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Designing Collaborative Emergence: Between Intelligence Coordination and Knowledge Confluence

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ABSTRACT

Design practice is inherently relational, shaped by encounters with diverse ways of knowing that influence how problems are defined, solutions envisioned, and legitimacy attributed. Conventional approaches to collaboration, often framed through coordination and consensus, prove insufficient when participants operate from fundamentally different epistemologies, risking the reproduction of hierarchies or the silencing of alternative knowledges. This article examines design's potential as epistemic mediation, understood as a situated capacity to engage across difference without erasing it. Methodologically, it is grounded in a critical review of literature in design and anthropology, articulated with over two decades of professional practice in collaborative contexts and with the early theoretical foundations of ongoing doctoral research. The investigation is therefore conceptual and exploratory, aiming to provide a vocabulary for engaging with epistemic dimensions of design practice rather than reporting empirical findings. Its main contribution is the articulation of three analytical dynamics—Horizontal Epistemic Interfaces, Emergent Attention, and Contextual Amplification—which are proposed as conceptual orientations to reframe collaboration as a site of epistemic care, expanding design research's capacity to foster more situated and plural forms of collective world-making.

Keywords: Collaboration, Difference, Epistemic Mediation, Knowledge Ecologies, Participatory Design.

INTRODUCTION

Design is always situated in relation to others. Every project involves engagements—with clients, collaborators, institutions, communities, and the surrounding world—that bring diverse perspectives and forms of knowing into play. These encounters with difference shape design methods, priorities, and outcomes. From routine professional negotiations in design agencies, through multidisciplinary collaborations across government, industry, services, or nonprofit and community organizations, to cross-cultural or participatory projects with indigenous or traditional communities, designers continually navigate varying degrees of difference in how knowledge is understood and validated.

Contemporary discourses on collaboration often frame it through coordination paradigms—focused on aligning tasks, roles, and goals. While such approaches offer valuable insights into organizational efficiency and collective intelligence (e.g., Woolley et al., 2010; Malone, 2018), they fall short when collaborative challenges involve fundamentally different ways of

establishing what counts as valid knowledge. Coordination alone may inadvertently reproduce hierarchies, even while claiming collaborative intentions.

Differences in ways of knowing take multiple forms—sometimes methodological, sometimes cultural, and sometimes more fundamentally epistemological. Differences never meet on neutral ground; rather, they actively shape how problems are defined, how solutions are imagined, and how legitimacy is granted to particular forms of knowledge.

To understand these dynamics, we need to clarify what we mean by epistemology. Epistemology concerns how we know what we know—the assumptions, methods, and criteria different groups use to establish what counts as valid knowledge. For example, in design projects involving traditional communities, design teams may rely on structured research methods and data analytics to guide decision-making, while community participants emphasize oral histories, relational knowledge, and culturally embedded practices as valid and vital ways of knowing. These differences are primarily methodological but also reveal deeper epistemic distinctions. Recognizing and thoughtfully navigating this interplay is essential for fostering respectful, meaningful, and effective collaboration.

These differences can be understood as operating at multiple, interrelated levels—ranging from the individual to the ontological (see Figure 1). It is important to emphasize, however, that this sequence is merely a didactic representation rather than a rigid hierarchy. In practice, especially between the cultural, epistemological, and ontological levels, the boundaries are porous and often overlapping. In many situations, cultural differences also involve assumptions about what counts as knowledge (epistemological dimension) and about what exists or holds agency (ontological dimension). Several authors have shown that culture, knowledge, and reality do not operate as separate layers but as interdependent fields. As argued by Viveiros de Castro (2019), Brazilian anthropologist, and Descola (2023), French anthropologist, different ways of knowing derive from different ways of inhabiting the world. Thus, presenting these levels in an ascending order aims only to highlight the growing complexity and interdependence among these dimensions, without implying a fixed or linear sequence.

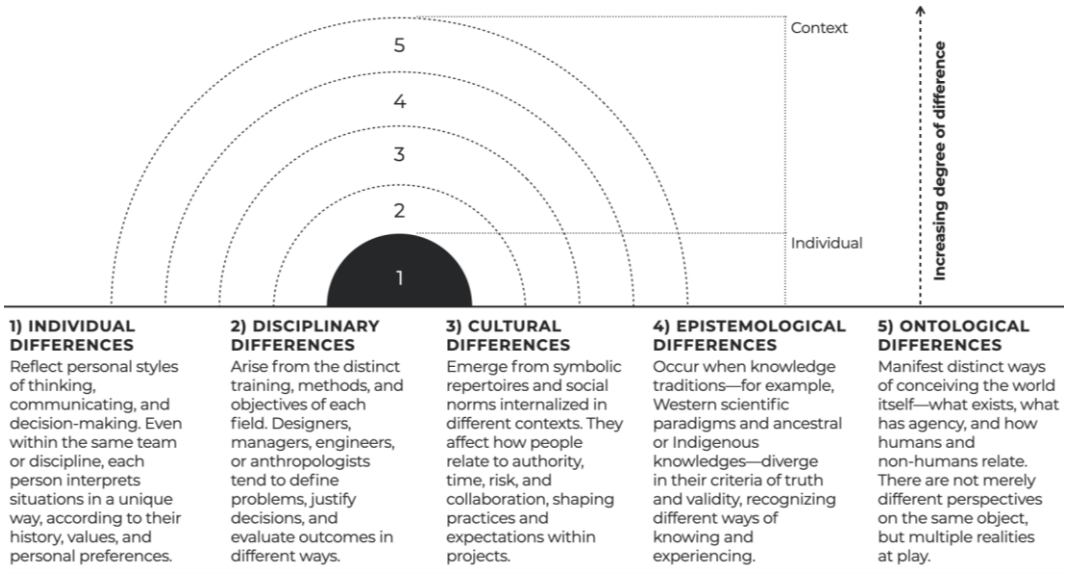

Figure 1. Levels of difference in collaborative encounters — from individual to ontological — illustrating how distinctions deepen and interconnect as different ways of knowing, acting, and understanding the world come into relation.

