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New Design Craft.

Blending Local Craft Practices and Emerging Technologies for More Just and Sustainable Futures.

Dottorando Elia Maniscalco

Curriculum Progettazione Sostenibile dell'Architettura e Design: approccio human-centered

SSD ICAR/13

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A Carmela Costa,
Prima Maestra di
Rigore e Meraviglia.

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Abstract, Acknowledgements & Index.

1. English Abstract

In an era increasingly defined by the poly-crisis (Giglio, 2022), sustainability has emerged as a complex and contested concept. As a wicked problem (Murphy, 2012), sustainability involves the coexistence of competing priorities across economic, cultural, anthropological, social, and environmental value spheres (Weber, 2013). For example, globalisation, while economically beneficial, has contributed to the erosion of cultural and artisanal heritage worldwide (Monteiro, 2020). Consequently, a paradigm shift is emerging within contemporary design and craft, with the former rediscovering Indigenous Making and traditional crafts, and the latter embracing processes of hyper-technologisation, thus defining new hybrid creative practices (Micelli, 2016).
In particular, this shift challenges the conventional notion of the "Industrial Designer," as hybrid practitioners work more and more outside mass production paradigms, often engaging with experimental materials, small technical series, and self-production models. The convergence of design and craft—enabled by accessible portable technologies—has given rise to a new, hybrid disciplinary space that this study defines as New Design Craft.

This dissertation investigates how hybrid practices that blend craft and emerging technologies can contribute to socio-environmental justice and cultural sustainability. Specifically—in defining a new paradigm for hybrid disciplines operating at the intersection of Design and Craft—it tries to answer the question: **"How can New Design Craft blend local craft and emerging technologies to support environmental and cultural sustainability by adopting a design justice approach to enable more just and sustainable futures?".**

Framed within a postpositivist paradigm, this three-year study employed a primarily qualitative research family with survey and action research approaches. We adopted both deskwork and fieldwork in different phases to cover literature and historical review, the screening of over 150 contemporary practitioners across Europe, Türkiye and Ukraine, and the administration of structured questionnaires and interviews to collect data on material culture values, processes, technologies, and sustainability practices. These were later organised in a structured database and analysed using both qualitative and quantitative techniques, including thematic and computational linguistic analysis, statistical measures of synthesis, and data visualisation.

Findings reveal that hybrid design-craft practices are often driven by efforts to reclaim material waste, preserve endangered knowledge, promote bioregional identities, and foster distributed ways of making. The tensions between the specificity and scalability of hybrid practices persist, yet the synthesis of insights supports the emergence of New Design Craft as both a conceptual and a practical framework with its unique challenges and opportunities.

The study culminated in the design of a *Manifesto of New Design Craft* outlining shared values, principles, and processes that could guide and inform the practice of future hybrid designers/artisans,

as well as academic researchers and policymakers; a pilot design collaboration with a local blacksmith to test the *New Design Craft framework*; a web-based platform for the dissemination of New Design Craft knowledge; and an Atlas of New Design Craft documenting relevant practitioners and projects selected from the analysed case studies. The research contributes to the discourse on post-industrial design futures by advocating for plural, design justice-oriented approaches to hybrid creativity.

Keywords: *#New Design Craft, #Hybrid Design Practices, #Emerging Technologies, #Material Culture, #Socio-Environmental Sustainability, #Design Justice*

2. Italian Abstract

In un'era sempre più definita dalla poli-crisi (Giglio, 2022), la sostenibilità è emersa come concetto complesso e polarizzante. Nella sua natura di *wicked problem* (Murphy, 2012), la sostenibilità implica la coesistenza di priorità concorrenti tra sfere economiche, culturali, antropologiche, sociali e ambientali (Weber, 2013). Per esempio, la globalizzazione, sebbene economicamente vantaggiosa, ha contribuito all'erosione del patrimonio culturale e artigianale in tutto il mondo (Monteiro, 2020). Conseguentemente a questa complessità, emerge un cambio di paradigma nel design e nell'artigianato contemporanei, col primo che riscopre il Saper Fare tradizionale, e il secondo che abbraccia sempre più processi di iper-tecnologizzazione, definendo pratiche creative ibride (Micelli, 2016).

In particolare, questo spostamento sfida la nozione convenzionale di "Industrial Designer", in quanto questi progettisti ibridi lavorano sempre più al di fuori delle logiche della produzione di massa, spesso impegnandosi con materiali sperimentali, producendo piccole serie tecniche e abbracciando modelli di autoproduzione. La convergenza del design e dell'artigianato, resa possibile da nuove tecnologie sempre più portatili accessibili, ha dato origine a un nuovo spazio disciplinare ibrido che questa ricerca definisce come *New Design Craft*.

Questa dissertazione indaga come pratiche ibride che mescolano artigianato e tecnologie emergenti possano contribuire alla giustizia socio-ambientale e alla sostenibilità culturale. Nello specifico, definendo un nuovo paradigma per le discipline ibride che operano all'intersezione di Design e Artigianato, cerca di rispondere alla domanda: **“In che modo il New Design Craft può fondere l'artigianato locale e le tecnologie emergenti per sostenere la sostenibilità ambientale e culturale adottando un approccio di *design justice* per consentire futuri più giusti e sostenibili?”.**

Inquadrato all'interno di un paradigma postpositivista, questo studio triennale ha adottato una famiglia di ricerca prevalentemente qualitativa con approcci di indagine e ricerca-azione. Sviluppata sia attraverso un lavoro su fonti primarie che secondarie, la ricerca si articola in una fase di analisi dela letteratura e revisione storica, nella selezione di oltre 150 progettisti contemporanei sul territorio Europeo, Turco e Ucraino, e l'amministrazione di questionari strutturati e interviste per raccogliere dati su valori relativi al rapporto con la cultura materiale, i processi, le tecnologie emergenti e le pratiche di sostenibilità di queste istanze di progettualità ibrida. Questi dati sono stati successivamente organizzati in un database strutturato e analizzati utilizzando tecniche qualitative e quantitative, tra cui l'analisi linguistica tematica e computazionale, misure statistiche di sintesi e la visualizzazione dei dati.

I risultati rivelano che le pratiche ibride di design-artigianato sono spesso guidate da sforzi per recuperare rifiuti materiali, preservare il Saper Fare e promuovere le identità bioregionali, e favorire metodi progettuali e produttivi distribuiti. Sebbene persistano punti critici sulla scalabilità delle

pratiche ibride, la ricerca sostiene in definitiva la validità del *New Design Craft* sia come quadro concettuale che pratico con le sue sfide e opportunità uniche.

Lo studio è culminato nella progettazione di un *Manifesto del New Design Craft* che delinea valori, principi e processi condivisi per supportare l'attività di futuri designer/artigiani ibridi, tanto quanto ricercatori accademici e policymakers; un intervento pilota di ricerca-azione con un fabbro locale per testare il *New Design Craft Framework*; una piattaforma Web per la diffusione delle conoscenze nel campo del *New Design Craft*; e un atlante del *New Design Craft* che documenta i professionisti e i progetti rilevanti selezionati per l'analisi di case studies.

La ricerca contribuisce al discorso sul futuro del design post-industriale sostenendo approcci plurali e orientati al *design justice* e alla creatività ibrida.

Keywords: *#New Design Craft, #Hybrid Design Practices, #Emerging Technologies, #Material Culture, #Socio-Environmental Sustainability, #Design Justice*

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1.

Introduction.

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1. Research Context & Addresses

In an era of poly-crisis (Giglio, 2022), sustainability is a highly disputed and articulated topic, showcasing how straightforward phenomena are extremely complex when examined from several different perspectives.

Sustainability, already defined as a wicked problem (Murphy, 2012) based on its adherence to the model described by sociologist Max Weber, who said that the various spheres of value of the world are in irreconcilable conflict (2013), owes its wickedness precisely to the constant state of tension between what a system calls sustainable and what an adjacent one deems unsustainable, especially in a closed system with limited resources like the world we inhabit.

Investigating sustainability today implies understanding complex relationships, especially when viewed through the lens of design, which is a discipline with many souls and therefore different points of view. In a properly designed sustainability, the spheres of economic, cultural, anthropological, social, and environmental values (Weber, 2013) need to harmonise to form effective solutions. However, each of these aspects carries its own priorities and requirements, leading to certain solutions being more favourable than others. From this tension, multiple approaches to sustainability originate; however, these multi-layered approaches are difficult to describe through inflexible systems, as a reflection of a contemporary world increasingly defined by its fluid nature, a concept introduced by Bauman (2012) and currently being applied to design by Bovo (2022).

In the clash of spheres of value in contemporary society, the homogenising pressures of globalisation, albeit beneficial from an economic standpoint, have jeopardised its cultural and anthropological counterparts worldwide (Monteiro, 2020). On a more tangible level, many communities now face the threat of losing their distinctive cultural heritage and artisanal know-how due to the replacement of skills and knowledge by mass-produced goods and homogenised processes.

In response to this cultural crisis, a noticeable paradigm shift is occurring in the current global design landscape, one that brings back Indigenous Making practices and traditional crafts through processes of hybridisation of the design practice itself (Micelli, 2016). This can easily be confirmed both by exploring the rich academic interest in alternative, post-industrial design paradigms and by the direct

interaction with the new actors of contemporary design. For example, attending the *Fuorisalone* events at the Milan Design Week, a new phenomenon in contemporary design has consistently been on the rise for many years now. Visiting *Fuorisalone,* we can't find products adherent to the classical definition of industrial production but, on the contrary, a jungle of experimental projects that pose the question of whether the classical definition of Industrial Designer is still effective and sufficient to define the totality of the creators of products, as these objects are not mass-produced, are often handmade with weird materials –from waste materials to mono-cellular bacterial growths- and not designed with a commercial mindset. On the other hand, if we look at the epistemology of the Making of these objects, this seems to align with an artisanal approach where creators create their own tools, learn by doing, source their own materials, design epic imagery rooted in material culture and self-produce objects in small series (See Figure 1.1).

Figure 1.1 Oggetti Inquieti II*, Design Jonathan Bocca per Fuorisalone 2022.*

Evidently, the advent of portable technology enabling at-home, handmade self-production models has changed the dynamics between Design and Craft, bringing them closer together than ever. The classical contraposition between technical mass production and artisanal small series –that for over a century has been the foundation of the argument that sees crafts as less evolved creative disciplines due to their inability to satisfy the needs of the masses in an economically competitive way– is weakened by the evidence that contemporary hybrid creative practices are more and more pulled towards a space located at the intersection of Design and Crafts. On one side, artisans are becoming more and more technologically specialised in embracing new tools and methods for their productions. On the other hand, contemporary designers, under the pressure of sustainability issues forcing them to pursue alternative productive paradigms, are reconnecting with their most experimental roots. Moving towards each other, designers and artisans define a new hybrid discipline that is neither Industrial Design nor traditional crafts (See Fig.1.2).

