

Collective handiness in prospective design: a philosophical account of a serious play on articulation work

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Abstract: Building on the German philosopher Heidegger, design philosophy has historically dealt with handiness (*zuhandenheit/vorhandenheit*) as an ontological relationship between an individual, a technology, and an artificial world. Such handiness conceptualization does not account for the social accumulation of work necessary to bring technology ready-to-specific-hands. Building on the work of Brazilian philosopher Vieira Pinto, this investigation foregrounds the collective aspect of handiness to account for the articulation work behind a new design philosophy program, prospective design. This program embraces philosophy through design; therefore, this investigation includes a description of a stakeholder mapping workshop in which serious play was used to develop the prospective design program's collective handiness, both in theory and in practice. By mapping who is “at-hand” (and who is not) for this program's ends, the collective body of researchers realized their fundamental relationship with their world.

Keywords: prospective design; design philosophy; articulation work; ontological design

1. Introduction

Design philosophy is increasingly critical of the implications of the Cartesian *cogito ergo sum* maxim (“I think therefore, I am”) for conceptualizing who can think, design, and thus exist. Several authors have noted that thinking and designing are social activities unequally distributed across worlds (Escobar, 2018; Fry, 1999), implicated in historical exclusions such as colonization, sexism, capitalism, and other systems of oppression.



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Here, further develop the notion of collective handiness found in prospective design, a design philosophy that emerges from the dialogue between Global North and Global South authors (Botter et al., 2024). Among the dialogues, Álvaro Vieira Pinto's critical engagement with René Descartes's maxim has great potential to expand design philosophy beyond a phenomenological critique of the cogito that merely includes the body as part of the individual's mind. Vieira Pinto rereads the *cogito* (I think) as *cogitamus* (we think) to emphasize that thought is not an individual capability, but a collective one built on the work of others, including not only other philosophers but also the entire society that makes philosophical thought possible in the first place. In his view, Descartes did not freely think what he wanted, but rather within the framework of his society's ideology, thereby expressing as much as supporting the colonialist, slaveholding, and extractivist practices of that society, as already identified by other authors in design philosophy (Escobar, 2018; Fry, 1999).

The question of who can think in design philosophy is usually subsumed under the question of who can design, as if thinking and designing were synonymous—design thinking. According to a previous work on relating Vieira Pinto and design philosophy (Van Amstel et al., 2026), the collusion of design and thinking found in Northern philosophies masks the coloniality of making, or the geopolitical separation between thinking and making across worlds. Under the coloniality of making, design is strictly understood as thinking and/or a sophisticated form of making associated with the Global North, rather than the act of making itself in the South (Van Amstel, 2023). Acknowledging the coloniality of making means recognizing the collective bodies that think, make, and design in the Global South, even when they are not recognized as designers or design thinkers by Northern literature. Born out of the criticism of the coloniality of making, prospective design posits human existence within collective design bodies—bodies that design their own means of existence (Botter et al., 2024).

This raises the central issue addressed by this paper: how does a collective design body interact with and transform its surrounding world? Fernanda Botter and colleagues (2024) argue that this interaction is mediated by existential structures, which “amplify individual to collective handiness, shaping human existence as much as human existence shapes [sic] them.” Initially mentioned in their account of prospective design, collective handiness has since been adopted by Garcia (2025) in his work on developing transition design capabilities in Ecuador. As a world in itself, Ecuador differs in many respects from the USA world, where transition design was initially conceptualized (Irwin et al., 2022; Irwin, 2015). Rather than essentializing world differences as ontological distinctions, Garcia (2025) preferred to frame them as handiness inequalities, offering a relational account of difference that encompasses not only worlds but also their designers.

In this paper, we aim to further develop the concept of collective handiness within design philosophy, building on Garcia's (2025) contribution to transition design. We further examine Vieira Pinto's third mode of being, which helps explain how a collective body transforms its surrounding world through work. To contextualize the specific work done by prospective design, this philosophical inquiry includes preliminary musings on articulation work (Suchman, 1996; Star & Strauss, 1999; Strauss, 1988). This concept, developed at the boundaries of Science and Technology Studies (STS), Computer-Supported Cooperative Work (CSCW), and Human-Computer Interaction (HCI), describes the invisible work individuals

perform to sustain collective activities in practice. We leverage articulation work to foreground the foundational *cogitamus* assumption of Vieira Pinto—thinking together while making together—which challenges the coloniality of making (Saito et al., 2024). By doing so, we expect to extend the ongoing discussions fostered by queer, feminist, and postcolonial theories at these disciplinary boundaries (Bardzell, 2010; Light, 2011; Irani et al., 2010; Bidwell, 2016).