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These varying degrees of proximity and distance among participants can be visualized as overlapping and diverging layers within a collaborative field (see Figure 2). The diagram shows how some participants may share certain epistemic or cultural layers, while others remain distant across all levels, highlighting the situated and relational nature of mediation.

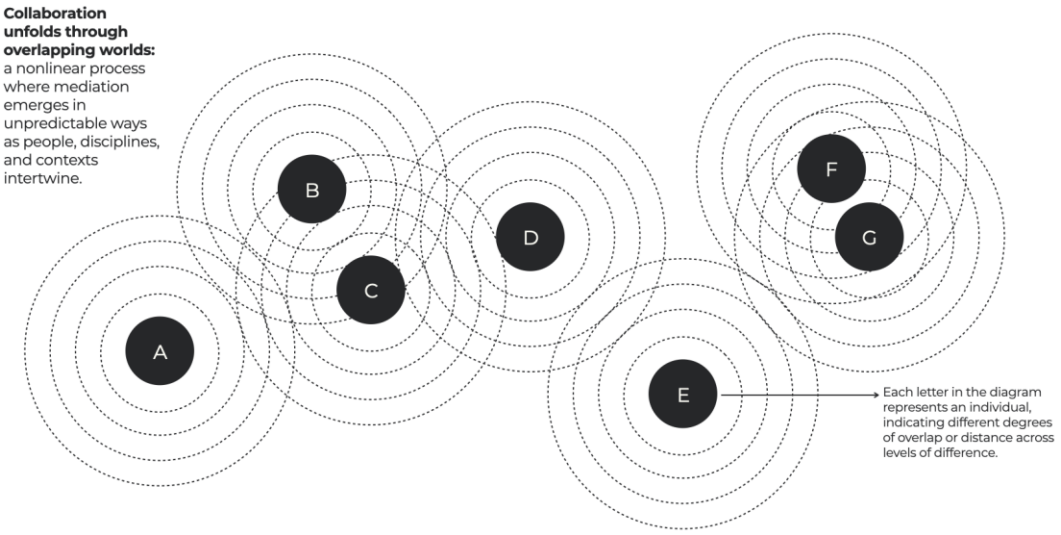

Figure 2. Overlaps and distances between worlds in collaborative groups show that mediation unfolds through partial proximities and untranslatable differences, revealing its situated and relational nature.

Our methodological approach combines theoretical reflection with situated engagement across professional, academic, and intercultural contexts. The discussion draws on the authors' diverse trajectories—spanning design, anthropology, communication, business, and human factors—and on extensive involvement in both practice and research. This plurality of perspectives, including experience in collaborative projects with traditional communities and in macroergonomics and corporate environments, provides a grounded basis for reflecting on how collaboration unfolds across different epistemic positions. Rather than seeking empirical generalization, the article adopts a constructivist and interpretivist orientation, viewing knowledge as situated and relational—emerging from the articulation between theory and lived experience. Reflexivity and critical awareness guide the analysis, positioning the researcher within, rather than outside, the processes examined.

From this perspective, we identify three recurring dynamics that appear significant when different ways of knowing encounter each other in design practice: horizontal epistemic interfaces, which describe moments when different approaches to knowledge meet without predetermined hierarchy; emergent attention, referring to responsiveness to what arises during encounters rather than adherence to predetermined procedures; and contextual amplification, which considers how local collaborative practices influence broader patterns of recognition and legitimacy.

Design occupies a distinctive position for engaging these dimensions. Unlike disciplines confined to specific subject matters, design operates across symbolic communications, material objects, organized services, and complex systems—each involving engagement with distinct forms of knowledge and validity criteria. The practical necessity of creating functional outcomes while navigating diverse perspectives means that designers routinely face situations where multiple ways of knowing intersect, sometimes harmoniously, sometimes in tension. Such differences may emerge in professional settings as collaborators negotiate priorities and responsibilities, in cross-cultural contexts involving diverse values and practices, or in epistemological contexts, where fundamentally distinct criteria for truth and

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evidence guide action. In all cases, mediation becomes possible through careful attention to the conditions of encounter, without assuming that consensus or uniformity is required.

This relational and temporal complexity of design practice is visually represented in Figure 3. The diagram depicts design as a mediating and relational practice that connects past, present, and future in a continuous flow between material and immaterial dimensions. By linking symbolic and material aspects, design articulates knowledge and values from different moments and spheres—visible and invisible—enabling the emergence of new realities. This reinforces the view of design as a relational field where mediation and collaborative emergence are central to creating and transforming worlds.

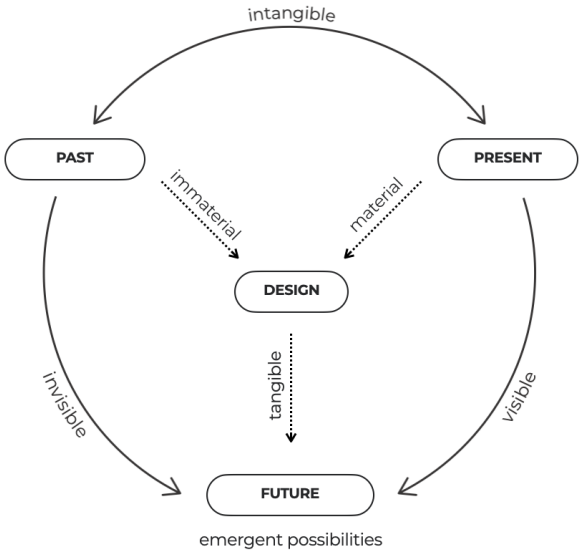

Figure 3. Design as a relational and mediating practice connecting past, present, and future through continuous articulation between material and immaterial dimensions (inspired by Fry, 2020). Adapted from Biancucci, 2025.

