Design for knowledge co-creation. Reflections on universities, society, and interdependence

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DESIGN FOR KNOWLEDGE CO-CREATION. REFLECTIONS ON UNIVERSITIES, SOCIETY, AND INTERDEPENDENCE.

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ABSTRACT | The article explores the complex interrelations between universities, society, and design in the context of knowledge co-creation and it discusses design's potential role as an ally in fostering collaborative, inclusive, and pluriversal approaches. Building on the concept of the Third Stream and its recent interpretations, the central argument of the paper suggests that current forms of university engagement and *civicness* are insufficient to address contemporary global challenges adequately.
In the first part, the article contextualises the evolution of universities' civic engagements within the framework of the Third Mission, presenting models such as the Civic, Entrepreneurial, Relational, and Engaged Universities. While these models highlight the growing societal role of higher education institutions, the discussion underscores their limitations in addressing coloniality and epistemic violence in academia and its knowledge production processes. Failing to rethink their role and embrace a more relational and situated understanding of knowledge, universities are missing the opportunity to support community self-determination and autonomy, as shared experiences of knowledge production, interpretation, and dissemination are considered essential for this purpose. Like academia, design, especially participatory design, is undergoing critical reflection, moving beyond simplistic visions of being intrinsically democratic or "good-doer." The discussion of positionality and privilege in design aligns with broader shifts

towards context-sensitive approaches rooted in interconnection and mutual responsibility. Although design has not yet fully integrated critical thinking into its discourse or comprehensively addressed its colonial responsibilities, the paper suggests that its ongoing transformation represents an intriguing opportunity to support the redefinition of collaborative dimensions promoted by academia towards external communities. This potential is also rooted in design's intrinsic emphasis on making and its inclination toward transformation and change. Also, the discussion defines its capacity for a pluriversal understanding of the world and its predisposition towards collaborative and community-based processes as crucial to the task.
The second part of the article examines the fitness of design in addressing knowledge-creation processes. Three key strengths of design in supporting knowledge co-creation are identified: its ability to enable metaphors, its role as a boundary object, and its tacit nature.
Finally, while acknowledging the study's limits and inherent complexities and contradictions, the preliminary results of the research point out that, with the support of design, academia could embrace a pluriversal vision of knowledge, conceptualising reality as an interconnected and diverse kaleidoscope of perspectives. Moreover, while engaging in these processes, design gathers insights that can enrich the discipline itself and reflect on which skills and/or attitudes designers should cultivate to effectively support processes related to the co-creation of knowledge, fostering ethical and more inclusive knowledge systems.

KEYWORDS | UNIVERSITY, KNOWLEDGE CO-CREATION, DECOLONIALITY, PLURIVERSAL DESIGN, INTERDEPENDENCE

1. Introduction

The article presents insights from a more articulate exploration into the complex topics of knowledge co-creation, university-society relationships, and the role of design.

Recently, various circumstances have brought me to the forefront of the opportunity—or perhaps the necessity—to reflect deeper on the connection between the discipline I have chosen as my own, design, and its capacity to respond to the events of the world, addressing inequalities and societal challenges (Campus Engage, 2017). I have felt compelled to observe, with the courage to delve beyond the reassurances that had driven my research and practices until now (Valentine & Farias & Farias, 2024), the ethical dimensions of what I was doing (Sweeting, 2018) —as both a designer and as an individual implicated within the academic context.

The lead hypothesis discussed here is that (1) universities should foster collective experiences of knowledge production (Bolisani et al., 2018), interpretation, dissemination, and memory-making (Kambunga et al., 2020) in order to support

community autonomy and self-determination (Kambunga et al., 2023). This generates two interconnected follow-up hypotheses. The first posits that (2) if universities engage in such collective practices, they are better able to acknowledge their mutual interdependence with society. This, in turn, opens up space for new, situated conversations that challenge traditional boundaries and foster more responsive and inclusive forms of knowledge production. The second suggests that (3) thanks to its inherently relational and collaborative nature, design can be instrumental in these processes—not by assuming leadership, which may reproduce problematic hierarchies, but by offering accompaniment, forming alliances, and fostering kin-ship (Haraway, 2016).

A design perspective on the Third Mission offers significant insights, as it intertwines topics such as organisational design, disciplinary responsibilities, and the development of designers' cultural and critical knowledge and competencies. More precisely, this article aims to contribute to the (inter)disciplinary scientific discussion on university, society and knowledge, offering a preliminary recognition of the most relevant aspects that shape the conversation on the ethical dimension of the phenomena under analysis and the role of design.