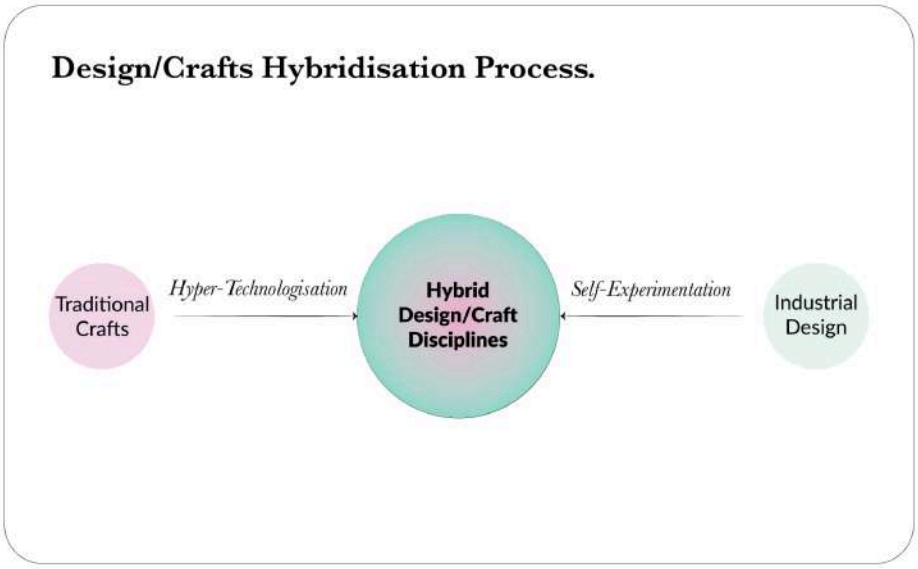

Figure 1.2 *Hybridisation process.*

This discipline expresses itself through small technical series and highly experimental products that deny the imposed uniformity of industrial production while discovering new languages that celebrate the identity and heritage of smaller and culturally diverse communities far away from the globalised Western model.

So this research, originally started with a broad theme, that is to say, the investigation of Design in its relationship with Crafts, ended up focused instead on the opportunity to explore how design and crafts can overlap to generate cultural value.

Moreover, the consideration that in a low-tech environment, design and craft are almost indistinguishable (Lara, 2024) raises the question of how technology can influence and shape the relationship between the two disciplines.

Lastly, reflecting on Design‘s nature of Total Social Fact (Mauss) and assuming that both design and craft play as agents of the creation of sociocultural value, brought me to realise the need for a third dimension to fully describe the space at the intersection of Design and Craft, that's to say the dimension of sustainability interpreted from the perspective of socio-environmental justice. Hence, I defined the three pillars of my research to guide the analysis of the contemporary landscape of hybrid Design and Crafts practices, that’s to say (1) The Role of Emerging Technology in Shaping the Relationship between Design and Crafts; (2) The Role of Material Culture and Local Heritage Design & Crafts in Shaping the Relationship between Design and Crafts; and (3) The Role of Design & Crafts in Pursuing Socio-Environmental Justice.

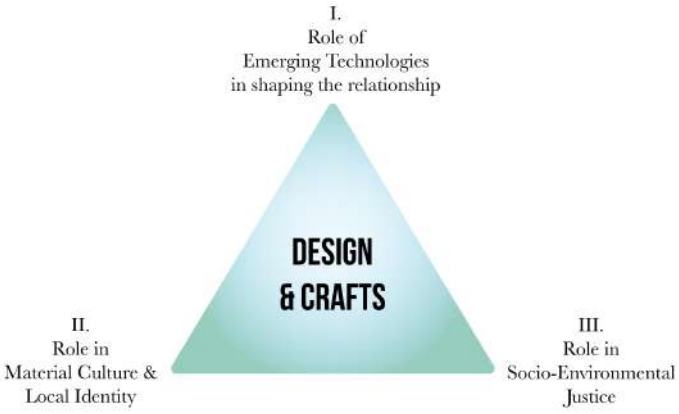

Figure 1.3 *Conceptual Pillars of the Research.*

The preliminary literature review shed light on how recent developments in both crafts and design studies have highlighted a disjunction between traditional making practices and modern design paradigms. Emerging technologies present transformative opportunities to reinvent the process of making, yet they often risk sidelining the cultural and environmental sustainability deeply embedded

in local craft traditions. This tension is worsened by the challenge of integrating the distinct epistemologies of craft and design, each with its own historical, social, and technical underpinnings. Additionally, as design justice principles call for equitable and sustainable practices, there is a pressing need to explore how these seemingly different elements can converge towards a new sustainable post-industrial paradigm. Moreover, the literature review points towards a specific gap: understanding the unique challenges and opportunities that contemporary hybrid design craft practitioners encounter. On one side, these challenges stem from the attempt to reconcile traditional craft values with the innovative potential of emerging technologies; on the other, opportunities arise from the attempt to forge new, inclusive models of creative practice. Understanding what happens at the intersection of Design and Crafts from the perspective of the three pillars of this research – the socio-environmental responsibility of Design, the role of technology in the definition of new hybrid creative practice, and the need for a new post-industrial paradigm– constitutes the gap that this research wants to fill by building knowledge to understand how a new design can blend local craft and emerging technologies to support environmental and cultural sustainability to enable more just and sustainable futures.

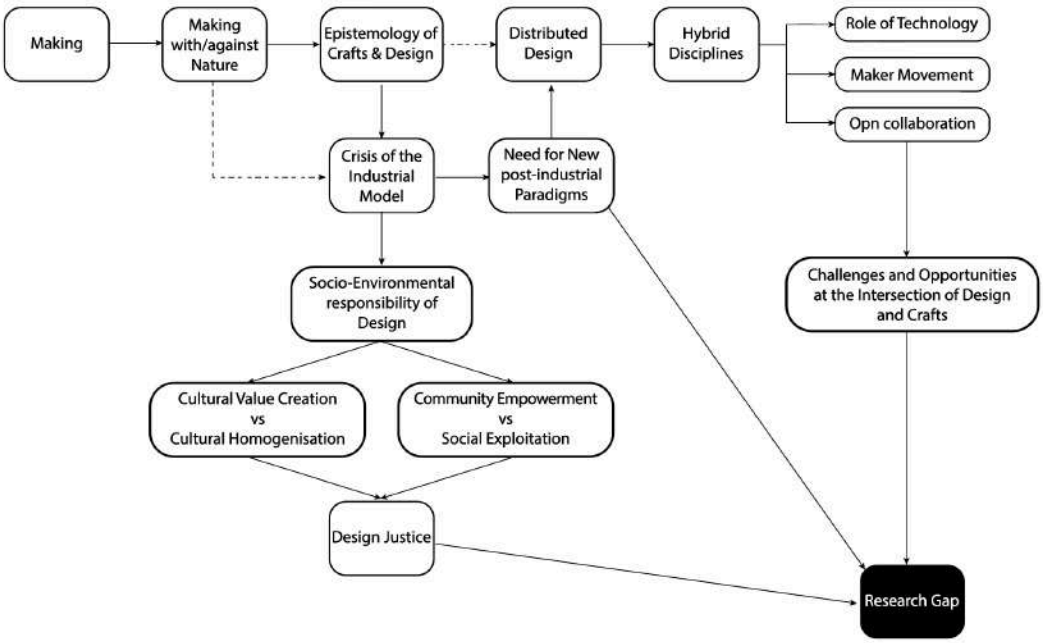

Figure 1.4 *Identifying Research Gap.*

The Addressees of the research belong to a broad range of stakeholders, including –but not limited to– academic researchers, design/crafts practitioners, and policymakers. The research is in fact intended to inform future research, shape future hybrid design practices, influence policy in sustainable and culturally responsive design, and support local artisan networks by highlighting the potential of a hybrid approach that blends traditional craft and emerging technology.

2. Hypotheses & Design Research Problem

The research is based on the assumption that emerging technologies have led to the definition of an alternative hybrid design paradigm that we have called ***New Design Craft*** by bringing design and craft closer than ever. This assumption supports the study and directs the research into how hybrid design can support environmental and cultural sustainability by adopting a design justice approach to enable more just and sustainable futures. Specifically, the initial assumptions for this research were:

- There is a community of hybrid creative practitioners currently embracing new paradigms that aspire to more just and sustainable futures, empowering local/artisanal communities through a hybrid approach to design and production processes. This paradigm involves decolonising design practices, mitigating the interference of the Western industrial model, and encouraging locally relevant and culturally diverse solutions (Noel 2023).
- Local communities are equipped with a sense of agency in the determination of sustainable future scenarios and can exercise it in the choice of practices consistent with their environment and the rejection of Western industrial models. These alternative paradigms can involve using local products and materials, reducing energy and waste, and strengthening local economies (Watson & Davies, 2019).
- Emerging technologies play a role in the hybridisation of creative practices and have brought design and craft closer together than ever.

The design research problem was iteratively defined through a combination of preliminary direct observation of the contemporary design landscape and a pre-empirical literature review. This phase of

preliminary deskwork supported the identification of recurrent themes and topics in the contemporary design landscape and informed the definition of the following Design Research Problem: ***"How can New Design Craft blend local craft and emerging technologies to support environmental and cultural sustainability by adopting a design justice approach to enable more just and sustainable futures?".*** This design research problem became a guiding compass in my attempt to systematise the research scenario while setting the context for an exploration that could be truly rooted in contemporary design's issues, dynamics and protagonists.

3. Questions and Keywords

Solidified the design research problem, it was then broken down into its key components to define operative research questions to examine each aspect of the phenomenon in detail.
Focusing on the three pillars of the dynamic at the intersection of Design and Crafts, that is to say, material culture, social environmental justice, and the dependency on emergent technologies, we defined the interrogatives detailed in Table 1.1.

Table 1.1 *Primary and Secondary Research Questions.*

Primary Research Questions	**Secondary Research Questions**
Q1. What are the differences and similarities in the epistemology of Making in Craft and Design?	**F/U1** Why do people make things?
Q2. Can Design and Crafts cooperate and overlap to generate material cultural value?	**F/U2** What are the first and most direct effects deriving from the direct relationship between design and craft?
Q3. What is the role of technology in shaping the relationship between Design and Crafts?	**F/U3** Can emerging technologies become a medium of hybridisation of Design and Crafts?
Q4. How can we define Socio-environmental Justice? Can it be pursued by Design?	**F/U4** What impact can hybrid creative practices have on local identities? **F/U5** Which role can they have in the pursuit of social environmental justice?
Q5. What new paradigm can we observe in contemporary design?	**F/U6.** Which general models can we draw from the analysis of contemporary design?

The main design research problem sets the stage by framing the intersection between contemporary design and Craft practices through the perspectives of material culture, socio-environmental justice and emerging technologies. These were identified as the core pillars of the research by providing definitions of the primary and secondary research questions. Consequently, they also guided the definition of the research keywords according to the relationships detailed in Figure 1.5. From the first pillar – the role of Emerging Technology in shaping the relationship between Design and Crafts– descended keywords highlighting the merging/overlapping of traditional techniques with emerging technologies and post-industrial approaches. From the second pillar – the role of Design & Crafts in Shaping Material Culture and Local Identities– derived keywords describing the relationship between Design, Crafts and local identities and heritage. From the third pillar – the role of Design & Crafts in Socio-Environmental Justice– descended keywords capturing the evolving narrative around sustainability in creative practices.