The article proceeds by establishing theoretical foundations that inform our understanding and analysis. Building on this foundation, the next chapter explores co-design and participatory design, highlighting some ethical, ontological, and political limits and implications. This structure links theoretical concepts with practical considerations, framing the three dynamics as analytical sensitivities for understanding collaborative encounters, followed by a discussion of contributions, limitations, and the tensions inherent in applying such insights while remaining open to revision through practice.

1. THEORETICAL FOUNDATIONS

Design does not exist outside the worlds it engages; rather, it actively shapes how realities are perceived, negotiated, and maintained within collective life. Encounters between diverse ways of knowing invariably unfold amid enduring asymmetries of legitimacy and representation. In mediating between perspectives, design operates within these preexisting power dynamics—sometimes enabling transformative possibilities, other times replicating hierarchies that render difference invisible or extractable. To grapple with these complexities, we draw on theoretical frameworks that expose both the limitations of coordination-centered approaches and the potentials of more experimental collaborative practices. Rather than aiming for seamless synthesis, we inhabit these productive tensions, embracing the openness and reflexivity that such engagement demands.

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1.1. Epistemological Foundations and Power Relation)

Donna Haraway, American scholar at the intersection of feminist theory and science and technology studies, radically challenges the myth of universal, objective knowledge by showing that all knowing is grounded in specific positions, relations, and embodied experiences (Haraway, 1988). Her seminal concept of "situated knowledges" reveals that what often passes as neutral scientific objectivity actually reflects the perspectives of those empowered by social and institutional structures—thus masking how gender, race, class, and other positionalities shape what is recognized as "truth." Rather than sliding into relativism, this insight opens the path toward what Haraway (in dialogue with Harding) calls a "strong objectivity": a committed, reflexive, and accountable knowledge-making practice that acknowledges its own limits while confronting complexity and power asymmetries. Central to Haraway's analysis is the idea that knowledge production methods and facilitation techniques cannot be understood as neutral instruments; rather, they are inherently embedded in epistemic and political positions—effectively "technologies of positioning" that shape which knowledges become visible and how they are interconnected. This dispels the fantasy of a disembodied, impartial facilitator and instead invites engagement from "split and contradictory" positionalities as critical resources for working with difference. Her notion of "partial connection" articulates a political-ethical commitment to sustained, responsible engagement among diverse knowledges that preserves their specificity, enabling richer and more reflexive understandings without collapsing difference into homogenization.

Boaventura de Sousa Santos, Portuguese sociologist of law and knowledge, critically examines how modern institutions construct "abyssal lines" that divide reality into visible zones—where scientific and legal knowledge are legitimized—and invisible zones—where entire epistemologies are rendered illegitimate and dismissed as "non-knowledge." This division results in what he terms epistemicide, the systematic destruction of alternative knowledges within dominant institutional regimes (Santos, 1998, p. 103). This abyssal thinking is deeply rooted in the coloniality of knowledge, which perpetuates colonial epistemic hierarchies constraining what counts as valid knowledge (Santos, Nunes, & Meneses, 2007), including in fields such as design. Santos proposes the concept of an "ecology of knowledges," a political-epistemic model that advocates for the sustained, non-hierarchical coexistence and dialogue among heterogeneous knowledge systems—technical, experiential, cultural, and intuitive—without forcing them into a single evaluative framework (Santos, 2010). Crucially, this dialogue requires "intercultural translation," a complex and reciprocal process that allows diverse ways of knowing to interact while maintaining their autonomy and specificity, forming temporary "constellations of knowledges" that generate situated and partial understandings without universalist claims.

1.2. Collaboration as Relational Transformation

Bruno Latour, French anthropologist and philosopher of science, fundamentally unsettles the modernist dualism separating "nature" from "culture," arguing famously that we have "never been modern" (Latour, 1993). What modernity claimed to purify into distinct domains—natural facts versus social values—has always been entangled in hybrid assemblages that exceed such clear-cut distinctions. These heterogeneous networks consist of humans and nonhumans alike—technologies, institutions, material artifacts, and natural forces—collaboratively shaping what is possible in collective existence. Within his Actor–Network Theory, Latour describes the constituents of these networks as "actants": entities possessing

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agency that influence and transform outcomes, regardless of whether they are human or not (Latour, 2005). Yet, agency is distributed, relational, and negotiated as actants continually engage in processes Latour calls "translation." Translation entails the dynamic and political renegotiation of interests, identities, and goals among actants, resulting in emergent configurations that cannot be reduced to any single actor's intent (Latour, 1986, 1999). For design practitioners, this foregrounds mediation as ongoing collective translation involving heterogeneous elements.