In the first part, after clarifying the methodology adopted, the article discusses the evolution of civic engagement in universities, followed by a critical discussion of how topics such as colonialism, hegemony, exclusion, and cultural extractivism influence reflexivity in academia and design. Then, design, particularly in its pluriversal and community-oriented expressions, will be discussed as a possible ally to overcome and bridge the distance between the university and society. After assessing the fitness of the design for this task, the paper will proceed with a discourse on knowledge and knowledge creation processes. Here, adopting stances offered by organisational and management sciences, we will debate whether design, with its practices and principles, is suitable for dealing with knowledge-related processes. Finally, while acknowledging the study's limits and inherent complexities and contradictions, the preliminary research results point out that, with the support of design, academia could embrace a pluriversal vision of knowledge, conceptualising reality as an interconnected and diverse kaleidoscope of perspectives. Moreover, while engaging in these processes, design can gather insights that can enrich the discipline itself and reflect on which skills and/or attitudes designers should cultivate to effectively support processes related to the co-creation of knowledge, fostering ethical and more inclusive knowledge systems.

2. Methodology

This research draws on two primary inputs: desk research and fieldwork. The desk phase is structured around a scientific literature review, initiated through a snowballing approach (Wohlin, 2014) using keyword searches on Google Scholar and Scopus. Keywords included topics such as "engaged universities", "third stream/mission", "knowledge co-creation", "decoloniality & academia", "design & knowledge co-creation". From an initial selection of relevant documents, the study

built a more systematic literature review to compare the most cited authorial positions. However, the systematic citation-based literature review aligned more with academic conventions than with necessity, as the critical perspective of the discourse upheld by this article challenges the limitations within the current scientific literature system and its predominantly colonised nature (Begum & Saini, 2019). For this reason, bibliographies of the most significant articles found were preferred as a springboard for further exploration. This criterion, while sometimes more time-consuming, better ensured that the reflection was supported by authors applying a post-heroic approach (Lupo, 2022), belonging (or presenting a perspective related) to groups that are under-represented, non-homologated or representative of different cultures of scientific thinking and knowledge production.

Although it will not be explicitly discussed throughout the article, the contribution of field research activities, primarily conducted through participatory observation and observational participation (Cardano, 2011), has been essential for understanding the multidimensionality of the phenomena under analysis. During the fieldwork activities, I also had the opportunity to reflect on and confront the positionality of my research and the complexity of advancing critical discourses on academia while simultaneously embodying the role of a researcher who is an integral part of that institution. This dual positioning has required a nuanced engagement on my part with the tensions between critique and a sense of belonging[1], which continues to shape the trajectory and implications of my inquiry.

The fieldwork consisted of personal experiences in co-design and co-creation within my research team (Campagnaro et al. 2024; Campagnaro & Ceraolo, 2022; Campagnaro et al., 2021; Campagnaro & Ceraolo, 2020) and participation in events, discussions, protests, workshops, several conferences and debates. Some of these experiences[2] predate the formal start of the research, serving both as evidence and as motivators for its relevance. In my fieldwork, I have prioritised extra-institutional experiences that critically interrogate the university's relationship with society, which I engaged with through the lens and the concept of design. These activities enabled critical reflection on power and colonial dynamics within institutions, universities, and the broader knowledge society.

3. University and society

To delve into the domain analysed in this work, it is first appropriate to discuss the evolution of universities' civic engagements. Contemporary Western academia, structured around three distinct missions, has evolved over the past fifty years,

[1] Given the ethnographic and sociological nature of these observations, this branch of the study will be explored further in subsequent works.

[2] Illustrative examples from some of these fields can be found in the projects presented in the book I co-authored with Cristian Campagnaro, *Ai margini. Un'antologia di social design* (see references for full details).

reflecting its intertwining with a complex network of interests and relationships (Blasi, 2023). It has shifted from an institution focused primarily on teaching and research to an active societal agent, addressing social, economic, and environmental challenges, shaping what Benson and Harkavy (2000) define as a third revolution.

This (re)evolution process has given rise to several visions of academia, which scholars have primarily translated into four models. Each model is traceable to a different push happening within the Third Mission: the Civic University (Benson & Harkavy, 2000), the Entrepreneurial University (Etzkowitz, 2004 and 2013), the Relational University (Castro-Spila & Unceta, 2014), and the Engaged University (Whitmer et al., 2010; Blasi, 2023). Even if they developed chronologically, these models are not merely stages of a linear progression. They represent the different forms the university has moulded into within broader transformation processes. These transformation processes have been shaped by specific priorities, stakeholders, and external pressures, such as collaboration with industries, social engagement, or the dynamics of networking and interactivity.

The Civic University arose in the 20th century and spread after the Cold War to counter criticisms of universities' detachment from local issues. It promoted active community collaboration to address societal challenges, bridging academic prestige and urban decline. It stemmed from the vision, offered since the early 1900s by scholars like Harper (1905), of the university as a “prophet of democracy”. Describing the phenomenon, Benson and Harkavy (2000) emphasise its dual role as both global and local institutions, highlighting the role of university-school partnerships in addressing inequalities and urban issues.