Instead of a detached mind-to-body or body-to-body investigation, here we share the results of a philosophy through design investigation (Eggink & Dorrestijn, 2018), meaning that we theorized philosophical concepts while living them in design practice as a collective design body (Marttila et al., 2025). Collective handiness, as an emerging design philosophy concept, became clear to us during a stakeholder mapping workshop hosted by our graduate design program. This workshop employed serious play to visualize and explore the articulation work done and to be done with the program's stakeholders. This articulation work brought collective and individual interests into tension.

This paper first introduces the theoretical grounding from which collective handiness was derived (Section 2). Then, rooted in Vieira Pinto's dialectical-existential philosophy, prospective design is introduced as a fruitful field for applying the collective dimension of handiness (Section 3). The subsequent section describes the workshop as an illustrative case (Section 4). Finally, Section 5 discusses its implications through the lens of collective handiness, followed by the conclusion (Section 6).

2. From individual to collective handiness

To understand how people interact with artifacts, or the relationship between people and their worlds, design has historically drawn on the philosophical notion of handiness (Gonzatto, 2014), as developed by the German philosopher Martin Heidegger (2010). Based on his philosophy, human beings are conceived as *Dasein* ("being-there"), and the world is understood as a world of tools, where objects are perceived in terms of their practical involvement with a specific person. Most of the time, when interacting with the world, humans use objects that are ready-to-hand (*zuhandenheit*) through absorbed practical engagement rather than reflexive or theoretical attention. However, when objects break apart or experience an interruption in their normal state, the human-object relation undergoes an ontological change in its mode of being in the world, also described as a shift in handiness mode. In the present-at-hand mode (*vorhandenheit*), humans are no longer together with their objects: they are separate. The object in question then emerges as an independent entity that can be examined theoretically.

These two modes of being and their shifts have inspired several investigations in design philosophy. For instance, in Winograd & Flores (1986), handiness helps explain the central role of everyday interaction with computer artifacts as a non-representational mode of being in the world. Similarly, Bonsiepe's (1999; 1997) approach of design as interface is built on handiness, understood as an existential structure between user, tool, and action (Figure 1). For both authors, interface design aims to establish a structural coupling between the human body and the computational or physical tool, thereby opening up possibilities for action and anticipating potential failures (Dubberly, 2021).

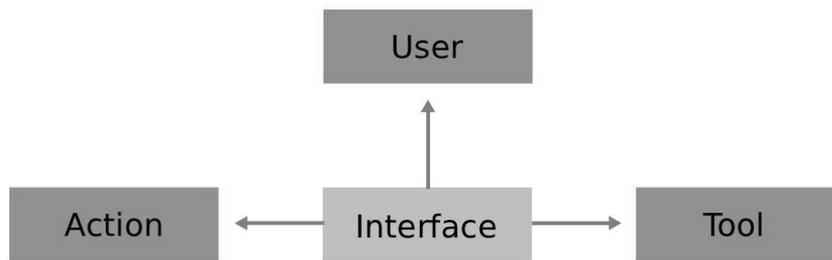


Figure 1 Bonsiepe's "ontological diagram of design" features an interface as a structural coupling between user, tool, and action. Adapted from Bonsiepe (1997, pg. 10).

This individualistic understanding of handiness fails to account for the societal bonds inherent in the structural coupling between user and artifact. The people who made the tool, demanded the action, or educated the user are not shown in this diagram, despite their significant contributions to the interface design.

The Brazilian philosopher Vieira Pinto wanted to avoid such omissions in his philosophy of technology. He, thus, expanded the Heideggerian concept of handiness, emphasizing that "handiness results from the accumulated knowledge, technologies, and objects put together in a specific conjuncture" (Vieira Pinto, 1960, pp. 60–69). In this sense, ready-to-hand is a socio-historical construction of reality: the artifact had to be produced by many people to become readily available. Vieira Pinto (1960, 1969, 2005) thus identifies work as the third mode of handiness. The third mode of handiness raises questions such as: who put that artifact "at hand" and at what human costs? Who benefits from this work? What are the consequences of interrupting and resuming work?

For Vieira Pinto, handiness includes the relationship between collective consciousnesses and a shared world, whether the individual acts as a social subject, or as the population of a nation (Barcat, 2024). Thus, ontological shifts are not reduced to the transformation of consciousness between a practical and a theoretical attitude. The subject-artifact relationship occurs within a reality that includes other people who produce the shared world. It is through the collective efforts of world transformation that reality can change, whether through disputes or cooperation. Individuals do not accomplish this alone, out of a desire for immediacy or mere willpower to resume being ready-to-hand. The transformation of consciousness and world between practical and theoretical attitudes arises from the mediation of work.