Isabelle Stengers, Belgian philosopher of science, develops a critical and complementary perspective through her concept of cosmopolitics, which calls for a deliberate "slowing down of political reasoning" to open temporal and conceptual space for hesitation, difference, and sensitivity beyond the impulse for rapid consensus or universal application (Stengers, 2018). Far from assuming a singular shared world, cosmopolitics insists on the irreducible plurality of multiple "worlds," each embodying distinct commitments and registers that resist premature closure or assimilation. This approach fundamentally departs from traditional cosmopolitanism by privileging multiplicity over universality and foregrounding a "cosmos"—a heterogeneous and unknown ensemble of worlds no single perspective can fully encompass. Such a stance fosters what Stengers terms an "ecology of practices": a relational space where diverse forms of knowledge and modes of validation coexist without collapsing into equivalence or hierarchy.

1.3. Dismantling Design's Foundational Myths

Cosenza, Pires, and Ponte (2022), Brazilian design scholars, offer a genealogical critique of enduring design myths—ideological narratives inherited from modernist projects that continue to shape both design theory and practice. Drawing on Roland Barthes's notion of myth as a communicative system that naturalizes contingent cultural constructs as self-evident, they uncover five central myths: design as problem-solving, neutrality, fixed methodology, universality, and form–function correspondence. These myths operate as ideological devices that obscure the political and epistemic commitments embedded in design, perpetuating exclusions and limiting epistemic pluralism.

The myth of design as problem-solving (pp. 3920–3923) is critiqued through Vilém Flusser's insight that attempts to control the world with technologies often produce unforeseen obstacles. The rhetoric of immediate problem resolution generates a solutionist urgency that truncates care and situated inquiry. Drawing on Tim Ingold (p. 3921), the authors emphasize that what designers call "problems" comprise dense, embodied, and skilled knowledges—accrued through long habituation rather than formal rules—making quick fixes reductive and erasing expertise. In response, they advocate reorienting design towards attentiveness to how problems are constituted, mediated, and transformed in situated, relational contexts.

The myth of design neutrality (p. 3923) is examined via Beatrice Warde's "crystal goblet" metaphor, which critiques the ideal of transparent, expressionless communication. Cosenza et al. argue that even ostensibly neutral design choices such as typography, color, and minimalist layouts carry cultural meanings and historical commitments. Neutrality thus functions as a rhetorical stance that masks particular social norms and power relations, often naturalizing dominant perspectives as universal and technical rather than political.

Regarding the myth of fixed methodology (pp. 3924–3926), the authors draw on Fabiana Heinrich's epistemological analysis alongside Nigel Cross, Karl Gerstner, Richard Buchanan,

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and Dijon de Moraes to challenge the reduction of design to repeatable, scientific procedures. Contrary to such rigidity, design practices are singular, context-dependent, and inventive interventions that resist systematization. This myth obscures the political, social, cultural, and ecological dimensions that fundamentally shape design work.

The myth of universality (pp. 3927–3929) is explored through the Bauhaus legacy, particularly Kandinsky's color–shape associations and Moholy-Nagy's photographic typography, which aspired to a universal visual language based on specific cultural and perceptual assumptions. By invoking postmodern critiques from Ellen Lupton and J. Abbott Miller, the authors demonstrate how universalist aesthetics suppress interpretive variation and social mediation, reinforcing perceptual norms of dominant groups and marginalizing alternative meaning-making modes.

1.4. Collective Intelligence Perspectives

Research on collective intelligence (CI) offers valuable insights into how groups coordinate knowledge and capabilities while revealing limitations when collaboration occurs within contexts of epistemic plurality and contested problem definitions. These studies highlight the contrast between optimizing performance within stable problem frames and engaging with situations where the frames of validity themselves are at stake.

Pierre Lévy, a French philosopher of communication and cyberculture, conceptualizes CI anthropologically as intelligence distributed across communities and coordinated in real time through networked media. He envisions CI not only as a technical capacity but as a political project aimed at democratizing participation and fostering mutual recognition among heterogeneous knowers. His original work is marked by an optimistic view of networked connectivity's potential for epistemic inclusion. However, critical readings developed after Lévy problematize this optimism, highlighting that connectivity alone does not guarantee equitable or wise outcomes, given the potential for digital platforms to amplify misinformation, social biases, and unequal power relations (Lévy, 1998; critical readings postdating Lévy).

Anita Williams Woolley, an American organizational psychologist, and colleagues provide empirical evidence for a measurable collective intelligence factor, akin to individual IQ, which predicts group performance across diverse tasks more reliably than the sum of individual abilities (Woolley et al., 2010). Their research identifies key contributors to this factor: social sensitivity among members, equitable turn-taking during discussions, and a higher proportion of women in groups—an effect related to enhanced social sensitivity rather than gender itself. Their findings underscore that collective capacity hinges on the quality of social interaction rather than the sum of individual expertise and reveal how domination by few can reduce collective efficacy.

Thomas Malone, an American researcher specializing in collective intelligence, crowdsourcing, and human-computer interaction, introduced the concept of "superminds"—hybrid systems in which people and technologies collaborate to produce emergent intelligence surpassing the capabilities of individuals, groups, or standalone machines (Malone, 2018). He emphasizes that what matters are the forms of organization and interaction structures—markets, hierarchies, communities, democracies—that channel how groups create, decide, and coordinate.

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Christoph Riedl, a German researcher in human-computer interaction, models collective intelligence as an emergent property from the interplay of three sociocognitive systems: collective memory, collective attention, and collective reasoning. His framework addresses how these dimensions interact to expand collective capabilities, especially in distributed and remote work environments where traditional coordination is challenged (Riedl, 2024; Riedl et al., 2021).

Sven Graf-Drasch, a German cognitive scientist and expert in collaborative cognition and organizational psychology, conducted a meta-analysis examining boundary conditions for collective intelligence. He demonstrates that collective intelligence reliably emerges in well-structured tasks—those with clear goals and measurable outcomes—whereas in ill-structured tasks characterized by ambiguous goals, multiple solution paths, or contested problem definitions, collective intelligence presents as a more complex, multifaceted phenomenon resisting unified measurement (Graf-Drasch et al., 2022).