The Entrepreneurial University model was developed in the 1980s and 1990s in response to economic challenges and global competition, focusing on technology transfer and private-sector collaboration (Etzkowitz, 2004 and 2013; Pausits, 2015). Policies like the Bayh-Dole Act[3] (1980) enabled universities to retain ownership of patents, fostering innovation through patents, spin-offs, and consultancy activities (Bosio & Gregorutti, 2023). Despite its success in economic innovation, critics argued that commercial priorities often overshadow initiatives with greater significant impact (idem).

The third model is the Relational University. Developed recently, it represents an additional evolution, focusing on collaboration between universities and local communities to address complex problems. As described by Castro-Spila and Unceta (2014), it envisions universities as nodes within social innovation networks, fostering partnerships to meet regional learning, knowledge, and innovation needs.

[3] The Bayh-Dole Act (1980) is a U.S. law that lets universities, small businesses, and other organisations keep ownership of inventions created through federally funded research. Before this law, the government often held the patents, and many discoveries were left unused. This encourages universities to collaborate with companies to turn discoveries into products, boosting innovation and economic growth. For further info: https://www.govinfo.gov/content/pkg/USCODE-2011-title35/html/USCODE-2011-title35-partII-chap18.htm

Finally, the Engaged University model, emerging in the early 2000s, integrates elements of previous models, engaging directly with communities and companies to tackle societal challenges. It emphasises transformative research involving citizens throughout the process, from problem definition to dissemination. Scholars like Whitmer et al. (2010) and Gregorutti (2021) highlight its potential to integrate research, teaching, and service, driving meaningful social change through collaborative frameworks.

Within this evolutionary path, the renewed social commitment framed within the Third Mission also supported the growth of new international networks gathering engaged universities worldwide, like the Talloires Network (Hollister et al., 2012), emerging to drive positive social impact[4]. The Third Mission, the responsibility towards people, and the need to contribute to building more just and sustainable societies have become central to the discourse promoted by universities and their boards across much of the world, with a particular emphasis on the Global North.

Yet, the fundamental issue of who holds the power to produce knowledge and how it is created remains overlooked. The engaged—civic, relational, and so on—university is committed to impactful and meaningful interactions with the "outside world". Still, its practices, even the collaborative ones, rarely challenge the university-society divide or place knowledge co-production at the centre of this exchange.

From a critical perspective, such involvement confined within a well-defined framework—designed and governed by the university alone, could ultimately hinder more profound transformations. To frame the question provocatively: are we witnessing a process of futuring, fostering new and inclusive possibilities, or defuturing, perpetuating structures that limit genuine change and reinforce existing power dynamics (Fry, 2009)?

Scholars and critics argue that such contradictions must be faced directly (Borghi, 2020; Kalema, 2019). Studies and theories from decolonial and queer thought, as well as concepts developed within the onto-epistemologies of the Global South, call for and support a thorough examination of the forms of hegemony, exclusion, and cultural extractivism that can characterise knowledge production within university-society relationships.

Going even further, this research holds that, to foster such a change, the criticism of academic practices should not be directed solely at the university institution as a whole. Instead, it would be appropriate for the analysis to be rooted in specific disciplinary frameworks, ensuring that the transformative potential of these

[4] Quoting from the website: "The Talloires Network of Engaged Universities is a growing global coalition of 443 university presidents, vice-chancellors and rectors in 91 countries who have publicly committed to strengthening the civic roles and social responsibilities of their institutions. It is the largest international network focused particularly on university civic engagement." For more info: https://talloiresnetwork.tufts.edu/

considerations is integrated into the dynamics and challenges unique to each field of knowledge.

4. Design as a possible ally?

The task at hand is undoubtedly challenging. However, this reflection does not aim to evoke despair or disengagement. While endorsing a call for staying with this trouble (Haraway, 2016) and diving into a critical examination of the university's inner workings, this article also seeks to propose some constructive ideas, which are, of course, related to the role of design.

As mentioned, disciplines should undergo a critical reflection process (if they haven't already started yet), and design is no exception.

Design is indeed undergoing a transition (Escobar, 2015 and 2023; Kossoff et al., 2015; Tonkinwise, 2015). It is slowly moving beyond the comfort of a naïve and megalomaniac (Tonkinwise, 2019) self-conception as inherently salvific, democratic, and good-doer. This transition marks a shift towards a more profound, culturally grounded, and honest awareness phase (Smith et al., 2020). It resonates with Tony Fry's articulation of the shift from "sustainability" to "sustainment," which underscores the urgent need for a radical reimagining of values and institutions to ensure long-term ecological and social viability (Fry, 2012). In this process, design increasingly interrogates its political and ontological dimensions (Escobar, 2018), particularly within its participatory practices (Akama et al., 2019).

The reckoning requires acknowledging the profound influence of Eurocentric, patriarchal, and neoliberal paradigms in shaping design's historical trajectory. It also entails confronting design's complicity in perpetuating the very societal structures it now seeks to address under the banners of "responsibility" or "engagement" (Escobar, 2018).