Work alters the material conditions of reality, providing new possibilities for action that become ready-to-specific-hands and possibilities for thought present-to-specific-hands. The continuity and interruption of this transformation give rise to historicity, or the collective possibilities for making history.

2.1 Designing from handiness

Previous work in STS, HCI, and interaction design has already built upon Vieira Pinto's understanding of collective handiness (Gonzatto, 2014). Collective handiness reveals how the design of computer artifacts alienates some people from their capability of working with

their surrounding reality, thereby becoming users and only users of computers (Gonzatto, 2014; 2018; Van Amstel et al., 2022). Work as a mode of handiness has helped build critiques of coloniality (Van Amstel et al., 2026), design fictions (Gonzatto et al., 2013), and speculative design (Gonzatto & Van Amstel, 2022). In design research, collective handiness also explained how a cultural producer designed their own self-management infrastructure (Pelanda, 2019) and “developed their handiness to improve their social productions of existence — not despite, but from their underdeveloped conditions” (Gonzatto et al., 2021, p. 46).

Building on the foundational work relating design and handiness by Gonzatto & Merkle (2016a; 2016b) and Gonzatto (2014), Luis Garcia (2025) explored what a ‘designing from handiness’ could mean for public designers. In his philosophical account of thinking and making collectively with Ecuadorian public designers, Garcia made four important contributions in this endeavour: 1) furthering the international dialogue among prospective design, transition design, and Quechuan indigenous design, effectively connecting three worlds/nations: Brazil, USA, and Ecuador; 2) framing work as a handiness mode in public transition design; 3) introducing the collective capability of “sensing handiness”, or to sense and act upon what is available in the current world; and 4) locating collective handiness within a historical consciousness development process, which he calls “expanding collective handiness” (Garcia, 2025, p. 76). By bringing design philosophies from these three worlds into dialogue, Garcia practiced a transition design that contributed to the local indigenous ideal of *Buen Vivir*, which is based on a normative view of interacting with the world in a way that respects how the world is already interacting with the collective design body.

3. Collective handiness in prospective design

Prospective design is a theoretical and practical philosophical design research program that looks at the design of existential structures, addressing wicked problems and their underlying contradictions (Botter et al., 2024; Van Amstel et al., 2022). This field invites designers to think and make in ways that bring the hidden aspects of existential structures into visibility, including their meta- and infrastructures, where relational qualities (Cipolla & Manzini, 2009) matter more than objectified qualities. Infrastructure is related to ready-to-hand because it supports the practical attitude of others. They are only noticed when a breakdown occurs and a theoretical challenge is posed to their designers and users. As Botter et al. (2024) state, “the work becomes visible and reality is transformed into the open (...) Infrastructure becomes infrastructuring, the visible work of making invisible work more just, fair, and sustainable by design”. Metastructures are related to present-at-hand by giving support to the theoretical attitude of the self “through reflection, problematization, and recognition of the meanings of the world” (Botter et al., 2024). The visibility of metastructures increases “when things are apparently normal and someone wants to change them (...) Successful metastructuring requires scrutinizing (in the present-at-hand mode) a lot of things that are taken for granted (in the ready-to-hand mode) when getting things done (in the work mode)” (Botter et al., 2024).

The ontological foundations of prospective design are grounded in Vieira Pinto's dialectical-existential philosophy. This field understands the dialectical dynamics of human existence, resting on the idea that human beings are in and with the world, meaning that “they transform themselves as part of the world's transformation” (Saito et al., 2024). By interacting with the world, human beings produce their own existence by transforming it,

simultaneously working on and shaping the world they inhabit. Prospective design expands these possibilities for world transformation by making the collective dimension of design work more visible and perceptible.

Building on Vieira Pinto's (1960) notion of social sensitivity, Botter and colleagues (2024) aims at “resensitizing the collective body to perceive its shared reality”. It involves reactivating perception to re-acquire tools and gestures through which we sense, imagine, and remake our shared world. Hence, collective prospectation is understood as a collaborative praxis through diverse perspectives integrated towards critical, collective and democratic design practice (Mazzarotto, 2025).

In summary, prospective design provides a theoretical and practical foundation for exploring the third mode of handiness, work. To transform existential structures and create new futures, this field acknowledges the accumulated work and hidden aspects of these structures, including the conditions and interests involved. When this work becomes visible, it drives collective action towards building fairer future projectories and fairer appreciations of the trajectories taken. Moving forward to an example of this process, the next section explores how researchers pioneering the field of prospective design expanded their collective handiness.