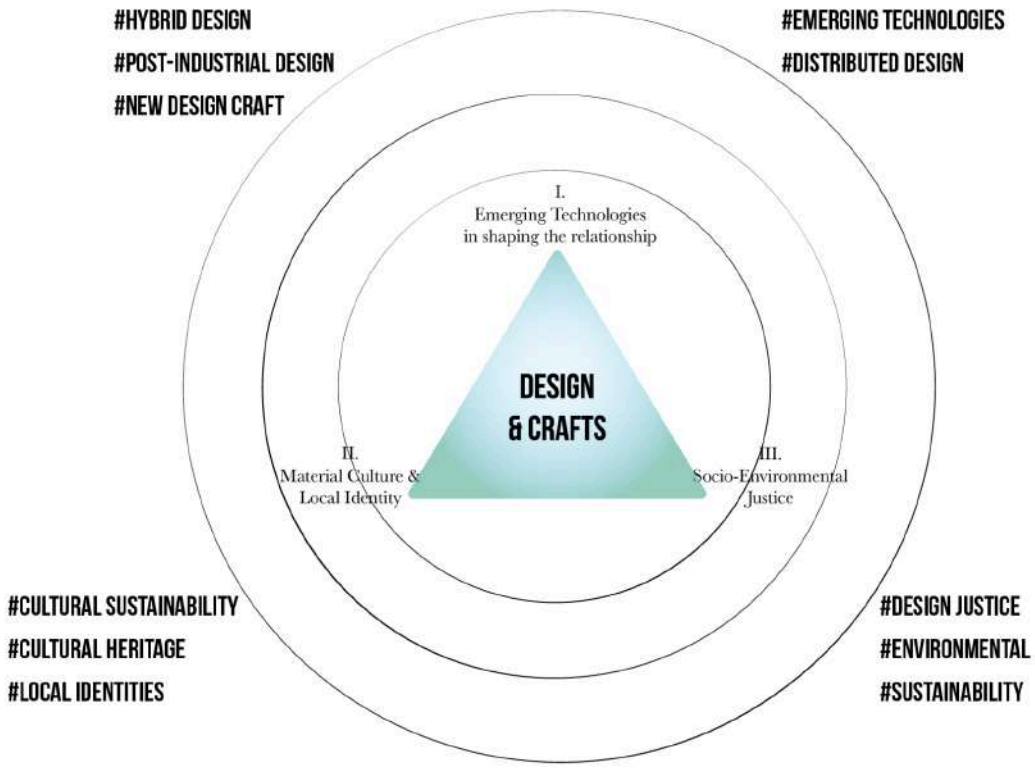

Figure 1.5 *Keywords generation.*

4. Paradigm & Methodology

This research started with acknowledging the existence of a plurality of cultural truths often overlooked by the dominant culture that today overlaps with Western bias (Costanza-Chock, 2020). As a result of this cultural superposition, design and design research tend to be unintentionally biased in believing in the existence of just one possible way to Design, that is to say, the Western Industrial way. In open contraposition to this approach and acknowledging the existence and validity of a plurality of truths, this research pursues a more inclusive approach to the conversation on Design, that is, one that celebrates cultural diversity over industrial uniformity.

For this reason, the research study was rooted in postpositivism. In this paradigm, we move beyond the idea of one objective reality and embrace complexity, assuming that reality is the result of the existence of multiple truths and perspectives (Clark,1998). This plurality becomes an antidote to the overarching presence of Western Bias and privilege in a Design world that reduces Design and its cultural production to that of the dominant minority –that's to say, the minority constituted by Industry-aligned, Western, White, Cis, Educated Male designers– and embraces the richness of the cultural production of the overlooked majority.

The research was conducted over a three-year period, and it was structured in six consecutive phases, each building on the previous ones to organically grow an understanding and produce knowledge on hybrid creative disciplines.

In **Phase 0** (*Macro-Scanning*), I conducted deskwork at a macro level to identify key literature sources and data to analyse the overarching dynamics between design and crafts, particularly focusing on material culture and emerging technologies, while I also defined the research problem and initial questions.

In **Phase 1** (*Micro-Scanning*), the focus shifted to a micro-level analysis, wherein historical case studies were examined and mapped out to reveal recurrent patterns at the intersection of design, crafts, technology, and socio-environmental justice.

Concurrently, during **Phase 2** (*Screening*), I developed rigorous inclusion and exclusion criteria and screened the contemporary landscape to shortlist hybrid design practitioners in line with them.

In **Phase 3** (*Surveying*), I carried out fieldwork by administering structured questionnaires and conducting synchronous interviews, which allowed me to collect detailed data that was organised into a comprehensive database of hybrid creative practices.

The next stage, **Phase 4** (*Systematising*), involved synthesising and evaluating the data: I clustered case studies based on recurring themes, developed Data Visualisations, and formulated a Manifesto that outlined the values and principles guiding future hybrid interventions, all of which were further tested through a pilot design experience.

Finally, in **Phase 5** (*Summarising*), we summarised the research findings by consolidating the data into a final dissertation that detailed key insights, recognised research limitations, and proposed directions for future research and development.

Overall, the research predominantly employed qualitative, deskwork and fieldwork research families (Blaxter et al., 2016), complemented by some elements of quantitative data analysis, and adopted Survey and Action Research approaches that integrated multiple research techniques for data gathering and analysis. In the initial phases, we carried out desk-based research through a relevant literature review and comparative scanning, which allowed us to map out the historical and theoretical context of the relationship between design, crafts, emerging technologies and socio-environmental justice. This involved the thematic analysis of academic and sectoral sources, with a focus on defining the key pillars of the study—namely, the role of emerging technologies, material culture, and socio-environmental justice as dimensions used to describe the dynamics at the intersection of Design and Crafts.

Building on this foundation, the research advanced into the following stage, which utilised asynchronous questionnaires and synchronous interviews to gather primary data from selected hybrid practitioners. These data collection techniques were adopted to capture insights into the values, processes, and challenges faced by practitioners operating at the intersection of traditional craft and contemporary design. The collected data were then organised into a comprehensive database, further refined through manual data cleaning and analysed using statistical tests on closed-ended responses, while open-ended responses were subjected to computational linguistic analysis techniques to

identify recurring themes. Additionally, the research employed data visualisation tools and comparative analysis—through the creation of case study cards and comparative tables organised in an Atlas of New Design Craft—to synthesise the findings and highlight patterns across multiple dimensions, as well as data visualisations to highlight key trends across the collected data categories such as Location and Longevity of Practice; Gender and Age Group; Design Mission and Values; Design Process; Relationship with Local Material Culture; Relationship with Emerging Technologies; Relationship with Sustainability Issues, etc.

In the last phase of the research, we summarised these insights to develop a new definition of a hybrid creative discipline, which we called New Design Craft, by drafting a manifesto that articulated the values and principles as well as a suggested process that could guide future hybrid experiences. Lastly, we tested and refined this new collaborative paradigm through a pilot design experience with a local blacksmith, which involved the design and implementation of a generative algorithm to upcycle metal scraps, iterative prototyping in close collaboration with the artisan, and the creation of a dedicated dissemination platform to promote the project during Milan Design Week 25.

5. Expected Contributions to Knowledge

The elements of innovation and the scientific relevance of this research regard both its content and methodology. On the one hand, the study challenges the traditional industrial design paradigm, which has long mirrored Western industrialisation by relying on mass production principles that often lead to cultural homogenisation and the marginalisation of local craft practices. By contrast, this study introduces the concept of New Design Craft—a hybrid approach that blends traditional craftsmanship with emerging technologies, thereby redefining the role of design as a catalyst for cultural diversity and socio-environmental sustainability.

New Design Craft is positioned as a distinct subset within the broader framework of Distributed Design, a movement that challenges conventional, industrialised design paradigms by advocating for decentralisation, inclusivity, and culturally responsive practices. Distributed Design rejects the homogenising effects of mass production and the centralisation of power in the Global North, instead

promoting design processes that are localised, participatory, and adaptive to the specific cultural and ecological contexts of diverse communities. In this research, New Design Craft builds on these core principles by specifically exploring how traditional craft practices can be revitalised and blended with emerging technologies to foster more just and sustainable futures.

While Distributed Design provides a broad ideological framework that encourages openness and collaboration, New Design Craft narrows this focus to the intersection of craft heritage and contemporary design, addressing the unique challenges and studying the unique opportunities and characteristics of the practice of hybrid creative practitioners.

The study also establishes a new nomenclature and definition, and a set of guiding principles for New Design Craft to clearly signal how New Design Craft doesn't just share some of the values of Distributed Design, but also extends them.

Additionally, the research expands the academic discourse on post-industrial design models by integrating diverse theoretical frameworks—ranging from design for social change to design for belonging—with empirical findings drawn from systematic deskwork, comprehensive fieldwork, and a pilot design experiment.

Moreover, the research defines a replicable model necessary to validate the efficacy of hybrid practices repositioning artisanal practices within the broader narrative of contemporary design and providing actionable insights as well as a conceptual framework that can inform future research, policy-making, and design interventions.

The research produced a set of outputs that address both the theoretical and practical dimensions of the hybrid creative discipline we call New Design Craft.

Key among these outputs is this dissertation, which synthesises the research insights.

The study also produced a database of hybrid creative practices, made accessible through the design of an Atlas of case studies and comparative tables that capture different dimensions of the practices. Data was also elaborated into a set of thematic data visualisations. Complementing these analytical tools, the research developed a Manifesto that articulates the values, principles and process defining New Design Craft, as well as a visual identity that positions this new paradigm as a distinct movement.

The pilot design experience, implemented in collaboration with a local blacksmith, culminated in a detailed account of the experience as well as a small technical series of eight design-conceptualised, computer-generated, human-optimised, and hand-produced pieces, serving as a practical validation of the collaborative paradigm. Additionally, the study produced a dedicated web platform to disseminate the New Design Craft culture.

6. Research Structure

The research is structured into six main chapters, with **Chapter 1** being the *Introduction*.
Chapter 2, *Relevant Literature Review*, presents the key thematic findings of the research and is divided into three parts. In **“Part 1 - Making"**, we examine the anthropological basis of making and cultural sense-making as well as the evolution of the epistemology of Crafts and Design.
"Part 2 - Hybridising" explores the potential overlap and integration of design and crafts through historical case studies and the role of emerging technologies.
Lastly, in **"Part 3 - Socio-Environmental Justice",** we investigate hybrid practices’ potential impact as vectors of socio-environmental justice.
Chapter 3, *Methodology*, outlines the research process in detail, presenting the rationale of the research strategy beginning with the methodology of the literature review, as well as the contextualisation of the research, and the identification of inclusion and exclusion criteria for the shortlisting of relevant examples.
Secondly, we describe the methodology of the Survey Approach, which included the design and administration of a screener and structured questionnaires and in-depth interviews, the construction of a database, and data analysis through comparative tables and case cards. Additionally, we describe the process of Manifesto Making and its testing through Action Research. Here, we outline the methodology and process for the pilot project, *Generative Craft*.

Chapter 4, *Analysis of Results*, presents the analysis and discussion of the collected data, commenting on the quantitative and qualitative data analysis and analysing the results of the data visualisations and computational linguistics analysis.

Chapter 5, *Synthesis and Evaluation of Results*, presents the outputs of the research, including the Atlas of New Design Craft, data visualisations, interview findings, the Manifesto for New Design Craft, a Visual Identity and Web Platform for the New Design Craft, the description and outcomes of the pilot project *Generative Crafts*, and the various papers and publications produced during the three-year programme.

Chapter 6, *Conclusion*, circles back on the original research questions and design research problem, addressing the emergence of a new design/craft movement, presenting its unique challenges and opportunities for future developments. Lastly, it acknowledges the limits of the research and offers suggestions for future research.

Following the conclusion, we introduce the *Bibliography and References* section of this research. Finally, **Appendix A** gives access to the full structure of the Questionnaires utilised for the async surveys and the sync interviews, **Appendix B** contains the New Design Craft Manifesto, and **Appendix C** presents the Atlas of New Design Craft.