Despite being a disruptive call that profoundly challenges both the idea that design has of itself and the rhetoric behind some of its most widespread practices, the change for more critical reflexivity lands on a fertile ground for a transformation: design's inclination toward change (Brown, 2009), its ability to navigate uncertainty, to comfortably inhabit spaces of transition (Campagnaro & Ceraolo, 2022), and its aptitude for exploring the margins - which, bell hooks describes as a place of "radical openness" (2015)- is an immense resource. These attributes can be critical for fostering preferable (Simon, 2019) systems, practices, and sensitivities (Manzini, 2015) and can also be amplified by design's intrinsic emphasis on "making" (Campagnaro & Ceraolo, 2022) and its practical, programmatic and concrete (Mbembe, 2016) orientation.

While design has not yet achieved significant milestones in fully integrating these critical thoughts or conducting comprehensive analyses of its colonial responsibilities (Tunstall, 2023), especially compared to disciplines like

anthropology, geography, or sociology—a particularly concerning issue, also given the limited availability of university courses addressing these topics—its nascent rethinking phase offers unique opportunities. This early-stage reflection aligns design and academia in a possible joint effort to develop more inclusive and collaborative knowledge production practices.

Adopting a design-inspired approach, we now aim to critique current practices while contributing to broader cultural change. The following sections address three key questions within the critical theory discourse, demonstrating the close alignment of reflections happening at the university level as an institution and design as a discipline.

4.1. Coloniality and Privilege

Critical theory is a philosophical approach and interdisciplinary framework that seeks to challenge and critique societal structures, ideologies, and practices, especially those perpetuating domination, oppression, or inequality. Originating from the Frankfurt School in the early 20th century, it emphasises integrating social theory with praxis to achieve emancipatory societal transformations (Devetak, 2013).

Critical theory underscores the importance of examining power, domination, and exclusion that shape the Western world, including the university's role (idem). Calls to ‘decolonise’ universities are not new (Mbembe, 2016). Within the critical theory framework, universities must confront the coloniality embedded in academia and its alignment with Eurocentric and neoliberal logic to call themselves socially engaged. As geographer Rachele Borghi points out, these systems historically linked colonial political goals to how knowledge is defined, constructed, and disseminated (Borghi, 2020).

In the 19th century, knowledge was an enormous power tool, with cultural domination preceding territorial conquest. University and society have always been, indeed, interdependent. Positivism fostered an uncritical trust in science, which extended to societal studies. Universities, therefore, became sites of epistemic violence, producing knowledge that reinforced dominant paradigms. While critical thought has addressed aspects of this history, Borghi (idem) observes that it falls short of adopting decolonial approaches or dismantling the structures of domination inherent in Western scientific knowledge.

Nowadays, under the Third Mission, universities that aim to achieve meaningful societal impact are therefore urged to embrace decoloniality. This entails scrutinising the content of knowledge and its producers, challenging the legitimacy of Western scientists as sole arbiters of knowledge.

Similarly, in design, decolonial perspectives are starting to expose entrenched power dynamics within the discipline’s practices and concepts. Following Escobar’s (2018) critiques, design practices are being made aware of how sometimes they perpetuate neo-colonial frameworks, even under the guise of empowerment. This critique aligns with the concept of coloniality of knowledge

(López-Yánez, 2021; Nimführ, 2022), challenging the assumption that neither design nor academia operates in a politically neutral space.

The reflection on the decolonisation of participatory design also examines how, if undiscussed, co-design practices risk legitimising privilege reinforcing unbalances if designers' roles are not critically examined (Smith et al., 2020). Schultz et al. (2018) argue that designers and academics often replicate the representational dimensions of movements without fostering substantive change, calling for more reflexivity and humility and transitioning from tokenistic inclusion to genuine empowerment.

Scholars highlight the need for an ontological shift in design practice, moving from an "ontology of separation" to an "ontology of relatedness" (Escobar & Maffei, 2021). In a brilliant paper published in 2024, van Zeeland describes this as transforming design from a transactional to a relational practice. Such a shift prioritises collaborative knowledge creation, enabling designers to challenge their complicity within systems of privilege and foster authentic co-creation processes (van Zeeland, 2024). This evolution in design, therefore, aligns with broader efforts to reimagine universities as agents of equitable and plural knowledge production, ultimately transforming academic and societal structures.

4.2. Knowledge, knowledges and the issue of speaking for *others*

Placing decoloniality at the centre of academic discussions requires rethinking the role of researchers and challenging entrenched epistemologies. "All knowledge is situated", Haraway (2013) notes, underlining the impossibility of neutrality or universality in scientific understanding. In this regard, critics discuss that knowledge systems rooted in Cartesian dualism—such as science/emotion and nature/culture—maintain exclusionary frameworks that align with neoliberal values while neglecting their colonial roots.