4. Serious play workshop on articulating work

Prospective design emerged from a specific institution with specific interests. Building on years of collaborative teaching in the generalist Bachelor of Design of UTFPR, a group of design educators joined forces in 2019 to create what later became known as prospective design. Its graduate program, established in 2025, offers a master's course to further expand design research beyond what is already covered in the Bachelor's program (visualities, objects, experiences, services, and systems). The program is designed and experienced by both its faculty and student bodies, who work in close collaboration to shape the structures, relationships, and meanings that sustain the program.

To illustrate how collective handiness manifests in this program (and in its philosophy), we present and discuss a workshop designed to map the program's surrounding entities, thereby making visible the dynamics of its collective body. The final objective was to create a visualization of relationships between the program's actors and external entities, commonly referred to as stakeholders (Hyvonen, 2014). In order to identify power dynamics between stakeholders, where conflicting interests might become visible, the group created a stakeholder map (Giordano et al., 2018; Smith & Fischbacher, 2000). To explore conflicts in a safe way, the mapping activity included the pretext of serious play: anyone who creates a conflict in play activity can always retreat and say “I was just joking, but this is a serious matter”.

The mapping begun with LEGO® Serious Play® (LSP), a creativity method in which participants construct metaphorical models and narratives using building blocks to convey their ideas and emotions (Wijayaratna & Rocha, 2025; de Saille et al., 2022; Köhlke et al., 2021; Hyvonen, 2014). Serious play, and creativity methods such as LSP, are sometimes framed as uncommitted exercises of creativity done at the fringes of work. Here, we follow Van Amstel & Garde's (2016) view that serious play is an integral part of work.

The activity was structured into five steps to collaboratively identify which stakeholders are at-hand for the program's collective body. Guided by the questions "Which entities are interested in the program?" and "What makes the program interesting?", the workshop began with participants representing their individual perspectives on the program and materializing them as metaphorical objects built with building blocks. Participants first shared their visions, which were then integrated into a single structure representing the program. Different elements were selected to symbolize each contribution and later integrated into a collective structure. This shared artifact brought together the program's collective body, simultaneously expressing its present configuration and possible futures (Figure 2).



Figure 2 The Lego Serious Play metaphorical model of the graduate program.

In this shared model, infrastructural and metastructural dimensions were materialized as large panels surrounding the composition. The program's body was constructed using different elements: housing components representing its solid and traditional foundation within the university; natural elements embodying its organic dynamics and mirroring cycles of birth, rooting, growth, and blossoming; elements expressing how it is carried forward into the future; pieces symbolizing rupture and renewal, allowing new modes of existence to emerge; and color diversity expressing the plurality of knowledge and voices composing its collective identity. Participants initially assigned meanings to the pieces, which were then reinterpreted through discussion and collaboration into collective meanings. By building the model, the group began acting as a living entity, through a shared perception emerging from its individual perspectives.

In the following steps, participants began identifying stakeholders as in a design game. Entities were represented by building blocks positioned around the representation of the program's body. As the group arranged the elements, entities perceived as closer to the program were placed close to the collective body, while distant ones were positioned far away (Figure 3).



Figure 3 Represented as animal puppets, the graduate program's stakeholders were laid around the program's metaphorical model. Engaged stakeholders were positioned closer to the model than the disengaged.

Subsequently, the design researchers represented their perception of the different stakeholders' interests. With instant cameras, participants took photos of the program's collective body to represent the perspectives of mapped entities. For instance, some photos focused on the design competencies of the body, representing how certain stakeholders relate to the program in a utilitarian way, rather than its broader contributions. On the other hand, some images suggested that stakeholders viewed the program as a source of mutual growth and learning (Figure 4).



Figure 4 Stakeholders interested in the program's knowledge (represented by a picture of a Lego street light) and in its transformative power (represented by a picture of a Lego magic wand).

Finally, the collective model was disassembled into its component parts while keeping stakeholders involved in the workshop context. Firstly, the group members selected elements

to represent their individual research interests. Subsequently, the previous entities were rearranged according to their engagement level with the researchers. At this point, the participants began negotiating stakeholder positions and coordinating relationships. While some actors formed bonds, others were positioned alone or farther away from key stakeholders (Figure 5).



Figure 5 The program's stakeholders are grouped by shared interests, materialized by the pieces extracted from the earlier, large metaphorical model.