7. On Ethical Use of AI

This dissertation incorporates Artificial Intelligence (AI) tools in alignment with ethical research practices and academic integrity guidelines. AI has been utilised solely to support and enhance the research process, including textual data analysis and summarisation, grammar check and proofreading, ensuring accuracy, clarity, and content consistency. The application of AI has been transparently acknowledged wherever employed, and all outputs derived from AI tools have undergone rigorous manual review and verification to maintain high academic standards and intellectual originality. We retain full accountability for the research outcomes, interpretations, and conclusions presented in this dissertation. No aspect of critical analysis, argumentation, or creative intellectual contribution has been delegated to AI. Furthermore, care has been taken to ensure that AI-generated material does not infringe any existing intellectual property rights or compromise ethical standards.

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2.

Relevant Lit-Review.

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0. Chapter Introduction

This literature review formed the critical foundation of the research, playing three distinct functions in each of the first three phases of the research process. During the Macro-Scanning phase (0), the literature review was used to contextualise the broader research landscape and identify existing gaps within the intersecting domains of Making, Hybrid Creative Practices, Emerging Technologies, and Socio-environmental Justice. Following that, in the Micro-Scanning phase (1), the literature review provided a granular exploration of historical case studies and established theories to map recurrent patterns and dynamics necessary to understand these phenomena. Lastly, in the Screening phase (2), the insights derived from the literature review informed the development of inclusion and exclusion criteria for the empirical sampling and analysis of case studies used in the Survey approach to represent the complexities inherent to the hybridisation of design and crafts and their potential advocacy for socio-environmental justice.

The literature review itself was strategically designed to systematically investigate both theoretical and empirical dimensions, comprehensively addressing the central design research problem:

"How can New Design Craft blend local craft and emerging technologies to support environmental and cultural sustainability by adopting a design justice approach to enable more just and sustainable futures?"

To tackle the complexity of the design research problem, this was deconstructed in its three main dimensions (Material Culture, Technology, and Socio-Environmental Justice), reflected in the structure of this chapter, which is articulated in three parts. Part 1 introduces the anthropological basis of Making and the epistemology of Crafts and Design; Part 2 explores the hybridisation of these epistemologies from a theoretical and historical standpoints as well as the influence of emerging technologies; Part 3 covers the evolution of the idea of sustainability as socio-environmental justice and the role that hybrid disciplines can play in projecting more just and sustainable futures. Each part is articulated in paragraphs directly addressing the research questions to ensure rigour and focus in the analysis of this complex phenomenology.

Part 1. Making

|| Synopsis ||

In this first part, we explore the act of Making as an innate impulse, analysing the tensions between working with or against nature. We discuss its anthropological foundations, comparing the modalities of Animal Laborans, Homo Faber and Homo Creator, and we examine indigenous craftsmanship and how it was disrupted by colonialism and industrialisation. We critically review technology mythologies, contrasting Anthropocene with Chthulucene, and we frame sustainability as a wicked problem. We introduce the Lo-Tek movement and Radical Indigenism. Lastly, we analyse crafts and design epistemologies, examining crafts' relation to Indigenous Local Ecological Knowledge (ILEK), material culture, and genius loci, and design's transition from the Western industrial model towards self-production and cultural agency beyond the Industry.

1.1 *Why do people make things?*

1.1.1 Earliest signs of artificial stone tools

Humans have always been able to establish relational interactions with their environment. The process of making, that is to say, changing the nature, appearance and features of natural elements, means attributing additional cultural meaning to nature itself: so the process of making is, first and foremost, a process of cultural sense-making (Sennet, 2008).

The creation of more and more complex systems of meaning is what traditionally characterised the passage, on the evolutionary scale, from less evolved modes of humanity to more advanced ones. Still, the traditional assumptions regarding the beginning of the influence of the human species on the World - that will naturally evolve into the idea of an Anthropocene once this influence reaches a critical point - are constantly challenged by paleo-archaeological findings that push back the clock of our human history (Joseph, 2000). In 2015, the finding of stone tools dated 3.3 million years forced us to assume that the act of making, traditionally seen as one of the characterising traits of the genus Homo, has indeed a way longer history, dating back to the Pliocene hominin (Harmand et al., 2015). This discovery challenged the long-held assumption that toolmaking began exclusively with Homo habilis (nicknamed “handy man”), as cut marks on animal bones suggests that even earlier hominins were using sharp stones to process food, in response to basic survival needs. Even in their most primitive forms, humans began making things as extensions of their bodies to augment the limited capabilities of teeth or fingers with crafted edges and points, providing a competitive evolutionary advantage.

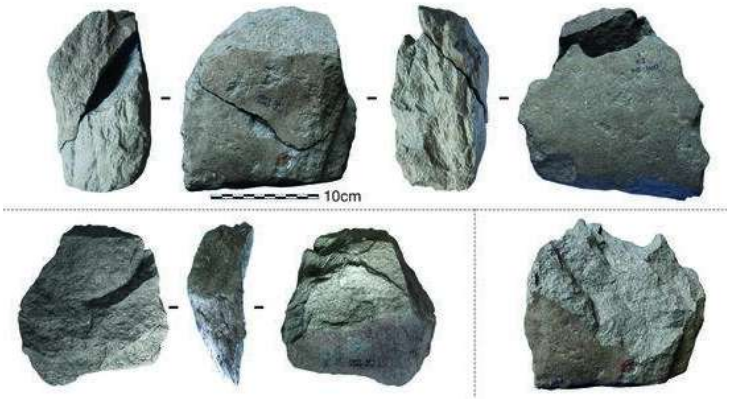

Figure 2.1 *Early Hominins’ stone tools dated 3.3 million (Harmand et al., 2015).*

Interestingly, the ability to bend the world around us and its resources is not a prerogative of the genus Homo, or the human species entirely: many other species showcase the same ability as a result of evolutionary processes developed under the pressure of the fulfilment of biological and material needs, from that of building nests and shelters, to the mating advantage guaranteed by the ability to build articulated structures and rituals. Moreover, the results of these processes are not always free from what we could define as aesthetic values that, for some reason unclear to biology, define an evolutionary advantage (Sumpter, 2006).

For example, the males of some species of cichlids usually prepare artificial craters where the females will lay their eggs to be fertilised. However, a type in particular, the Japanese pufferfish, showcases an even more refined expression of this acquired instinct: this particular pufferfish flaps its fins near the seafloor to create ornate circles in the sand. Three unique characteristics characterise the geometric patterns that result from this intentional effort: they involve radially aligned ridges and valleys outside the nest site that can reduce the force of external water streams resulting in increased stability for the eggs; secondly, the ridges are enriched with shells which seem to give an advantage in the choice the females make when deciding where to lay their eggs; lastly, the males focus their effort with the scope of giving the formation a distinctive look and colouring (Main, 2013).

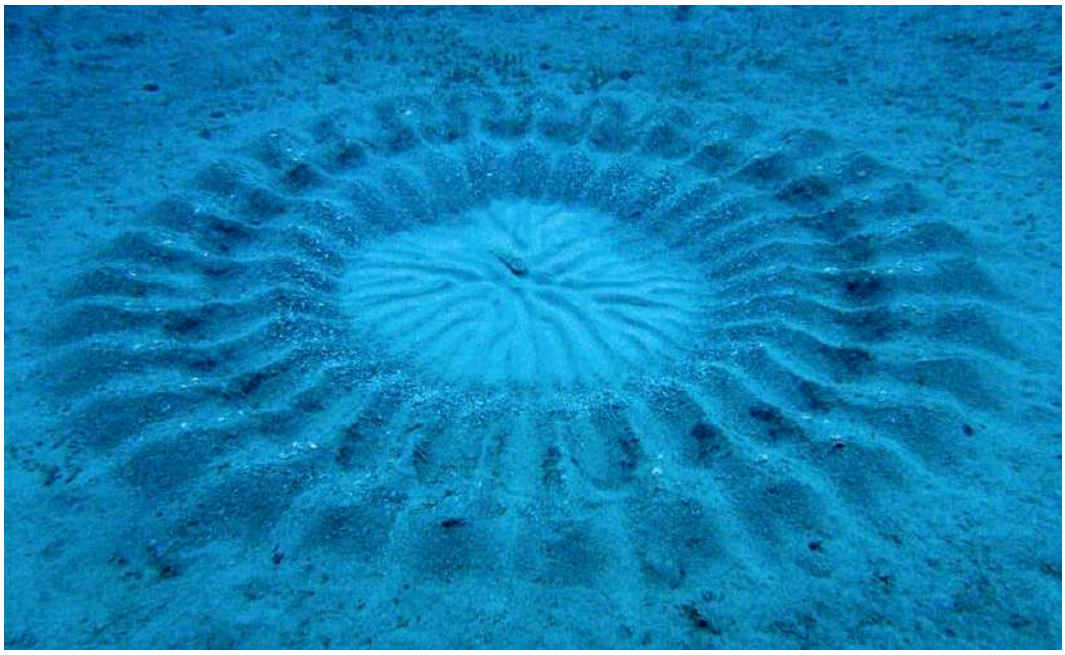

Figure 2.2 *Sand craters created by Japanese pufferfish as part of the mating ritual.*

Another fascinating example is represented by some type of *Ptilonorhynchidae*, called Bowerbirds, due to the distinctive and unique configuration of the bowers created by the males to induce the females to engage in the mating ritual. These birds can build elaborate bowers that are meticulously decorated with various objects such as colourful flowers, leaves, feathers, and even artificial items like bottle caps or pieces of plastic, mostly displaying an inexplicable preference for the colour blue. The females visit these bowers to evaluate their aesthetics: when the display convinces the female, she enters the bower where the male performs an intricate dance, keeping the female's favourite trinkets in its beak (Borgia & Keagy, 2015).

Figure 2.3 *Complex nests including artificial components created by Bowerbirds as part of the mating ritual.*

These and other examples have led modern biologists to theorise that there are strong cognitive components directing processes of co-option that can explain the evolution of complex behavioural displays (Borgia & Keagy, 2015). More than that, these models show a fundamental instinct that makes all living organisms able to bend their environment to change those conditions that can constitute an advantage. So we might generalise the idea by saying that the act of making, as previously defined, constitutes a fundamental instinct for all living beings.

The human species makes no exception: from the first appearance of the hominin tribes–our extinct bipedal ancestors–we have explored the world around us with the scope of finding ways to change it and leave our physical and conceptual footprint on its surface (Cole, 2011).
The drivers of this effort have, undoubtedly, evolved alongside the evolution of our species itself: as we become more sophisticated in our needs and more aware of the social, political, ethical and economic implications of such process of systematic consumption, our ability to shape the world around us has evolved as well.