Dealing with the construct of "researched others" and, in general, processes of "othering" (Muftee & Rosales, 2022; Winschiers-Theophilus et al., 2010) is also problematic, as it reinforces hierarchical divides, silencing marginalised perspectives. Linda Alcoff critiques this "speaking for others" dynamic, highlighting how privileged voices, even with good intentions, often amplify oppressive structures. Borghi (2020), referencing Grosfoguel, critiques Eurocentric epistemologies for representing only a fraction of global perspectives while claiming universality. This imposition prevents marginalised groups from engaging with the world on their terms, who emphasise the need for frameworks that enable ontologies and epistemes outside the Western canon to flourish (Moreira & Diversi, 2012).

This monocultural dominance not only marginalises diverse perspectives but also ignores crucial dimensions such as the historicity of the body, intersectional oppressions, and the voices of women and queer people, especially from the Global South. Knowledge systems in the Global South, which integrate mind, body, heart, and spirit, are often erased. Even in participatory research, researchers

frequently retain control over knowledge creation, producing inaccessible outputs that alienate communities.

Participatory design, likewise, sometimes perpetuates these exclusions by failing to examine critically who defines what constitutes the knowledge and the meanings of the projects. Despite well-intentioned goals, design scholars are acknowledging that design practices often remain constrained by predefined briefs, client expectations, funding requirements, and tight timelines. They are also highlighting that decolonising design requires recognising its inherent plurality—not only in the diversity of its outputs but also in its varied approaches and underlying ontological foundations (Taboada et al., 2024).

Moreover, authors discussing reflexivity within the participatory design reflections are pushing to rethink “inclusivity”, claiming that it must extend beyond demographic representation to include embodied and emotional experiences. Two inspiring concepts are worthy of mentioning in this regard. Albarrán González (2022) introduced the idea of *corazonar*, which emphasises integrating heart, emotions, and collective reasoning into the design process. The researchers explain that “the act of reasoning with the heart in collectivity (corazonar) allows going beyond analytic reasoning; it integrates emotions and our sensitivity for a holistic research approach” (Idem).

The second concept is using *yosotros*, a collective *we* transcending individualism, in participatory design. This approach underscores relationality and shared humanity (Idem).

By embracing *corazonar* and *yosotros*, therefore, promising signals can be traced to participatory design practices to foster equitable and transformative collaboration, build deeper connections, and inspire collective innovation.

4.3. Acknowledging interdependence

Finally, the third point of analysis within the debate of the proximity of academia and design in the critical process of addressing the inequalities around knowledge co-creation is related to acknowledging the interdependence that connects the two to society.

Academia is frequently described as an ivory tower. This image, used to criticise universities' detachment from society, might even reinforce the flawed perception of division. Indeed, universities are not separate from society but embedded within its practices, meanings, and processes. They are integral to broader societal systems, and the separation between "outside" and "inside" academia is misleading. Paradoxically, it would better fit the purpose if it were framed as a “corridor within a building” than a “tower”: an instrumental architectural connection, which is part of something whole. Not detached, not higher, but just a part of the building (society, in our case). So, just like a corridor and its respective building, the university and society are interdependent and need each other more than they might be reciprocally willing to admit.

Interpreting their relationship in terms of interdependency helps to frame knowledge production (as "what universities do") as a collaborative process that bridges people's experiences and organises them into shared understandings with transformative capacity. Without people, universities lack purpose. Without purpose, knowledge is hollow. Without knowledge and its transmission, experiences and people are isolated.

Recognising interconnectedness among actors, spaces, and processes is central to the co-design discourse. Co-design, indeed, thrives in participatory networks that empower stakeholders. As Koskinen emphasises, "relationality is a cornerstone of design research as it is the relational aspect that binds human beings, the environment, and objects into a coherent fabric of meaning" (Koskinen, 2023, p. 15). Relationality anchors co-design in networks and participatory practices, shifting the focus from objects to empowering relationships and sustaining collective agency.

5. Design's strengths: navigating pluriversality & the co-s.

To summarise: discussing knowledge in terms of universality and neutrality can be troubling and could reinforce unfair power structures; instead, it would be more appropriate to conceive the question as a plurality of *knowledges* (Haraway, 2013) and ways of knowing (Cross, 1982). Researchers are also always implicated. Therefore, knowledge is situated, not objective. As Rachele Borghi brilliantly explains:

> "Decolonising involves perceiving reality as kaleidoscopic—resembling more the multifaceted images of a kaleidoscope than the rigid linearity of cartographic projections. The kaleidoscope allows for a reinterpretation of reality, creating new images and envisioning alternative realities. This perspective goes beyond merely adopting different viewpoints; it revolves around initiating actions. The kaleidoscope is a tool that offers multiple, decentralised perspectives without centres or peripheries. By simply rotating, it shifts the coloured fragments within, and new and vibrant constellations emerge. Through this lens, the kaleidoscope reveals the pluriversality inherent in the world-system. (Borghi, 2020, p. 17. Translation by the author).