5. Discussion

Rather than hosting this activity as a creativity collaborative exercise, ice-breaking, or team-building, the prospective design program—and its founding philosophy—harbors serious play as a genuine form of articulation work within the third mode of handiness. The workshop led to the following observations. First, the construction of the shared model suggests a common understanding of the program and its potential for collective transformation. Second, stakeholder mapping exposed uneven levels of engagement, showing that even crucial groups for the program's development remained distant or weakly involved. This situation may have prompted participants to reflect on and question the conditions that shaped these relations: how these relations emerged historically and how more desirable relational qualities might be cultivated. Third, the new configuration of the model made emerging contradictions visible: at a theoretical level, this program is founded on the idea of collectivity. If so, why were some design researchers left isolated? Why were certain stakeholders connected to many researchers?

Taken together, these results suggest an increased awareness of the program's contradictions. The metaphorical model can be interpreted as embodying the program's collective body through serious play, indicating how individual perspectives may have

coalesced into a collective whole. By revealing contradictions and tensions, the activity can be interpreted as fostering greater awareness of the conditions under which these relations were formed. Thus, articulation work becomes visible not only through the negotiations that took place during the workshop but also through a collective realization of the work required to sustain the program and its relations with stakeholders.

The workshop can be interpreted as illustrating shifts between practical and theoretical attitudes within the program's collective body. The serious play helped materialize not only the possibilities for the program, but also the collective body itself. As participants mapped their relationships with stakeholders, they identified who was "at hand" and who was distant, suggesting their practical existences toward these entities. The activity served as a means for participants to express their interpretations and concerns about the building-block representation, which enabled different types of breakdowns during the construction of this collective work. This prompted a shift toward a theoretical attitude, as the group began questioning the varying levels of engagement between the program and its stakeholders, as well as among the researchers themselves.

Beyond a simple practical/theoretical shift, the activity can be interpreted as making the group's collective handiness visible, sparking discussions about the work needed to change group relations for a new, collective, ready-to-hand situation. As participants negotiated stakeholders' positions and reconfigured relationships of shared interest, they simultaneously visualized and performed articulation work (Strauss, 1988; Star & Strauss, 1999). Alongside questioning why certain stakeholders appeared closer or farther away, this suggests an awareness of the historically accumulated work underlying the network that shaped the distance between actors. Through this simultaneous act of building and becoming, the process suggests that the collective body is both shaped by and capable of reshaping its structures and the relational qualities around it. While similar dynamics may emerge in other group activities, collective handiness allows us to understand them beyond collaboration alone, suggesting how the group's capacity to act is shaped by accumulated socio-historical work, in this case, articulation work. Serious play can be analytically framed as a key moment in the process of conscientization, thereby building the program's historicity. The workshop, as a whole, is a lived expression of prospective design: while individuals may acquire the capacity to act and reshape existential structures through social interaction, only by coalescing into a collective body and realizing their collective handiness can they reshape existential structures from the ground up.

6. Conclusion

By distinguishing individual from collective handiness, this research outlines a theoretical contribution to design philosophy by clarifying how collectives relate to and transform the world around them. It is worth mentioning that Heidegger's concept of handiness is not restricted to individuals as much as Vieira Pinto's concept of handiness does not ignore the role of individuals. What is emphasized here is the collective aspect of any handiness, including the Heideggerian *Dasein's handiness*.

The goal here was to contribute to prospective design search for a collective praxis engaged in transforming reality. Collectivity is not as a method, but an ontological foundation to act in concert, redefining the designer's role as a collective designer (Marttila et al., 2025) of material conditions that shape new modes of existence.

In conclusion, to move beyond an individual-centered design perspective, it is crucial to reflect on design from and for collective bodies. From this perspective, prospective design can be understood as a field that makes visible the articulation work underlying societal structures, thereby supporting conditions for collective action. Collective handiness supports the notion of collective praxis, in which social and material transformation is not a result of design but its very condition of possibility. This perspective invites reflection on how collective bodies interact with the world, develop critical consciousness, articulate themselves, and act toward transforming reality. Thus, within prospective design, collective handiness contributes to a design philosophy that understands the collective as the primary agent and condition of transformation.

The reflections presented in this paper represent an initial view on the topic of collective handiness. Although based on the developments of accumulated work from an increasing research tradition, this work has been developed primarily by Latin American researchers, who have historically faced greater difficulty introducing theoretical traditions into global design communities, as a consequence of the coloniality of making (Van Amstel, 2023) and injustices of global division of design labour. We believe that, in addition to prospective design, this debate may be relevant to other approaches interested in considering and discussing the collective, such as transition design and participatory design.

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