1.1.2 Anthropological Basis of Making

If these archaeological evidences provide an idea regarding the timeline of toolmaking, anthropology offers insight into its significance for humanity. Anthropologists agree on the idea that the ability to make and use tools is one of the defining characteristics of Homo sapiens, so much so that the term Homo faber ("human the maker") is used to emphasise the role of Making in our species' identity. From a biological standpoint, opposable thumbs, refined motor skills, and large brains were the conditions for the acquisition of the ability to practically engage in intricate craftsmanship. Being able to imagine an object that does not yet exist and then bring it into being represents a cognitive leap supporting the conceptualisation of crafts itself. The anthropologist Tim Ingold describes making as a way of thinking and understanding that emerges through an intimate relationship between the maker and their materials (2013). In fact, arguing that Making is not merely the act of imposing form onto matter, Ingold challenges the traditional anthropological views that see objects as static entities passively resulting from the process of Making and, on the contrary, become the proof of an active form of engagement with the world, demonstration of how making is inherently connected to life's dynamics, integrating observation, creativity, and skill (Ingold, 2019).
In his theory of Making, Ingold starts from a comparison between the notion of hylomorphism, where form is imposed upon passive matter, with that of morphogenesis, arguing that materials are not inert matter, but something characterised by intrinsic properties and forces influencing the making process

which require makers to establish a dialogue with the material to understand their qualities and allow forms to emerge instead of being predetermined.

Figure 2.4 *A potter balancing structure, moisture and speed to shape a vessel on a pottery wheel.*

This shift from hylomorphism to morphogenesis reflects a broader anthropological change of perspective on making, which is now seen as a dialogical process between human agency and the characteristics of materials (Ingold, 2013). Reimagining Making as a process of growth and mutual adaptation, Ingold highlights its epistemological significance, emphasising that functional understanding must come from action and direct immersion/connection in the material world.
A key aspect of Ingold's framework is the idea that materials have both an active and passive dimension as they exert an active role in influencing the outcomes of a shaping process. Thus, maker and matter become both co-creators (Ingold, 2013). Other anthropological perspectives emphasise the relational aspects of Making. For example, Dei (2015) argues that every object carries social, cultural, and environmental values, reinforcing Ingold's concept of the "meshwork", which suggests that making goes beyond the interaction between a maker and materials, and it embeds a wider social and ecological meaning into the act of Making. In this way, material culture becomes a medium through

which humans adapt to and organise their environments. In other words, if we take, for example, a traditional handwoven basket, we will find that it serves as a functional object but it will also reflect the cultural system and practices of the community that produced it, since its design and materials can tell a story of the environment it was created in.

In line with this idea, Harmand et al. (2015) reflecting on the early origins of tool-making demonstrate how objects and materials carry evolving knowledge systems. A perfect example of this dynamic is the making of a handaxe. Ingold (2013) describes the handaxe as both a product of skilled labour and evidence of the evolving relationship between the maker and stone. Although early anthropological theories considered the handaxe an example of humans domination on nature through imposed form, Ingold highlights that shaping the stone requires the maker to adapt to its natural properties as each fracture and contour guide each strike of the tool, making the making process a negotiation rather than an act of control.

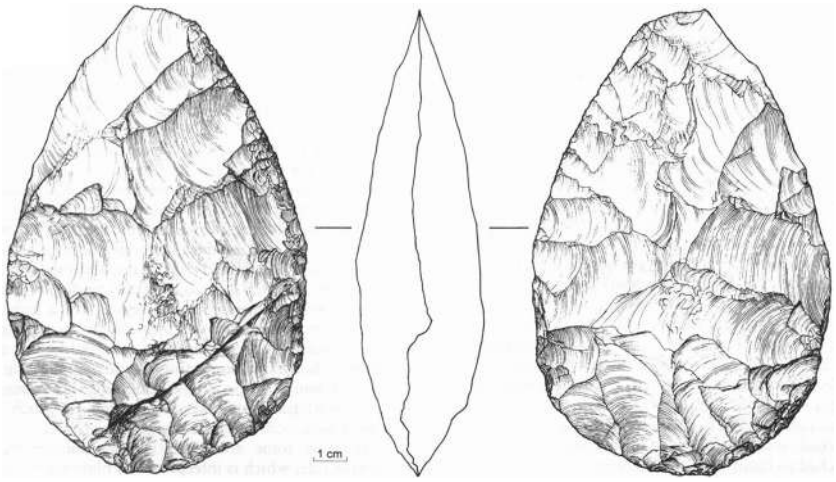

Figure 2.5 *Acheulean Handaxe shape: Imposed Mental Templates vs Emergent in Manufacture (Ingold, 2013)*

Building on Ingold's analysis, Wynn and Gowlett offer a reconsideration of the Acheulean handaxe as a cultural artefact, emphasising its functional and aesthetic dimensions. In fact, the design of the handaxe reflects ergonomic principles like stability and ease of handling, alongside aesthetic preferences for symmetry and balance, like its characteristic teardrop shapes, highlighting early humans' cognitive abilities for planning and a shared understanding of form (2018).

1.1.3 Making with vs Against Nature

This exploration of the anthropological basis of Making introduces the relevance of the theme of the relationship between human craftsmanship and the natural environment, which can be summarised into two main perspectives. From one point of view, creating objects is a means for people to tame and change natural materials, asserting dominion over nature. In this perspective, the Maker is aligned with the characteristics of the Homo faber who creates an artificial world of tools and structures, to rise above nature. Historically, the industrial revolution captured the spirit of labour against nature with factories and machinery allowing large-scale resource exploitation, profoundly altering the living landscape, while rooting these efforts in the idea of progress intended as surpassing natural boundaries (Vachon & Klassen, 2006).

The opposite perspective describes Making as working with nature, stressing the need for cooperation and harmony between artificial and natural processes. Many indigenous traditions hold that the ideal maker is one who listens to what the material "wants". Craftspeople bend their designs to the characteristics of the material rather than pushing raw materials into a preconceived mould, producing outcomes that complement natural forces. In this paradigm, Makers are participants in the creativity of nature rather than outside demiurges, and Form emerges from interaction and not imposition (Ingold, 2013). The dichotomy of with-versus-against nature in creation is not absolute; rather, most human endeavours entail some degree of extraction and modification of natural resources, bearing ethical and ecological significance. Cultures that prioritised collaboration with nature frequently devised sustainable methods capable of enduring for generations. In contrast, the anti-nature mentality produced unparalleled material wealth and invention, but at the expense of environmental deterioration. This contradiction establishes the foundation for current discussions on design and sustainability: should creators today pursue a reconciliation with nature, or is ongoing technical supremacy (moderated by improved governance) the way forward? Knowing why people create things cannot be divorced from how they create them as this process of evolution of needs and awareness hasn’t been a linear one and it still isn’t: some of the behaviours that characterise our relationship with Nature and our Planet seem to suggest the permanence of that instinctive mode that

is driven by the drudgery of necessity, that coexist alongside some others and more sophisticated instincts characterised by political and creative awareness (Kazak, 2019).

1.1.4 *Homo Faber* vs *Homo Creator*

In the words of Hannah Arendt, a political philosopher of the 20th century, we witness every day the fundamental coexistence between two modes of human nature that Arendt calls *Homo Faber* and *Animal Laborans*, representing the personification of the instinct to swing between the two poles of Labour vs Work. In Arendt's theory, labour is a necessity-driven activity carried out by the *Animal Laborans* who, in contrast to *Homo Faber*, symbolises a style of human existence where the never-ending cycle of labour necessary for survival rules. In other words, the *Animal Laborans* mode, as defined by Arendt, represents a state of humanity characterised by an existence centred on meeting just basic physical and biological needs (Arendt, 2013). The primary call to action for *Animal Laborans* is to meet the fundamental needs of nourishment, shelter, and clothing. Humans living in their *Animal Laborans* mode are entrapped in a repetitive cycle of labour focused on maintaining life rather than enhancing it, according to the rules of a mode of living characterised by consistency and predictability (Arendt, 2013). On the other hand, *Homo Faber* epitomises human creativity, emphasising the capacity to invent new, durable things such as new tools, and bring them into the world. And this is what makes humans stand apart from other animals on Earth: their creative nature, defined as that of practical problem-solvers, able to use technical skill and labour to shape their fate and environment (Sternberg & Kaufman, 2018). However, Arendt also warns us on Homo faber's fixation on utility that can lead to a world where everything is valued only as a means to an end.

But the human aspiration to transcend the mere cycle of labour for survival to engage in creative and innovative activities that go beyond meeting basic needs pushes our evolution one step further: we become Homo Creator when we seek to break free from the constraints of necessity to explore the realm of human potential in various creative domains. The term Homo Creator can be seen as a more general definition of the making abilities of Homo Faber which are enriched with the skill of Invention,

as in the creation of new ideas. In this way, Homo Creator encompasses a broader range of artistic endeavours which extend beyond pure workmanship (Sennet, 2008).
The idea of Homo Creator can be adopted also to capture another dimension of humanity: the creative meaning-making impulse. If Homo Faber is the tool-maker, Homo Creator is the symbol-maker or world-builder – an entity that doesn't just replicate existing patterns but can originate new ones. Although this term is less formalised in classical literature, it emerges from the recognition that human beings seek to create beauty, and knowledge, rather than just utility as proven by the fact that humans create art, music, mythology, and scientific theories, none of which are tools in a narrow sense, but all of which help us make sense of existence.

1.1.5 Indigenous Craftsmanship and ILEK

These modes of humanity seem to coexist throughout history, leading to our contemporary era: behind a new tool, there's usually a new idea, and behind a new idea, there's always an instinct derived from an unresolved need or issue. This principle justifies the passage from unorganised attempts to bend the world around us, utilising its resources to meet our basic needs, to the evolution of entire cultural systems of indigenous craftsmanship that span thousands of years and are still deeply rooted in the cultural heritage of Indigenous peoples worldwide (Okumu, 2016).
We can study these organised systems of craftsmanship that have survived human history and its technical development both to understand the origins of the act of making and also to learn a lesson in sustainability, in an era that has demonstrated the negative impact of interactions with the environment that disregard the balance between living and non-living components of our ecosystems. Indigenous craftsmanship usually originates from a direct and unmediated interaction with nature and its elements, and it is defined by three unique characteristics (Mellegård & Boonstra, 2020):

- First, due to its variability and unavoidable degree of unpredictability, the central role that living nature plays in these crafts demands constant attention, evaluation, and adaptation;

- Second, a co-productive connection based on sustainability between users and the living environment produces ecological services and benefits as a result of humans and nature's mutual dependence on one another, emphasising the agency of humans and non-humans.
- Third, the tools employed have an impact on the sustainability of craft practices for the environment (Mellegård & Boonstra, 2020).

These limiting and characteristic factors have laid the foundation for the creation of complex and stratified systems of workmanship, very often developed to the point of craftsmanship. The difference between the two concepts lies in the level of skillfulness and mastery of the operator, so that, in a way, any form of craftsmanship could be described as an evolved expression of an underlying form of workmanship. If the results of workmanship consist of the mere solution to an existing problem, for the craftsman to succeed, every detail counts, and just the mastery of the operator stands between the achievement of the desired outcome and a technical disaster. For this reason, David Pye, in the late '60s, defined craftsmanship as the workmanship of risk (Pye, 1978), since its outputs are generated in close coordination between the mind and the hand of the operator, and they might be destroyed or ruined by the slightest distraction.

Indigenous craftsmanship, with its long history that dates back thousands of years, whilst still being firmly anchored in the rich cultural legacy of the many Indigenous cultures around the world, showcases a variety of expressions and applications confirming the constructivist idea of a craftsmanship resulting from an evolved workmanship. The different systems of indigenous craftsmanship present recurrent patterns of evolution: they usually originate from a core set of techniques aimed at the resolution of practical problems related to the construction of shelters, systems of production and storage, etc., to evolve, at a later stage, to higher levels of artistry and symbolic cultural objectification of meanings (Varutti, 2015). This includes a variety of artistic disciplines, such as jewellery making, weaving, carving, pottery, and basketry. Moreover, these cultural systems of craftsmanship are usually passed down from one generation to the next, protecting cultural identity and keeping a close link to ancestral customs: in this sense, craftsmanship can be defined as a carrier of Indigenous and Local Ecological Knowledge (ILEK) (Mellegård & Boonstra, 2020) amassed by

Indigenous populations in the form of a vast and varied body of knowledge from their close interactions with the environment over many generations. ILEK includes a comprehensive view of ecosystems, biodiversity, and natural resources that is frequently based on customs, cultural norms, and oral traditions.