Reimagining an academic institution that welcomes the idea of kaleidoscopic knowledge (Borghi, 2020) aligns with a pluriversal vision: it means envisioning knowledge as an archipelago of enunciation points, a constellation of decolonial micropolitics and experimentation workshops, grounded in one's positionality and privileges (Idem).

Embracing pluriversality requires changing the lenses through which reality is observed and fundamentally altering the tools used to view, interpret, and project oneself within it. This pluriversal idea of the world and knowledge is, once again, a

familiar concept to delve into wearing the “design shoes”, as the following paragraph will explain.

After that, the second major strength offered by design as an ally within this discourse will be discussed: the participatory, collaborative, and co-creative dimensions already mentioned. The “co-s” question will be addressed in the second paragraph, and the nuances of its meaning and implications will be explored.

5.1. The pluriverse

The concept of the pluriverse, or pluriversality, can be summarised as the idea of a world where many worlds coexist. Escobar (2018) explains that it fundamentally revolves around difference, cautioning against efforts to efface or normalise it. The pluriverse encourages nurturing and embracing diversity—whether biological (hence the focus on biodiversity), epistemic (coloniality), cultural, or, as is increasingly discussed today, ontological.

Among transformative and relational disciplines, design is uniquely suited to navigating a vision that understands reality as a coexistence of interconnected and interdependent worlds (Leitão, 2023). Escobar (2018) notes that design is the transformative discipline (as we already mentioned) best equipped to respond to the call for a world made up of many coexisting and interdependent realities rather than a single, homogeneous, hierarchical one (idem).

A central feature of the pluriversal design approach is its processual and relational nature (Smith et. al., 2024). As Dunford (2020) notes and van Zeeland (2024) discusses, the pluriverse embodies a process, a value, a human capability, a form of social design and a tool. Pluriversal design acknowledges the necessity of engaging with ontological differences: pluriversality is not a synonym for inclusivity nor diversity. Instead, it refers to humans' capacity to build worlds differently (Leitão, 2022; Leitão & Noel, 2023).

Finally, pluriversal design further emphasises dialogue and collaboration among diverse worlds, maintaining a critical stance toward power dynamics. It involves moving beyond an ontology of separation to an “ontology of relatedness”. Such relationships are fostered through participatory practices that include nature as an entity and promote the autonomy and emancipation of the communities involved.

5.2. The “co-s”

Secondly, there is the topic of collaboration. This article intentionally addresses the dimension of co-creation (Sanders & Stappers, 2008) or, more generally, of the “co-s” of design, as the last part of this overview.

This choice is twofold. On the one hand, the discussion on collaboration and participation within design processes is well-known, extensively researched, and represented by numerous esteemed authors (Boyle & Harris, 2009; Steen, 2013;

Meroni, 2018; Manzini, 2015; Björgvinsson et al., 2012; Ehn, 2008; Manzini & Rizzo, 2011; Manzini & Staszowski, 2013; Papanek, 1971). An introduction to the concept is deemed, therefore, unnecessary in this context, and we prefer to limit ourselves to referring to some of these resources for those who wish to contextualise the discussion better.

In addition to this, a nomenclature debate regarding the question of the "co-s" within the design discourse would have been out of place, as co-creation is understood here as a broad umbrella term encompassing a range of related concepts: co-design, co-planning, co-production, and even co-crafting (Campagnaro & Ceraolo, 2022). The idea behind this is that the potential of this variety lies not in describing radically distinct practices separated by clear boundaries or rules but in imagining collaboration as a fluid process (idem). Discussing a design practice that enables the collaborative construction of knowledge means envisioning a discipline capable of all these functions—and even some more. Some are already emerging - co-writing or writing together (Blank & Nimführ, 2023), and others are interesting to envision (co-presenting, co-advocating, co-teaching?).

However, that being said, there is indeed a specific meaning or declination of "co-" that stands before the different design practices that we feel the need to stress in this context: that is the "co-mmunity".

While aiming to avoid any rhetorical drift, for this article's purpose, it is essential to emphasise that discussing knowledge co-creation requires the actors involved to think of themselves as part of a community (Wenger, 2009) or a group, sharing a purpose, embodying reciprocity and care (Contadini, 2021; The Care Collective 2021). This sense of togetherness, which resonates from the idea of conviviality (Illich, 1974) and the sense of belonging to a group taking part in a shared process (Ciampolini, 2019), is seen as the essential foundation through which the collaborative framework and shared sense-making can take shape.

With the emphasis on the community dimension in mind, we can move on with the discussion and explore the matter of knowledge production.

6. Knowledge creation and the role of design

Until now, we have examined how design, with the evolving awareness of its limitations and strengths, can be a suitable partner of academia in rethinking knowledge production. We have also explored the strengths that design has to offer as an ally within these processes. However, we must now address the topic of knowledge itself.