1.5. Alternative Collaborative Practices

While theoretical insights provide foundational frameworks for epistemic mediation, analyzing concrete collaborative practices reveals alternative modes of engaging difference in context-specific ways. This section draws on the work of Brazilian designer and anthropologist Zoy Anastassakis and the Laboratory of Design and Anthropology (LaDA, based in Rio de Janeiro, Brazil), as well as the Argentinean collective Iconoclasistas (based in Buenos Aires, Argentina), whose critical practices exemplify collaboration modes that preserve distinct knowledge traditions while enabling mutual transformation.

Zoy Anastassakis mobilizes the concepts of correspondence, confluence, otherwise, and in-between-ness to propose ways of rethinking design beyond projection. Drawing on Tim Ingold, correspondence names a mode of moving together in which each way of knowing is strengthened through sustained co-presence. In dialogue with Antônio Bispo dos Santos, she contrasts confluence with "fusion," highlighting encounters that flow together like rivers without losing their distinct currents. Such notions resonate with the ethical stance of cultivating otherwise—ways of existing and knowing that resist assimilation—and inhabiting in-between-ness, where encounters remain open and generative rather than resolved in synthesis. Anastassakis metaphorically describes correspondence as "the walk of two or more people moving together in the same direction rather than a face-to-face encounter, one advancing toward the other. Something close to holding hands" (Anastassakis, 2024, p. 35). This orientation is operationalized at LaDA, where "doing design without projecting" emphasizes design-as-attunement rather than design-as-plan. Methodologically, this entails cultivating skills of noticing and responding to emergent conditions, privileging embodied and iterative engagement, and conceiving design as sustained care and maintenance of relationships rather than the imposition of predetermined solutions (Anastassakis, 2024, p. 39). In this way, correspondence and confluence articulate an ethical and methodological stance that foregrounds attentiveness, experimentation, and relational responsiveness.

The Iconoclasistas collective develops visual cultural and critical cartography "resources" for supporting collaborative territorial processes in Latin America and beyond, conducting workshops in Mexico, Colombia, Uruguay, Portugal, Spain, and Austria. Their collaborative mapping exemplifies relational responsiveness through their "Manual de Mapeo Colectivo," which provides structured guidance while refusing prescriptive authority over application.

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The manual is intentionally presented as a "starting point available to be taken up by others" and emphasizes that "mapping is a means, not an end" (Risler & Ares, 2013, p. 7). Mesquita (2012) characterizes their methodology as "contracartografias," collaborative mapping practices that subvert dominant territorial representations by generating new ways of seeing and inhabiting spaces via encounters among diverse ways of knowing.

The productive tension within the Iconoclasistas' manual—offering systematized resources while maintaining openness to local adaptation—demonstrates how resource-sharing can coexist with relational responsiveness when creators refuse prescriptive authority over implementation. What we interpret as significant about both LaDA's and the Iconoclasistas' approaches is how they exemplify situated practices that highlight an ontological dimension of design: designing becomes not only a mode of producing artifacts, but a way of being and relating that shapes—and is shaped by—the collaborative processes it inhabits.

2. PARTICIPATION AS EPISTEMIC AND POLITICAL PRACTICE

Participatory design has often been celebrated as a democratizing paradigm, opening space for broader involvement in shaping design processes and outcomes. A key turning point came with Sanders and Stappers (2008), American design researcher and Dutch industrial design professor respectively, who distinguished co-creation—any collective act of creativity—from co-design, where participants are actively involved throughout the entire process. This distinction signalled a shift from user-centered approaches, where people were primarily observed as sources of data, to participatory design, in which participants are recognized as experts of their own experiences. Participation thus unfolds across multiple levels, from everyday practices of making (doing) to moments of inspired invention (creating), with researchers and designers facilitating processes and developing tools that extend the expressive capacities of non-professional participants.

Yet, as Hale (2021), American business anthropologist, emphasizes, the term "user" remains problematic, reducing individuals to functional roles within systems and obscuring their situated knowledges, identities, and political agency. Similarly, Rachael Luck (2018), British design studies scholar, highlights that participatory design is always entangled with power relations, positionalities, asymmetries, and institutional structures. Together, these critiques reveal participation as not merely methodological but fundamentally epistemic and political: it shapes whose knowledge counts, how decisions are made, and which forms of expertise are legitimized. Replacing terms like "user" with participant, collaborator, or other is therefore not a superficial change but an epistemological and political gesture.

Sanders and Stappers' focus on "tools for ideation" and generative techniques has been foundational, yet it risks presenting participation as a neutral toolkit, abstracted from the ethical, political, and epistemological dimensions that govern who participates, how, and under what conditions. Even as their framework broadened the notion of creativity—arguing that "everyone is creative"—it remains epistemologically situated: its generative toolkits privilege certain expressive and material modes while assuming that facilitation can be neutral. Such assumptions overlook how the very tools and categories through which participation unfolds mediate which ways of knowing become visible, legitimate, or actionable.

This tension becomes especially visible when contrasted with managerial models of co-creation. Prahalad and Ramaswamy (2004), Indian-American management and strategy

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scholars, framed co-creation as a business strategy centered on DART (Dialogue, Access, Risk-benefits, Transparency), emphasizing interaction and experience. While their model recognizes participation, it assumes equivalence among perspectives and treats engagement primarily as a transactional value exchange. Moreover, by treating notions such as "dialogue," "transparency," and "value" as universally understood and culturally neutral, it risks obscuring the epistemic and cultural situatedness of these very concepts. Such appropriations illustrate a central risk: participation may be instrumentalized to serve managerial objectives—producing buy-in or extracting insights—rather than addressing deeper issues of knowledge, power, and difference.