Recently, there has been a growing interest in Indigenous craftsmanship, which has helped to preserve these traditional crafts, empower Indigenous communities and promote cultural diversity (Watson & Davis, 2019). A first example of the result of this process of creative adaptation to nature is offered by Watson & Davis (2019): it's the case of the suspended living root bridges predominantly grown by rural Khasi and Jaintia tribes in Meghalaya, India: these are resilient, flexible, responsive, and productive infrastructures derived from the interaction between humans and the living aerial roots grown from a specific tree, the Ficus Elastica (F. elastica). Over the last two thousand years, these communities have learnt how to use the living trees as building material to build bridges and ladders characterised by infrastructures that organically increase in strength and size over time, disrupting the natural ecosystemic cycles only ever so slightly, while increasing the overall biodiversity, all while providing a natural solution to environmental pressures like decomposition and flooding. This Indigenous creative thinking has led to the development of sophisticated and durable infrastructures by collaborating with nature's inherent intelligence to withstand the force of the monsoons that would, otherwise, cut their villages off by making travelling between them impossible.

But the relationship between the Khasi tribe and the living bridges is not just a functional one: the bridges become a cultural vessel if we consider that these represent a fundamental element of the mythology of creation for the Khasi tribe whose ancestors descended from a living root ladder connecting heaven and earth, making them one with nature.

The bridges and ladders are grown in a four-step process that leverages the natural growth patterns of trees pre-existing on opposite banks of a river:

1. The aerial main roots intertwine to form the fundamental structure of the root bridge.
2. The structure is reinforced with hollowed-out betel tree bark to provide a guidance system for the additional growth of the roots and to redirect them in the necessary direction.

3. The more malleable secondary roots are used to weave a net to reinforce the structure.
4. Over time, the network of main roots, secondary roots, and bark creates an integrated and solid infrastructure that can resist the strength of the monsoonal flooding.

Figure 2.6 *Living suspended bridges by the Khasi tribe, Meghalaya, India. (Ph. National Geographic).*

Dating back even further, Watson & Davis (2019) give us two other excellent examples of cooperation between craftsmanship and nature that still survive the most recent technical developments.
The Waru Waru agricultural terraces were invented by the Inca people around Lake Titicaca, in Peru. Although formally introduced in the 1800 BCE, this agricultural technique, which involves the microtopographic modification of the surface of the lake, originates from similar approaches dating back to the year 6000 BCE. The Waru Waru agricultural terraces are a prime example of how indigenous communities can utilise their knowledge to create sustainable farming practices. These terraces, developed by the ancient Andean civilisations, maximise land productivity while helping preserve the environmental biodiversity, prevent soil erosion and conserve water resources, against the destructive effects of the recurrent floods, droughts and frosts that characterise the area. This is obtained through

the construction of a system of land beds and canals with consistent elevations and depressions, which maintain the ecological balance of the ecosystem thanks to the thermo-regulatory effects of the body of water and the different gradients of porosity of the different layers of soil. At the same time, the decaying plants, algae and fish residue present in the canals become a nutrient source for the plantation. The value of such technology, besides the evident agricultural advantages for the Inca population is represented by the lesson in sustainability it can teach to the industrialised world: it is a strong testimony to our ancestral ability to understand the world around us, its resources and to adjust to them in a positive, constructive way. They constitute examples of human intervention in nature that is not just non-destructive but planet-centric, as it is based on the mutual advantage obtained by both humans and the environment through the introduction of such technologies.

Figure 2.7 *Waru Waru Terrace: an example of symbiotic technological intervention.*

A similar understanding of the natural rhythms and environmental factors can be found in the temporary intervention operated by the Enawenê-Nawê tribe in Brazil, whose primary fishing technique is based on the construction of temporary wooden dams during specific rituals at specific times of the year. The Enawenê-Nawê are a small Amazonian pescatarian tribe who live along the Juruena River: they were first contacted in 1974 and, although their diet is based on the manioc and corn they grow in gardens, they remain fundamentally pescatarian. Fishing and fish are a vital part of their life, not just from a dietary perspective but also from a cultural one: for the fishing season, corresponding to the Yãkwa ritual that takes place across the seven months of the dry season, the men build large temporary dams called *waitwina* in the river utilising different types of small and big trunks intertwined with a variety of bamboo and maize ropes. Within them, a series of traps is placed to intercept the schools of fish swimming downstream from the flooded Amazon, after the rainy season. When Yãkwa is over, the dams are removed to allow fish to swim back upstream and reproduce, respecting the river's natural flow of life.

Figure 2.8 *Traditional fishing dam by the Enawenê-Nawê people (ph. Vincent Carelli, 2009).*

Finally, as a last example of positive interaction between humans and nature, we describe the characteristic agricultural technique that defines Pantelleria's *heroic viticulture* (Tudisca et al., 2011). Pantelleria is a small volcanic island belonging to the Sicilian islands system, although located just 35 nautical miles away from the Tunisian coast: it is characterised by extremely harsh coastlines and landscapes due to its geological volcanic formations that give the island its peculiar black colour, hence the nickname of Black Pearl of the Mediterranean. The weather is another factor that makes practising agriculture on the island's surface particularly difficult: the island is subject to continuous, violent winds that can burn out any attempt at classical agricultural techniques. For this reason, in the 9th century BCE, the Phoenicians who ruled the island introduced the now-called *alberello pantesco* method, allowing the cultivation of grapevines in volcanic soil and under harsh weather conditions. The *alberello*, also known as the Pantelleria bush vine, is a vine training system consisting of training grape vines to grow low to the ground, forming a characteristic bush-like structure, used primarily for growing the *Zibibbo* grape variety, which is famous for producing *Zibibbo* wine (also known as Muscat of Alexandria) (Tudisca et al., 2011).

This approach serves several purposes:

- The island's strong winds are shielded from the fragile grape clusters by the plants' low bush form, which also serves as a windbreak.
- The low bush vines maximise heat absorption during the day and radiate it back to the vines at night, helping to maintain a temperature that is conducive to grape ripening.
- Given Pantelleria's dry climate, the alberello pantesco's compact design reduces water loss through evaporation and maximises water absorption, meaning it lowers the dew point;
- The rocky landscape of Pantelleria forces many vineyards to be terraced. Due to its adaptability, the *Alberello Pantesco* is particularly suited to this type of terrain.

The use of *Alberello Pantesco* is deeply rooted in regional customs and cultural history, thus also serving the purpose of a cultural vessel (Georgiadis et al., 2014). As such, in 2014, it was recognised by UNESCO as Intangible Cultural Heritage of Humanity.

Figure 2.9 *Alberello Pantesco (Pantelleria bush vine) displaying the typical low, horizontal structure.*

These examples showcase the recurrent characteristics of indigenous craftsmanship identified by Mellegård & Boonstra (2020):

- The strict causal connection between human needs, natural resources and constructed solutions, with continuous monitoring of Nature's well-being.
- The co-productive, symbiotic connection between users and the living environment.
- The utilisation of tools derived from processes of co-production, co-creation and indigenous craftsmanship, which can teach a lesson in sustainability to the most industrialised Countries.

1.1.6 Colonialism and Industrialisation: Disruption of Indigenous Making

But if it is true that so many diverse indigenous communities around the world can display such advanced natural technologies that, whilst still preserving the environment, don't affect the community's ability to thrive, how come that the idea itself of indigenous technologies is sufficient to make us think of less evolved ways of living, always with a negative connotation?
The cultural narrative that can justify this assumption is, intimately, a colonialistic narrative as Indigenous manufacturing methods all across the world were significantly impacted by colonialism and industrialisation. Throughout the Colonialistic Era, with an increasingly violent force, the production and trading systems of European powers were imposed as their empires grew, frequently at the expense of indigenous communities (Emerson, 1969), where indigenous artisans were compelled to adjust to new economic and social systems due to the disruption of traditional craft industries. Due to this, indigenous craftsmen' means of subsistence were challenged by the arrival of mechanised production techniques and mass-produced commodities since they were unable to compete with their effectiveness and low prices. As a result, numerous indigenous groups were pressured to give up their traditional skills in favour of wage work in factories or other businesses. The knowledge and methods handed down through the centuries were gradually lost, which resulted in the homogeneity of native crafts and the loss of cultural variety (Watson et al., 2021). Indigenous groups can find it difficult to compete with mass-produced commodities on the global market, thus affecting their capacity to maintain their economic stability as well as their sense of pride and cultural identity (Gay, 1974). The disappearance of cultural diversity was almost a total social fact (Mauss, 1990) and affected indigenous communities worldwide, with the limited exceptions of those communities that, for a purely geographical advantage, weren't intercepted by the commercial routes of the colonialistic empires. The implications of these politics are still affecting today's global balances and call for the urgent need for sustainable development programmes that place a high priority on the preservation and revival of traditional crafts, safeguarding their legacy for coming generations (Watson & Davis, 2019).

Additionally, indigenous communities are also disregarded through a lack of recognition and protection for their intellectual property. Their practices are frequently used without just compensation or acknowledgement or, even worse, undermined and defined as primitive and irrelevant (Raxworthy, 2020).

1.1.7 Mythologies of Technology

The diverse narratives commenting the creation and expectations of technological innovations are referred to as Mythology of Technology (Francis, 2023), which derives from the assumption that technology can become a potent force able to reshape civilisation and alter the course of history. These myths are the embodiment of society's hopes and anxieties towards technology, since people can perceive technology as both a blessing and a curse, capable of bringing development or disaster (Francis, 2023). Today, these myths continue to evolve and adapt in response to rapid technological advancements, with new narratives arising around issues such as artificial intelligence, genetic engineering, and virtual reality (Chaharbaghi & Willis, 2000). Society's relationship with the technological evolution of Making has always been defined by its way to build cultural narratives and myths around it: for example, the most common myth is the belief that newer technologies inherently signal improvement and human advancement.

This belief comes directly from European Enlightenment thinkers who, over three hundred years ago, dismissed native knowledge and indigenous inventions as primitive and irrelevant, under the influence of colonialism and racism. This perspective on technology encouraged the notion of unrestricted expansion and progress while ignoring the potential negative effects on the environment and future generations, encouraging a mentality that valued exploitation over sustainability, which resulted in the deterioration of ecosystems and a rise in social inequality (Monteiro, 2020). The Industrial Revolution brought about massive economic expansion and scientific improvements, but at the expense of biodiversity loss and ecological imbalance. The ramifications of this mythology are still relevant today as we struggle with the pressing need to switch to sustainable practices and re-engage with indigenous civilisations' knowledge of how to live in harmony with nature (Monteiro, 2020).