It would be simplistic to assume that participatory design and co-creation are inherently suited to fostering co-produced knowledge. In this regard, Taboada et al. (2024) note that the emergent design culture continues to function within a

Cartesian view of individuals and things despite its emphasis on participation and interactivity.

Also, we will not use this space to analyse the collaborative practices, somehow design-friendly, already carried out in universities, such as living labs or citizens science workshops. Those, while valuable, often lack a proper design foundation and/or a critical perspective on knowledge production dynamics we discussed in the first paragraphs.

Instead, in the following sections, we will discuss whether a pluriversal, decolonised and situated design could legitimately engage with knowledge production using the theoretical framework provided by the field of Organisational knowledge and management science.

Organisational knowledge and management science studies how organisations create, share, and apply knowledge to foster innovation and adapt to change. This field explores the interplay between tacit and explicit knowledge and the processes that explain how it is developed, acquired and transmitted (Argote et al., 2003). Scholars such as Polanyi, Nonaka, and Takeuchi, whose contributions are milestones within this field of studies, offer foundational insights into the field's theoretical ground and the purpose of assessing design's possible role within these processes.

In a nutshell, Polanyi is the "father" of the concept of tacit knowledge (Polanyi, 2009). Criticising positivism, he argued that explicit knowledge is inseparable from tacit understanding. He demonstrated that even formal sciences rely on tacit dimensions, as individual judgment shapes the interpretation and application of explicit knowledge (Polanyi, 2009). Building on this, Nonaka (1994) developed the Dynamic Theory of Knowledge Creation and, together with Takeuchi, discussed the "knowledge spiral" model (1996), which describes how organisations transform individual knowledge into collective knowledge through iterative processes of socialisation, externalisation, combination, and internalisation.

In the following paragraphs, we will investigate three key dimensions within the domains of Organisational knowledge and management science that demonstrate that design is particularly suited to supporting knowledge creation. In particular, we will discuss design processes as a process of metaphor creation and active world-building, the relationship between design and boundary objects, and the proximity between design and tacit knowledge. This short investigation will allow us to finally assess the potential of design as a transformative tool for collaborative knowledge production and will ultimately accompany the discussion towards the conclusions.

6.1. Design as metaphors enablers

Metaphors play a crucial role within the knowledge discourse and, precisely, in the knowledge creation spiral. According to Nonaka, metaphor is essential for converting tacit knowledge into explicit knowledge (1994). Lakoff and Johnson (1980) point out that the essence of metaphor is understanding and experiencing

one kind of thing in terms of another. It follows that while metaphor does not constitute a thought process, it enables new behaviours by drawing inferences from the model of another behaviour.

Moreover, within organisational theory, metaphor is not only a preliminary step in transforming tacit knowledge into explicit knowledge; it is also a vital method for creating networks of concepts (Nonaka, 1994). These conceptual networks generate innovative insights about the future by drawing upon existing knowledge. As Bateson (1973) suggests, metaphor's contradictions and intuitive associations can lead to learning that challenges and negates established assumptions, fostering the development of new paradigms.

This creative, exploratory process is central to design, a discipline that addresses complex problems and imagines innovative solutions by combining seemingly incongruent elements. In design, metaphor transcends its traditional definition as a rhetorical figure, serving instead as a creative, cognitive, and practical tool (Campagnaro & Ceraolo, 2022). The conceptual systems through which we think and act are fundamentally metaphorical: this is particularly significant in design, where imagination and intuitive learning through symbols, prototypes, shapes, materials and gestures are crucial for forming new conceptual and perceptual connections.

The many designerly ways of knowing (Cross, 1982) and design's capacity to transform tacit knowledge into explicit knowledge through metaphors, analogies, and models position the discipline as an appropriate tool for supporting knowledge creation and exchange (Petrova & Campagnaro, 2017).

6.2. Design as a boundary object

Star and Griesemer (1989) introduced the concept of a boundary object to describe artefacts that facilitate collaboration among different social or professional groups. These objects serve as bridges between practices, cultures, or contexts that sociocultural boundaries would otherwise separate.

According to Kanwal et al. (2019), boundary objects play a pivotal role in fostering knowledge co-creation by acting as bridges between distinct social worlds. Their unique capacity to facilitate collaboration across boundaries lies in their interpretive flexibility, enabling them to be understood and utilised differently by various groups while retaining a shared identity across contexts. This dual quality allows actors with divergent perspectives, knowledge systems, and cultural assumptions to collaborate without complete alignment.

Following this line, scholars such as Thinley et al. in 2020 defined design as an "interactive boundary object". They highlighted its role in fostering interdisciplinary interactions by enabling diverse actors to co-create while maintaining their distinct perspectives. As a boundary object, design balances interpretive flexibility and shared meaning, allowing reflexivity and dialogue across disciplines. This process generates novel outcomes by integrating varied vocabularies, practices,

and values, transforming design from a static tool into a dynamic framework for collective problem-solving.