Taken together, these perspectives reveal that participatory design cannot be reduced to methodology alone. It is traversed by methodological, political, and epistemological dimensions that must be addressed together. Conflicts arising from divergent ways of knowing cannot be resolved by better techniques alone. What is required is attentiveness to how knowledge systems interact, clash, and transform, without assuming that difference can—or should—be dissolved.

This horizon prepares the next chapter. Confronted with the limits of methodological fixes and the risks of managerial appropriation, we propose to understand collaborative encounters as forms of epistemic mediation. To articulate this perspective, we introduce three analytical dynamics—Horizontal Epistemic Interfaces, Emergent Attention, and Contextual Amplification—that illuminate how differences, epistemic and otherwise, are surfaced, negotiated, and amplified in design practice.

3. THREE DYNAMICS OF EPISTEMIC ENCOUNTERS

This chapter proposes three interrelated dynamics that emerge when different ways of knowing engage in collaborative design processes. These dynamics are theoretical propositions derived from critical engagement with design literature and decolonial perspectives. They are not methodological prescriptions or analytical frameworks but rather conceptual lenses for noticing patterns that emerge when validation systems that never meet on neutral ground attempt to work together.

At the core of this framing lies what we term collaborative emergence mediated by design—an approach emphasizing the relational and situational nature of design practice. Here, design operates less as a mechanism controlling outcomes and more as a practice catalyzing processes where novelty arises from the encounter itself. The designer is not positioned as problem-solver following the linear logic critiqued by Cosenza, Pires, and Ponte (2022), nor as hierarchical coordinator of knowledge, but as operating relationally, shaping conditions for interaction without predefining results.

As illustrated in Figure 4, this approach operates through three porous and mutually constitutive dynamics: horizontal epistemic interfaces that suspend predetermined hierarchies, emergent attention that responds to what arises rather than executing protocols, and contextual amplification that reverberates effects beyond immediate encounters. These dynamics create conditions for collaborative emergence while never fully encompassing the multiple layers of difference that participants bring to the encounter.

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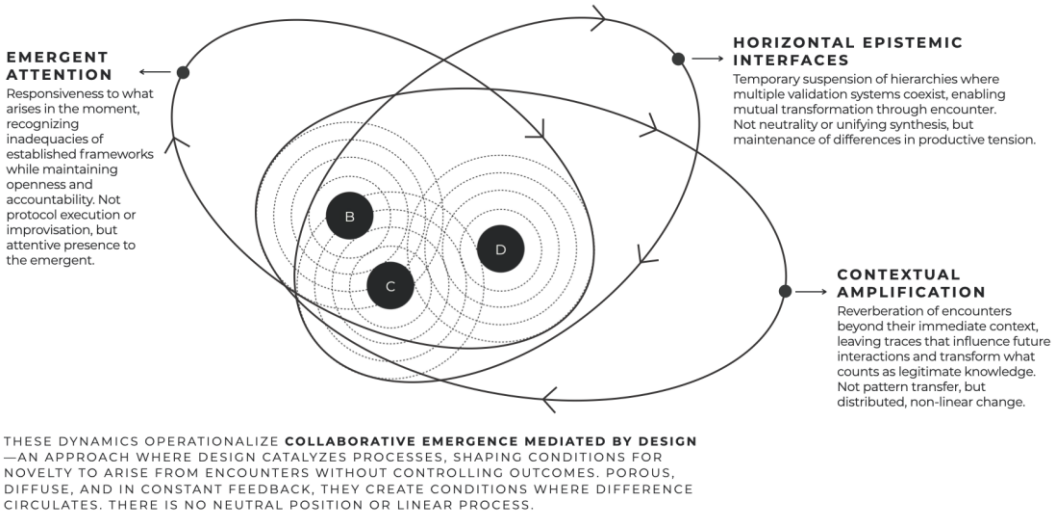

Figure 4. Collaborative emergence mediated by design operates through three interdependent dynamics that create conditions for novelty to arise from encounters themselves. Individuals B, C, and D (with their multiple layers of difference presented in Figure 2) are never fully encompassed by the dynamics, yet these allow difference to circulate. Horizontal epistemic interfaces suspend predetermined hierarchies; emergent attention responds to what arises; contextual amplification reverberates beyond immediate encounters. The dynamics operate in porous, diffuse, and mutually constitutive ways, shaping conditions for interaction without predefining results.

The first dynamic, horizontal epistemic interfaces, describes moments when different epistemologies come into contact without predetermined hierarchies dictating which knowledge counts as valid. This horizontality does not erase power asymmetries—institutional constraints, funding structures, and historical inequalities persist throughout any encounter. Rather, it signals a temporary suspension of the impulse to immediately translate difference into familiar categories or actionable resources. In these interfaces, alterity is not data to be processed but constitutive of the interaction itself. The encounter shapes what becomes possible, often in ways no participant could have anticipated. This dynamic manifests through relational arrangements that resist reducing epistemic difference to inputs for predetermined outcomes—a resistance that Stengers (2005) might recognize as maintaining the "irreducibility of the plurality of worlds."

What distinguishes horizontal interfaces from conventional collaborative arrangements is this quality of mutual constitution—participants do not simply bring their knowledge to the table but are themselves transformed through the encounter. The interface becomes a space where epistemologies interact without one subsuming the other, where different validation systems coexist in productive tension rather than being reconciled through a master framework. The suspension required here is not passive but actively maintained through continuous negotiation, requiring participants to resist their trained impulses toward immediate synthesis or problem-solving.