To preserve a healthy future for future generations, we must learn from indigenous civilisations that have long recognised the interconnection of all living things. In other words, we need to build a new mythology of technology that incorporates indigenous knowledge into our contemporary activities (Chakravarty, 2012). The first step is the deconstruction of the cultural infrastructure built around the ideas of indigenism and the centrality of the industrialised Western Society. Agreeing that Western industrial development has caused the activation of destructive processes that have led to the age of the poli-crises, we must restore faith in the effectiveness of indigenous and local craftsmanship. But these sustainable approaches are not gone and forgotten: they are still present around the world in abundance, but hidden in plain sight by the prominence of the Western narrative around progress, consumerism and power dynamics. The imposition of such narratives is, by all means, a political act as it is a means to impose the supremacy of a certain cultural model over another one and, in doing so, define a gradient of power that establishes who the rulers are and who they can subjugate. As an answer to this political dimension of the main mythology of technology, many groups and movements have advocated for a return to the origin (Watson & Davis, 2019).

1.1.8 Anthropocene vs Chthulucene

The Age of Industrialisation was ultimately motivated to distance itself from natural systems by the belief that technology profited from the devastation of forests and the extraction of resources. The so-called Anthropocene, our current geological era marked by the undeniable influence of humans on the environment at the planetary scale, was born out of progress at the expense of the planet (Watson & Davies, 2019, p.26).

The phrase "Anthropocene" implies that humankind's collective "making" has evolved into a force that is just as incisive as natural ones, such as geological or climate phenomena. Since the same creative force that has shaped the modern world is also in charge of upsetting the planet's equilibrium, the Anthropocene reframes human making as a paradox and calls for an assessment of the effects of the industrial approach to Making (Ruddiman, 2013).

By placing humanity at the centre of the phenomenon without taking into consideration patterns of colonialism, capitalism, and inequality that could explain how some societies and industries may have driven change far more than others, the Anthropocene narrative has been criticised for oversimplifying the sustainability issue (Malm & Hornborg, 2014) and other frameworks have been proposed in response. Some authors suggest referring to our time as the Capitalocene to highlight the role of capitalism in ecological crises, or the Plantationocene to highlight the ways in which colonial plantation systems shaped injustices and landscapes. These terms have been promoted by thinkers such as Anna Tsing and Jason Moore (Moore, 2017; Tsing, 2016).

Donna Haraway suggests the adoption of the nomenclature "Chthulucene" as a signal to transcend the human-centred perspective. Evoking Lovecraft's chthonic creature Cthulhu, the Chthulucene is a concept that wants to bring the attention to the interconnected web of life, as Haraway believes that we should view ourselves as a part of a dense network of species, technologies, and natural processes that are all working together to "make" the future, rather than viewing humans as the only heroes or villains of Earth's story (2020).

Instead of looking for an escape through either technofix or apocalyptic resignation, the Chthulucene perspective suggests staying with the trouble of living in a damaged world, fostering kinship across species and systems and appreciating the knowledge of non-dominant cultures, frequently marginalised in the narrative of the Anthropocene. Chthulucene is an invitation to imagine and create in a more symbiotic, less anthropocentric manner, whereas Anthropocene is a warning label for the impact of humanity. This has sparked conversations in design research about switching from human-centred design to earth-centred or life-centred design (Luts, 2022), which aligns with the notion that empathy for non-human stakeholders must now be incorporated into the design process.

1.1.9 Sustainability as a Wicked Problem

In the wake of the Chtulucene realisation and in an era of poly-crisis (Giglio, 2022), sustainability is a highly disputed and complex topic, showcasing how straightforward phenomena are extremely articulated when examined from several different perspectives.

Sustainability, already defined as a wicked problem (Murphy, 2012) based on its adherence to the model described by sociologist Max Weber, who said that the various spheres of value of the world are in irreconcilable conflict (2013), owes its wickedness precisely to the constant state of tension between what a system calls sustainable and what an adjacent one deems unsustainable, especially in a closed environment with limited resources like the world we inhabit.

In a wicked problem, every attempted solution has cascading effects that may create new issues. This forces us to systemically rethink our approach to sustainability and making things, to find new paradigms in lieu of the old models of linear production (extract, produce, consume, discard), notoriously unsustainable.

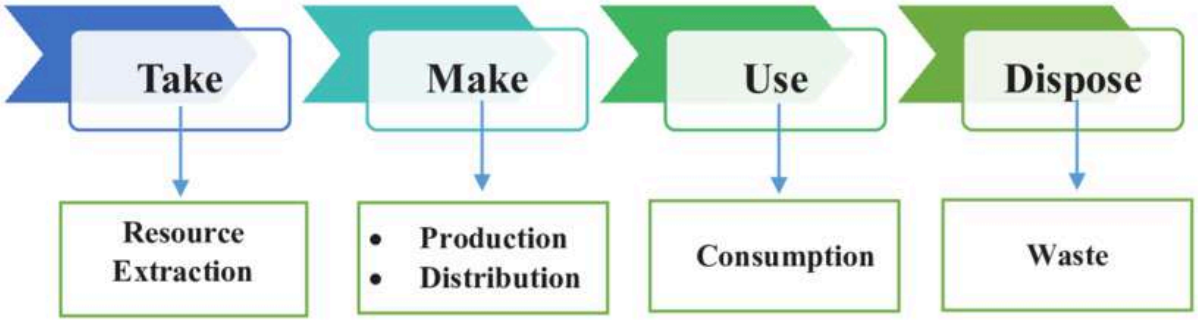

Figure 2.10 *Linear productive paradigm (Markosyan, 2022).*

Concepts such as the circular economy (where materials are kept in closed loops of reuse and recycling) and cradle-to-cradle design (where products at end of life become nutrients for new products or for nature) are examples of attempts to address the wicked nature of the problem that justify the perspective of those who argue that sustainability is as much about cultural change as it is about science or engineering. The notion of wicked problems also encourages humility and iteration in the act of making. Rather than assuming a designed solution will permanently fix an issue, designers

and communities are urged to adopt adaptive, participatory approaches: learning from stakeholders, testing interventions on small scales, and being willing to revise and learn.
Framing sustainability as a wicked problem redefines the role of the Maker from that of a Saviour in charge of creating greener products in isolation, to that of a facilitator of change, working with communities to co-create solutions that make sense culturally and ecologically.
Investigating sustainability today in fact implies understanding complex relationships, so that the spheres of economic, cultural, anthropological, social, and environmental values (Weber, 2013) can harmonise to form effective solutions. However, each of these aspects carries its own priorities and requirements, leading to certain solutions being more favourable than others, as a reflection of a contemporary world increasingly defined by its fluid nature, a concept introduced by Bauman (2012) and currently being applied to design by Bovo (2022).

1.1.10 Lo-Tek and Radical Indigenism

In response to the challenges of sustainability and the legacy of undervaluing indigenous knowledge, some contemporary thinkers advocate for what has been termed “restorative sustainability”, exemplified by the so-called Radical Indigenism and the Lo-TEK movement (Watson & Davies, 2019).
The term "radical indigenism" originates from the Latin word radix, which means "root": to create sustainable and climate-resilient infrastructure, design by radical indigenism envisions a movement that rebuilds an understanding of indigenous philosophy about design and Making.
Radical Indigenism celebrates local traditions as a tool to counterbalance the Western perspective. Also, aiming at the construction of a more equitable and inclusive future, it redefines colonial structures that have sustained discrimination and inequality, promotes the principles of land rights and self-determination, and acknowledges the connection between peoples and their territories. Additionally, it aims to dismantle stereotypes regarding indigenous cultures by emphasising their significant contributions to philosophy, science, art, and other disciplines (Watson & Davies, 2019).
Another important aspect of this change in perspective is the rediscovery of new sustainable approaches to design and production that take into account the characteristics of the land and its

resources which aim to minimise environmental impact and promote long-term stewardship of the land by incorporating traditional knowledge and practice to benefit the local communities by preserving their cultural heritage, and contributing to the promotion of a more harmonious relationship between humans and nature (Zaman, 2022).

Figure 2.11 *Floating islands of Al-Tahla - Town of Ma'dan (Iraq). Image © Agata Skowronek.*

Lo-TEK, says Julia Watson, Professor of Urban Design at Harvard and Columbia and among the most important thought leaders in the field of indigenous technologies for climate-resilient design, is “a movement that investigates lesser-known local technologies, traditional ecological knowledge (TEK), indigenous cultural practices, and mythologies passed down as songs or stories. In contrast to the homogeneity of the modern world, indigeneity is reframed as an evolutionary extension of life in symbiosis with nature. Lo-TEK explores the intersection of design and radical indigenism. Coined by Princeton Professor and citizen of the Cherokee Nation Eva Marie Garoutte, radical indigenism argues for a rebuilding of knowledge and explores indigenous philosophies capable of generating new

dialogues." (2019, p.18). According to the Lo-TEK movement, "The field of design is at a pivotal moment, expanding to confront complex problems that require robust and adaptive responses. With environmental and societal collapse imminent in the coming decades, design at the intersection of anthropology, ecology, and innovation is the most pressing discussion of our time. A new mythology that acknowledges Lo-TEK is critical to advancing the coexistence of man with nature." (Watson & Davies, 2019, p.26)

The ethos of Lo-TEK and radical indigenism is fundamentally centred on cultural sense-making. It reclaims the narrative for indigenous peoples, acknowledging that their heritage might be able to offer inputs for the resolution of contemporary challenges. But it also provides a new narrative for global society, in which progress does not mean abandoning traditional knowledge, but rather blending it together with emerging technologies to create hybrid solutions. In doing so, they not only produce environmentally sound designs but also tell a story of continuity and respect between past and present. Lo-TEK projects often emphasise storytelling: documenting how an indigenous practice works and the cultural context around it to translate a practice that might seem alien to outsiders into a narrative of ingenuity and wisdom. Branding it as "design by radical indigenism", the movement advocates for a perception of these practices not as anthropological curiosities, but a source of design inspiration to challenge the mainstream innovation paradigm, broaden the canon of knowledge we draw from and build trust and reciprocity with communities.

The design community around the globe seems to agree with this perspective: more and more attempts to reconnect the design discipline with its ancestral roots connected to the land (or the Planet) and its resources are becoming increasingly present in the most important stages and forums.

1.2 *How can we describe Crafts' Epistemology of Making?*

1.2.1 Crafts as a carrier of ILEK and a Social force

Comparing the definition of ILEK and the nature of Crafts as practices deeply embedded in knowledge systems functioning as carriers of cultural memory and skill across generations (La Pietra, 2019), researchers have established a direct connection between the two concepts. In fact, both ILEK and Crafts respond to the definition of a reservoir of understandings about materials, environment, and techniques that is passed down through practice (Mellegård & Boonstra 2020).
In the case of Crafts, this knowledge is usually not codified in writing but tacit and embodied, learned by doing and through apprenticeship within communities (Sennett, 2008).
Strengthening this position, UNESCO recognises traditional craftsmanship as a vital form of intangible cultural heritage, emphasising that its value doesn't lie in the produced artefacts themselves but in the skills and know-how required to create them (UNESCO Craft Revival Fund, 2005).
The tacit dimension of knowledge in crafts implies that crafts practices are able to carry insights about working with local materials, ecological conditions, and functional needs, through an intrinsic ability to preserve experiential lessons across generations. For example, vernacular craft techniques in textiles, pottery, or building often encapsulate ecological wisdom – how to use particular plant fibres or clay found in a region – thereby acting as a living archive of sustainable resource use and adaptation to the environment (Boonstra et al. 2020). In this way, crafts serve as a carrier of ILEK, bridging past and present: each crafted object materialises a body of knowledge about its making, connecting its maker to ancestral practices and local nature.
But beyond its ecological and technical knowledge, craft is also a potent social force. In fact, being connected to social relationships and cultural values, handicrafting is not a solitary technical act (Sennett, 2008), and anthropological research on craft guilds and workshops has long demonstrated that social contexts-through mentoring, communal work and collective problem-solving-are where craft knowledge is passed down, giving rise to what Lave and Wenger defined "communities of practice" (Lave & Wenger, 1991). Guild traditions and craft apprenticeships have strengthened social

cohesion through the creation of ties of mutual obligation and trust between masters, apprentices, and the larger community to the point that, throughout history, waves of Craft revival have often underlined a desire to rebuild a sense of community (Lucie-Smith, 1984).