Similarly, as Mark, Lyytinen, and Bergman (2007) highlight,

> "Design as a boundary object possesses four essential characteristics: the capability for common representation, the capability to transform design knowledge, the capability to mobilise for action, and the capability to legitimise design knowledge" (Mark et al., 2007, p. 551).

These qualities empower design to bridge gaps between social worlds, facilitating the sharing and transformation of knowledge.

Thinley et al. (2020) also focus on design's role in enabling interdisciplinary interactions. They argue that "design is an interactive boundary object allowing different meaning structures to co-exist and co-inform actors from multiple disciplines" (p. 5). In interdisciplinary research centres, for example, divergent definitions of design paradoxically enhanced collaboration through shared reflexivity, which valued the contributions of all participants.

From this perspective, design is both a technical tool and a cultural and political mediator. It facilitates collaboration among diverse social worlds, enabling meaningful exchanges and co-creation across boundaries.

6.3. Design knowledge as tacit knowledge

An additional factor aligning design discipline with the broader discourse on knowledge creation is its inherently tacit nature. Design knowledge is often deeply embedded in practice and intuition, making it challenging to articulate or codify fully. These characteristics push the design to cultivate a distinct, almost tacit sensitivity toward capturing content and insights that are difficult to express in words or text.

Whether understood as a manual and artisanal skill or the ability to identify problems and generate innovative solutions or meanings, design capability is frequently *slippery* to codification. While design knowledge can be subjected to processes of exploitation, its foundation remains deeply rooted in personal experience, intuition, and the implicit understanding of context, materials, and processes. In this regard, Polanyi (2009) famously observed that "we can know more than we can tell," which can be interpreted as much of what designers understand and apply cannot be easily articulated or formalised.

This tacit nature is evident in various aspects of design practice. For instance, an experienced furniture designer may intuitively "feel" the correct curvature for a chair without consciously reasoning through every step. Similarly, Schön (1983) highlights how reflective practice enables designers to draw upon tacit insights when deciding proportion, aesthetics, or functionality during the design process. Following Nonaka and Takeuchi (1995), it is also possible to emphasise the role of tacit knowledge in creativity and innovation and, therefore, in design, where

problem-solving seldom depends on unspoken insights cultivated through practice.

The tacit dimension of design knowledge stresses the importance of experiential learning and the transmission of skills through observation, imitation, and hands-on engagement. Finally, this perspective reinforces the unique role of design in fostering knowledge creation, as it bridges the gap between the unspoken and the articulated, transforming intuition and experience into innovative and actionable insights.

7. Closing remarks and future perspectives

Building on the hypotheses outlined in the first paragraph, this article has explored (1) how the call for universities to foster collective experiences of knowledge production, interpretation, dissemination, and memory-making can be enacted both theoretically and practically to support community autonomy and self-determination. In doing so, it has examined (2) the implications of acknowledging the mutual interdependence between universities and society, and (3) the enabling role that design—when approached not as a leading force but as an ally capable of offering accompaniment, building alliances, and fostering kinship—can play in such processes.

In doing so, we have examined various transformative processes currently reshaping both academic institutions and the design discipline, particularly through the lenses of decoloniality, epistemological violence, hegemony, exclusion, and cultural extractivism. These processes often converge in critical zones of friction, revealing the persistent struggle of universities to reconfigure their modes of engagement with society. Moreover, within the dominant discourses on the Third Mission and social engagement, universities often fail to critically question the dynamics of knowledge production, which remain largely under their control. Consequently, society continues to be treated as the "other," kept at a distance and deprived of the capacity to articulate its own knowledge, meanings, and memories.

Although these findings are preliminary, they suggest that the pluriversal vision—which asserts the possibility of conceptualising the world and its structures in plural, overlapping, and multifaceted ways—when combined with the capacity of design to support participatory and community-based knowledge processes, offers a promising pathway grounded in collaboration and ethics. This supports and confirms hypotheses 1 and 2. Hypothesis 3—regarding the capacity of design to support knowledge-related processes—was also confirmed, particularly by exploring the relationship between design and concepts such as metaphors, boundary objects, and tacit knowledge.

Further research is essential to identify and investigate both existing and yet-to-be-discovered practices through which design can be harnessed to help universities foster new paradigms of co-created knowledge. Equally important is

for design to assimilate the lessons emerging from this bridge-building experience between universities and society. Such integration could advance debates on the boundaries, purposes, and competencies that define the discipline. It could also stimulate the development of new curricula and (trans)disciplinary dialogues that connect co-creation experiences with the evolving body of critical discourses and growing reflexivity within the field.

The challenge is broad, marked by complexity and contradictions—yet it constitutes an aspirational horizon that invites further exploration.

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