The second dynamic, emergent attention, concerns how participants respond to what arises during encounters rather than executing predetermined procedures. This attentional stance—what Anastassakis (2024) describes as noticing "what is already happening"—requires maintaining openness while navigating practical responsibilities. It involves recognizing when familiar frameworks prove inadequate yet remaining engaged despite this inadequacy. Emergent attention differs fundamentally from both strategic planning and pure improvisational response. It requires what Haraway (1988) calls "situated" awareness: understanding that one's position shapes what becomes visible while remaining accountable to multiple, often conflicting, demands.

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This form of attention involves cultivating sensitivity to moments when unexpected connections emerge, when taken-for-granted assumptions become visible, when different temporalities intersect. It requires holding multiple interpretive frameworks simultaneously without defaulting to the most familiar or institutionally sanctioned one. The challenge lies not merely in being responsive but in developing the capacity to recognize which responses might open new possibilities versus those that foreclose them. It demands a particular quality of presence—neither the detached observation of traditional research nor the immersive participation of action research, but something more akin to what Stengers describes as "thinking in the presence of others."

The third dynamic, contextual amplification, captures how localized encounters reverberate across broader epistemic landscapes over time. Design interventions are never isolated—choices about documentation, representation, and process influence how epistemic diversity is engaged in subsequent contexts. What Santos (2014) describes as "intercultural translation" occurs not through direct conversion but through gradual shifts in what becomes recognizable as legitimate knowledge. This amplification operates through multiple channels simultaneously. A decision to document community knowledge using their own categories rather than academic frameworks may seem minor but can gradually reshape how expertise is recognized in future projects. The choice to hold meetings in community spaces rather than institutional settings sends ripples through organizational culture.

These effects are neither linear nor predictable. Small adjustments in how meetings are structured, whose expertise is acknowledged, or which outcomes are valued can gradually reshape institutional cultures, yet these effects remain distributed, indirect, and often visible only retrospectively. Contextual amplification also involves what might be called epistemic memory—how encounters leave traces that influence future interactions. These traces exist not only in formal documentation but in shifted assumptions, adjusted practices, and transformed relationships. A single project involving genuine epistemic horizontality may not transform an institution, but it creates precedents, relationships, and conceptual openings that make subsequent transformations more possible.

These dynamics operate in deep interdependence: horizontal interfaces shape what receives attention, emergent attention influences how interactions unfold, and contextual amplification extends effects beyond immediate encounters. This interdependence is not mechanical but organic—each dynamic both enables and constrains the others in complex feedback loops that resist linear analysis. The tensions within each dynamic—between openness and closure, responsiveness and accountability, local specificity and systemic implications—are not obstacles to be resolved but the very terrain upon which collaborative emergence unfolds.

These tensions are productive precisely because they cannot be resolved through better planning or more sophisticated methods. They reflect what Haraway calls the "god-trick" impossibility—the recognition that there is no view from nowhere, no neutral position from which to facilitate pure epistemic encounter. The theoretical grounding developed in previous chapters—Haraway's situated knowledges, Santos's ecology of knowledges, Stengers's cosmopolitics, Latour's translation—all emphasize that epistemic encounters cannot be managed through better coordination but require ongoing negotiation of irreducible difference.

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4. IMPLICATIONS AND ONGOING TENSIONS

This investigation emerged from recognizing fundamental inadequacies in how participatory design engages epistemic diversity—inadequacies that cannot be addressed through methodological refinement alone. The dynamics proposed offer vocabulary for understanding what occurs when different validation systems meet, without presuming such encounters can be optimized or their outcomes predetermined.

These dynamics suggest fundamentally reconsidering how collaborative processes are evaluated. Traditional metrics—deliverables produced, participation levels measured, stakeholder satisfaction assessed—capture only surface dimensions of epistemic encounter. The deeper transformations often remain invisible to conventional evaluation. How did different frameworks for establishing validity interact and transform each other? What shifts occurred in participants' understanding of what constitutes legitimate knowledge? Which previously unrecognized forms of expertise gained visibility, and through what processes? How did the encounter alter the very terms through which problems were understood? Such questions resist quantification yet capture dimensions crucial to epistemic mediation. They point toward what might be called epistemic accountability—not accountability to predetermined outcomes but to the integrity of the encounter itself.

For design education, particularly programs engaging cross-cultural collaboration or community-based work, these insights suggest fundamental reconsiderations. Rather than treating epistemic difference as diversity to be managed or cultural sensitivity to be developed, educational approaches might focus on helping students recognize design's own cultural and historical commitments—what Cosenza, Pires, and Ponte (2022) identify as persistent myths about neutrality, universality, and problem-solving capacity. This involves developing capacity to recognize when familiar frameworks fail—not as a problem to be fixed but as an opening for different possibilities. It requires cultivating comfort with what Bezaitis and Robinson (2018), American corporate researchers working at the intersection of anthropology and design, describe as the “immigrant” experience of moving between disciplinary homes, but extended to encompass movement between entire systems for validating knowledge.

The dynamics also highlight multiple temporalities operating simultaneously in any epistemic encounter—a complexity often flattened in project-based design practice. There is the immediate temporality of project deadlines and deliverables, the institutional temporality of funding cycles and organizational change, the cultural temporality of shifting epistemic recognition, and the emergent temporality of collaborative possibilities that cannot be scheduled or predicted. Navigating these different temporal registers requires what might be called temporal multiliteracy—the ability to work simultaneously within urgent project timelines while recognizing that epistemic transformation operates on entirely different scales.

