioners from academia and industry—and the diverse, complementary perspectives they bring to the workshop topics.

SOPHIA PPALI (<https://www.sppali.com>) is a Researcher in the Extended Experiences group at CYENS Centre of Excellence, Cyprus and an Associate Lecturer in UX and Interaction Design at the University of Central Lancashire. Her work explores how immersive technologies can be designed and studied in ways that put people’s lived experiences at the centre.

MIREIA YURRITA (<https://mireiayurrita.github.io/>) is a Postdoctoral Researcher at the Responsible AI group at Utrecht University, the Netherlands. Her work focuses on developing methods that support the design of AI systems that work and grow alongside humans.

ALICE VITALI (<https://www.tudelft.nl/en/ide/about-ide/people/vitali-av>) is a PhD candidate at TU Delft, researching the intersection of reading, cognition, and HCI. Her work focuses on designing intelligent and immersive interfaces that support and enhance the pleasure of reading.

ALOK DEBNATH (<https://alokdebnath.github.io>) is a PhD candidate at the ADAPT Centre, Trinity College Dublin. His current research focuses on analyzing empathetic tendencies in conversational agents.

LUCIE FLEK (<https://www.b-it-center.de/caisa>) is a Full Professor at the University of Bonn, leading the Data Science and Language Technologies group. Her main interests lie in Machine Learning and empathy research for natural language processing (NLP), including AI robustness and safety.

ANDREA CUADRA (<https://www.andreacuadra.com>) is an Assistant Professor of Computer Science at Olin College of Engineering. Her work lies at the intersection of interaction design, inclusion, and AI.

SVEN MAYER (<https://sven-mayer.com/>) is a Full Professor at TU Dortmund University. His research sits at the intersection between HCI and AI, where he focuses on the next generation of computing systems. He designs, builds, and evaluates future AI-driven human-centered interfaces.

MICHAL LAHAV (<https://research.google/people/michallahav/>) is a Staff User Experience Researcher at Google Research. She focuses on uncovering challenges within the generative AI and natural language understanding space, primarily on improvements for underserved and marginalized communities.

TIFFANIE HORNE (<https://www.tiffaniehorne.com>) is a User Experience Researcher at Google. With an interdisciplinary background in Special Education and Human-Computer Interaction, and passionate about creating socially responsible technological experiences, she helps launch more inclusive products through diversifying external users’ voices early and often in the product life cycle.

ANEESHA SINGH (<https://profiles.ucl.ac.uk/30634-aneesha-singh>) is a Full Professor in HCI and Digital Health at the University College London Interaction Centre. She is interested in the design, adoption, and use of personal health and well-being technologies in everyday contexts, focusing on sensitive and stigmatized conditions.

GIULIA BARBARESCHI (<https://giulia-barbareschi.com>) is a professor at University of Duisburg Essen and leads the Inclusive Technology and Collective Engagement group at the Research Center Trustworthy Data Science and Security, part of the University Alliance Ruhr in Germany. she works with marginalised individuals to explore how to leverage technologies to improve meaningful inclusion in societies.

ANDREA MAURI (<https://andreamauri.me>) is a Junior Professor at UCBL, affiliated with the LIRIS Lab. He investigates how to integrate human factors in computational methods to design, and develop data-intensive applications.

HIMANSHU VERMA (<https://vermahimanshu.com/>) is an Assistant Professor at TU Delft. He studies the role of empathy in facilitating human-AI collaborations, including AI-mediated interpersonal collaboration.

3 Pre-Workshop Plans

Our goal is to bring together researchers and practitioners from ACM SIGCHI and beyond, including those working in HCI, design, social sciences, ethics, technology development, psychology, and related fields. The organizing team (see Section 2) embodies this diversity and will extend invitations to a broad range of communities.

In preparation for the workshop, we will launch a public call for two types of contributions. *First*, instances of empathy's materialities—cases where empathy is embedded in technologies, practices, or design processes. These will be gathered via a shared Miro board open to both prospective attendees and the wider HCI community, allowing participation beyond those physically present. Contributors can post short descriptions, examples, or links, and the board will remain open through the event as a collaborative resource. *Second*, position papers or statements of interest from prospective attendees, allowing them to situate their work and perspectives in relation to empathy and informing diverse group formation. We will announce the call via the ACM SIGCHI mailing list, the workshop website³, organizers' networks, and the *EmpathiCH* Slack. Submissions will be juried for relevance, balance, and originality, targeting 35–50 participants to ensure diversity and meaningful exchange. Accepted papers will be curated with instances from the open call and insights from previous *EmpathiCH* iterations, organized along sociomaterial dimensions to inform workshop activities (Section 4).

4 Workshop Activities

The workshop consists of two consecutive sessions at the conference (3 hours) and it will be broken into two sessions. In the *first* session, participants will collaboratively develop an understanding and overview of empathy's role in HCI. In the *second* session, participants will collectively discuss empathy's current status and identify potential research opportunities from a sociomaterial perspective. The workshop organizers will coordinate and facilitate activities within these two sessions, including group activities (described below), with each group assigned one co-organizer as a facilitator.

[Session A] Mapping Empathy to Sociomaterial Perspective Dimensions. Drawing on the sociomaterial perspective and pre-workshop inputs, this session introduces participants to empathy's diverse applications within HCI, exploring its varied facets including definitions, applications, experiences, methodologies, and affordances.

The session will begin with brief introductions and an icebreaker, allowing participants to reflect on empathy in their own work and establish a shared foundation (~20 minutes). Participants will then work with a physical collaborative canvas displaying all pre-gathered materials from Section 3—community-submitted instances,

insights from previous *EmpathiCH* workshops, and attendees' statements of interest—as printed cards (~35 minutes). Working in groups, participants will map and cluster these materials across sociomaterial dimensions: *technology and materiality*, *social practices*, and *contexts and intentionality*. This activity highlights overlaps, tensions, knowledge gaps, and unaddressed questions about how empathy is embedded, challenged, or transformed in HCI. Each group will have at least one organizer to facilitate activities and discussions.

Each group (5–6 participants) will subsequently share its maps with the room, allowing commonalities and differences to be discussed and establishing a shared starting point for the second phase. The organizers will ensure that the groups are representative of the diversity of how empathy is used in technologies (e.g., AI, VR), methodologies (e.g., co-design), contexts (e.g., healthcare), and applications (e.g., inclusive interactions) (~35 minutes).

[Session B] Layering and Synthesizing a Taxonomy. Following the initial divergent phase, the second part moves toward convergence by refining the mapped material into a draft taxonomy. Groups will add temporal and intentional layers to the collaborative canvas, reflecting on how empathy emerges and evolves over time, aligns or conflicts with design intentions, and how shifts in scale and stakeholder relations reconfigure empathic practices (~30 minutes).

Participants will then formulate candidate taxonomies grounded in one or more sociomaterial dimensions, examining the assumptions, intentions, and effects embedded in each category and exploring how empathy is operationalized in current research and what opportunities or risks this reveals (~30 minutes). Groups will be reorganized based on affinity for particular dimensions, enabling participants to explore areas aligned with their expertise. To support continuity, participants will rotate between groups while at least one member remains to summarize previous discussions. Each group will present its proposed taxonomy, identifying convergences, tensions, and open questions.

We will conclude with a plenary synthesis, sketching a shared taxonomy of empathy's sociomateriality in HCI (~30 minutes). This draft will serve as the foundation for post-workshop collaboration, including canvas digitization, development of a living document, and preparation of a co-authored publication. The day will close with a summary of next steps, a group photo, and an informal social event to sustain connections beyond the workshop.

5 Post-Workshop Plan

As outlined in Section 4, the workshop proceedings, including group taxonomies, will be digitized and shared through the workshop website. The accepted submissions (position papers and design cases) will be published on CEUR-WS.org. We will also create a living document consolidating workshop outcomes for the broader HCI community to reference and improve upon. To further develop the sociomaterial taxonomy of empathy, organizers will invite attendees to co-author a conceptual paper informing HCI and adjacent communities on meaningfully leveraging empathy in their technologies, practices, and contexts. This collaboration will extend into a consolidated research agenda for empathy in HCI.

³<https://empathich.com>

6 Accessibility

To improve workshop accessibility, we will implement several measures. Authors must follow SIGCHI's Accessible Submission Guide⁴ when preparing position papers, design cases, and statements of interest. Organizers will review materials for accessibility compliance and assess participants' needs, collaborating with CHI Accessibility Chairs to accommodate special requirements. All content will include accessibility features such as alt-text.

7 250-word Call for Participation

We invite researchers, designers, and practitioners to join the workshop **(Re-)thinking Empathy's Materiality in HCI** at CHI 2026. This workshop critically examines empathy as both a tool in research and design practices and as a quality embedded in technologies such as conversational agents, XR, and Large Language Models. Through a sociomaterial lens, we explore empathy across three dimensions: *technologies and their affordances*, *actors and social practice*, and *context, situatedness, and intentionality*. Our goal is to disentangle diverse definitions, applications, and risks of empathy, and collaboratively develop a taxonomy to guide its responsible and meaningful use in HCI.

We welcome position papers, design cases, and provocations (2–4 pages, ACM single-column format) addressing these themes or presenting empirical, theoretical, or design perspectives on empathy in HCI. We particularly welcome perspectives from domains where empathetic design can advance research and practice, recognizing that applying an empathy-centric lens can benefit work across application areas such as healthcare interventions, educational technologies, human-robot interaction, assistive systems, or human-AI collaboration. Accepted authors will contribute to structured discussions and co-design activities during the workshop. Submit via EasyChair by **February 12, 2026 AoE**. Selection is based on originality, quality, relevance, and potential to stimulate discussion. Submissions will be juried by the organizing team. At least one author per accepted submission must attend the workshop *in-person*. For inquiries, contact **Sophia Ppali** (s.ppali[AT]cyens.org.cy) or **Alice Vitali** (A.Vitali[AT]tudelft.nl). Further details can be found at <https://empathich.com>.

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⁴Guide To An Accessible Submission: <https://sigchi.org/conferences/author-resources/accessibility-guide/>.

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