Several fundamental limitations constrain this investigation's scope and applicability. First, these dynamics emerge from theoretical reflection and critical literature engagement rather than systematic empirical study. While grounded in extensive engagement with collaborative design theory and informed by practical experience across professional, academic, and intercultural contexts, they await validation, contestation, and refinement through diverse empirical encounters. Second, our use of “epistemic” necessarily conflates distinctions that might be analytically useful—between methodological differences, ontological differences,

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and epistemological differences. This conflation reflects genuine difficulty distinguishing these categories in practice, but it limits analytical precision and may obscure important distinctions.

The investigation also risks reproducing what it critiques: by articulating dynamics of epistemic encounter, we potentially impose another framework on phenomena that resist systematization. This tension between offering useful conceptual means and avoiding reductive frameworks remains unresolved—perhaps necessarily so. As Stengers reminds us, the plurality of worlds is irreducible; any attempt to create a meta-framework for understanding their interaction risks betraying that irreducibility.

Each dynamic contains internal contradictions that reflect deeper challenges in collaborative practice. Horizontal interfaces must negotiate between epistemic openness and institutional demands for closure and accountability. The very conditions that enable different epistemologies to meet as equals—suspended judgment, deferred synthesis, maintained ambiguity—conflict with institutional requirements for clear outcomes, measurable impact, and transferable methods. Emergent attention must balance radical responsiveness with practical accountability. The openness required to notice unexpected possibilities conflicts with responsibilities to communities, funders, and institutions. Contextual amplification must consider systemic implications while remaining grounded in specific encounters. The patterns that emerge from one context cannot be simply transferred to another without betraying the situated nature of knowledge.

Future research might examine how these dynamics manifest—or fail to manifest—in specific domains. Healthcare systems where clinical evidence meets patient experience, urban planning where technical expertise encounters community knowledge, or educational contexts where disciplinary frameworks meet student perspectives each offer unique configurations of epistemic encounter. Longitudinal studies could trace how epistemic recognition shifts over extended collaborative engagements, examining whether and how the dynamics we describe influence institutional cultures or professional practices. Critical attention to failures—situations where attempts at epistemic mediation reproduce hierarchies or enable appropriation—would be particularly valuable for understanding the limits and risks of this approach.

5. CONCLUSION

The orientation proposed throughout this investigation involves sustained engagement with what resists assimilation into familiar categories. Rather than treating epistemic difference as an obstacle to efficient collaboration, this approach recognizes it as revealing possibilities for collective action that no single framework could anticipate. The dynamics we describe—horizontal epistemic interfaces, emergent attention, and contextual amplification—are offered as provisional lenses that may prove useful in some contexts while requiring substantial revision in others.

This investigation's contribution lies less in the specific dynamics identified than in the underlying recognition that epistemic mediation requires ongoing attention to how our own frameworks participate in shaping the encounters we seek to understand. The theoretical foundations we have drawn upon—from situated knowledges to cosmopolitics, from ecology of knowledges to the critique of design myths—all emphasize that there is no neutral position

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from which to facilitate epistemic encounter. We are always already implicated in the dynamics we attempt to describe.

In contexts increasingly marked by challenges that exceed any single discipline or cultural framework—from climate change requiring both indigenous knowledge and atmospheric science, to social justice demanding both lived experience and structural analysis, to technological transformation needing both technical expertise and community wisdom—the capacity to work across epistemic difference becomes essential. Yet this capacity cannot be codified into methods or institutionalized into procedures without losing what makes it valuable: the ability to remain open to what exceeds current frameworks while still engaging constructively with immediate needs.

The work of epistemic mediation thus remains necessarily incomplete, requiring continuous renegotiation and reflection. This incompleteness is not a gap to be filled but an opening to be maintained. It reflects recognition that epistemic encounters cannot be concluded, only temporarily stabilized; that understanding across difference is not achieved once but continuously renegotiated; that the work of mediation is not a project to be completed but an ongoing practice of attention, responsiveness, and accountability.

Recognizing this incompleteness not as failure but as the very condition of possibility for collaborative engagement across difference may itself constitute a form of what we might carefully call epistemic care—not as prescription or sentiment but as sustained attention to the conditions that enable different ways of knowing to encounter each other with integrity. This care involves maintaining spaces where different validation systems can interact without one dominating, where unexpected connections can emerge without being immediately instrumentalized, where the slow work of mutual recognition can unfold alongside urgent practical demands.

The three dynamics proposed here do not resolve the challenges of working across epistemic difference but rather provide vocabulary for engaging them more consciously. They offer ways of noticing patterns that might otherwise remain invisible, of articulating tensions that might otherwise be dismissed as project failures, of valuing transformations that might otherwise go unrecognized. In this sense, they function less as tools for managing epistemic diversity than as invitations to inhabit its complexities more fully.

As design continues to engage with increasingly diverse contexts and communities, the questions raised by epistemic mediation become more pressing. How can collaborative processes honor different ways of knowing without reducing them to resources for predetermined outcomes? How can design practice navigate between the specificity of situated encounters and the need for broader institutional change? How can we maintain openness to epistemic difference while meeting concrete responsibilities to communities and stakeholders? These questions have no definitive answers, but the vocabulary developed here may help us engage them more productively.

The practice of epistemic mediation ultimately requires what might be understood as a dual commitment: to the integrity of different ways of knowing in their irreducible plurality, and to the possibility of their productive encounter despite—or perhaps through—their differences. It is in maintaining this tension, rather than resolving it, that the transformative potential of collaborative design across epistemic difference may reside.

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