Figure 2.12 *A medieval baker with his apprentice. The Bodleian Library, Oxford.*

As a consequence, Craft plays the role of both a technical practice and a social force, and sociologists like Richard Sennett argue that the ethos of craftsmanship, deriving from the pride in doing something well for its own sake, nurtures ethical and cooperative habits in individuals (Sennett, 2008). Moreover, crafts often become a social force for community resilience and identity. As an alternative to anonymous mass production, artisan production favours local materials and local markets, rooting economic activity in place and reinforcing local interdependence (Micelli, 2011). Economists of culture have observed that craft enterprises, even small family workshops, can stimulate local development by providing sustainable livelihoods and by valorising unique regional resources (Micelli, 2011). In regions facing deindustrialisation or rural decline, a renewed focus on artisan skills has sometimes revitalised communities, giving people a shared project of preserving and innovating their heritage.

For instance, initiatives supported by the European Crafts Alliance stress that nurturing master artisans as role models can inspire younger generations and spark creative entrepreneurship at the local level (European Craft Alliance, 2023). The social impact of such craft revitalisation is double: it strengthens community bonds and empowers communities economically and culturally by differentiating their products in a global market. Crafts thus act as a social engine, building identity and collective pride. Additionally, craftspeople's ability to carry intergenerational social knowledge extends to how to behave and think as active members of society. In this sense, the workshop becomes a microcosm of society where apprentices gradually assume responsibility and status as they gain proficiency, according to a process that social theorists liken to “enculturation” into a way of life (Bettini, 2016). Hence, the artisanal epistemology is based on the assumption that knowledge is gained through hands-on experience, trial and error, and collaboration, and as such, the processes of Making intertwine with learning and identity formation, turning the act of crafting into a cognitive process and a social performance, linking mind, body, and community (Feder-Nadoff, 2019).

Figure 2.13 *A medieval goldsmith workshop as a microcosm of society. (Étienne Delaune,Engraving, 1576)*

1.2.2 Crafts, Material Culture & Genius Loci

As ILEK carriers, Craft is one of the most tangible expressions of material culture, and handcrafted objects can be defined as "embodied culture", being embedded with cultural meaning and storytelling about the society and context in which they were made.

Additionally, anthropologists have underlined how objects made by artisans function as carriers of cultural identity and memory as they reflect the moral sensibilities, beliefs, and daily life of a community. In this way, craft artefacts are living documents of material culture, as significant as texts or oral histories in understanding a people's heritage (Varutti 2015).

As Edward Lucie-Smith effectively put it, craftsmen's role in society was never only to fabricate utilitarian objects, but to create material vessels of the culture's values and aesthetics (Lucie-Smith, 1981), as craft objects can provide insights into non-material aspects like social structure or religious practice.

Closely tied to this idea is the relationship between crafts' systems and the *genius loci*, or "the spirit of place". In fact, traditional Crafts are often profoundly local, arising from specific geographic, cultural and material settings, shaped by the available resources, the climate, and the cultural tradition of a place, to the point of becoming identifying factors as distinct regional identities are often defined by their specific artisanal practices and styles. Local wood, clay, fibre, or stone, imbued with the area's natural qualities, are transformed by artisans who are themselves part of the local culture. The outcome is an artefact that could not be made in quite the same way anywhere else and, in this sense, craft materialises the spirit of their place of origin. Design theorist Ugo La Pietra, a great advocate of respecting local identities in design, emphasised that artisan production is a means to preserve and rejuvenate the *genius loci* in the face of global homogenisation (La Pietra, 2021). In the 1990s, La Pietra coordinated projects bringing together designers and traditional craftspeople across Italy's regions, explicitly to celebrate and update local craft heritage – an approach rooted in the belief that each territory's craft skills and forms are a cultural treasure that conveys the spirit of that place.

Figure 2.14 *Ugo La Pietra with his collection* "Doppia Firma".

Concerning this idea, La Pietra denounces how design often forgets the intrinsic value of local craft traditions and how this leads to a loss of connection with local culture. According to La Pietra, a renewed focus on crafts could become a way to root design in locality, authenticity and diversity (La Pietra, 2021).

One way to understand the crafts-material culture-genius loci relationship is to consider how craft products serve as symbols of place: the anthropomorphic pottery from Sicily, Delft blue pottery for the Netherlands, Navajo weaving for the American Southwest, or the watchmaking crafts of Switzerland's Jura mountains, they all carry a sense of origin, demonstrated by the fact that they are often marketed with their geographic names, signalling a guarantee of certain quality and tradition. Academics note that such artisanal geographic indications not only protect the product's reputation but also reinforce local identity and pride (Bologna, 2017). The local community sees its values and history reflected in the internationally recognised craft, which in turn strengthens cultural self-esteem. In Italy, the notion

of Made in Italy has heavily capitalised on the link between territory and craft excellence: from Murano's glass-blowing to Como's silk weaving, each area's *genius loci* is a selling point and a source of innovation, blending tradition with contemporary design without severing the local roots.

In this scenario, Crafts become a bridge between past and present, built by the artisanal ability to innovate, but within the boundaries of a sense of respect towards inherited methods and rituals, which are always strongly tied to local conditions.

Marzia Varutti's research on indigenous artisans in Taiwan shows, for example, that the notion of authenticity revolves around using traditional materials and methods in situ – essentially, keeping the spirit of place alive in the craft process (Varutti, 2015). When artisans are uprooted or materials change, the craft itself transforms, sometimes causing debate about authenticity. Museums and heritage bodies struggle with the question of how to preserve the genius loci of a craft when circumstances shift. The consensus among many scholars is that preserving a craft means preserving its context whenever possible, enabling artisans to remain in their communities, use local resources sustainably, and transmit on-site knowledge. For example, the Italian Fondazione Cologni dei Mestieri d'Arte promotes master-apprentice programs to keep craft anchored in its original cultural and environmental landscape. In fact, the relationship between crafts and genius loci is not purely nostalgic as it can prove to be a strategic force, and a real economic advantage. For example, urbanists argue that in an era of globalisation, cities and regions can leverage their local craft heritage as a cornerstone of cultural identity and creative economy (Carta, 2013). Places can in fact use their material culture as a differentiator factor and create cultural and economic opportunities, all the while strengthening community cohesion. This "glocal" strategy turns the idea of genius loci into a unique selling proposition and a source of identity. When contemporary designers collaborate with traditional artisans, the result can be innovative products that still echo the *genius loci*, thus retaining a link to place (Lotti et al., 2017). Such collaborations demonstrate that crafts' epistemology of making is compatible with innovation: new expressions emerge, yet the deep knowledge of materials and cultural references rooted in the practice's history continues to guide the making process.

1.2.3 Epistemology of Crafts: Connecting the Hand and the Brain

The local aspect of how artisanal knowledge is conceived and applied in the process of making determines the fundamentally unique nature of the epistemology of Crafts. The artisanal model is characterised by skilled individuals or small groups who oversee an entire production process, relying on their training, experience, and ingenuity at each step (Cavalli, 2014).

Craft knowledge is possessed by the craftsman in tacit form, who frequently manifests it as sensory awareness or contextual judgement. As opposed to the "workmanship of certainty" in mechanised production, where results are predetermined by machine settings, David Pye famously referred to craftsmanship as the "workmanship of risk", meaning that the quality of the final product depends on the maker's ongoing exercise of judgement and skill throughout the process (Pye, 1968). Therefore, experiential knowledge, that is to say knowing how to accomplish a goal through careful engagement rather than just following a formula, is the epistemology of the artisanal model. Since no two pieces are exactly alike and the craftsman learns and adapts with each piece, mistakes and variations are acceptable and frequently instructive. According to this model, knowledge is dynamic, contingent on context, and changes as a result of practice (Lucie-Smith, 1984).

Because theorists such as Leon Battista Alberti separated the idea of a work (drawings, plans) from its execution (left to artisans) as early as the Renaissance, they elevated the role of the thinker (the architect) over the manual worker, which historically resulted in a diminished status for craft knowledge. Bologna notes that Renaissance artists gradually evaded the guild system and the designation of craftsmen to become renowned individual geniuses, which signifies a change in the value placed on craft knowledge as, in the fine arts, the social value of individual creativity and theoretical knowledge were kept in a higher regard (Bologna, 2017).

By the 20th century, some writers even proclaimed the “metamorphosis of the craftsman” in the industrial age: Herwin Schaefer (1958) argued that the true inheritors of craftsmanship were now designers and engineers in industry, and that clinging to pre-industrial handcraft traditions produced only decorative trivia (Schaefer, 1958). Schaefer’s view, reflective of mid-century modernist optimism, essentially claimed that the epistemology of making had migrated from the artisan’s bench to the

industrial design office.

Yet, even as industrialisation peaked, countermovements valued the artisanal model's knowledge. The Arts and Crafts movement in the late 19th century, figures like William Morris, and later mid-20th-century studio craft revivalists all challenged the notion that industrial knowledge was superior (De Fusco, 2009).

Figure 2.15 *William Morris. Floral Wallpaper in Blue.*

However, over the last decades, theorists and researchers have tried to rehabilitate and articulate craft's epistemology. Paramount in this sense was Richard Sennett's book The Craftsman (2008), where the author explores the mindset and societal role of craftsmen, arguing that craftsmanship is above all an approach to doing work well, cultivate a special kind of knowledge originated from an intimate dialogue between the maker and the material (Sennett, 2008), involves problem-solving in real time, improvisation, and a gradual accumulation of wisdom through handling tools and materials over thousands of hours. Sennett and others define craft's knowledge as embodied and residing in muscle

memory, often without full consciousness by the artisan. It is inherently situated as the artisan's decisions make sense in the context of specific materials that have unique behaviours. Thus, the artisanal epistemology acknowledges ambiguity and uncertainty as natural parts of making; the maker knows that one cannot plan everything in advance, and that understanding emerges through the making process itself.

Today, we refer to this as "thinking through making": rather than separating design (thinking) and execution (doing), the artisanal model integrates them, as the artisan's direct engagement with the material often leads to insights, suggesting what form or technique will work best next (Ingold, 2013). So craft's knowledge is characterised by an emergent epistemology where knowing comes from action. (Cristallo, 2023). The artisanal model, with its tolerance for trial-and-error and reliance on skilled intuition, is thus seen as a rich, creative knowledge system. Specifically, different ways of making entail different ways of knowing, as, for example, to carve wood by hand is to learn things about wood that would never be learned by merely designing a shape on a computer screen (Ackerman, 1985). Importantly, the epistemology of crafts is also a moral and aesthetic philosophy of work. The artisan's model implies a certain integrity since knowledge isn't used just instrumentally but is bound up with personal expression and responsibility for the result. Artisans often speak of "knowing their craft" in a way that suggests deep familiarity and pride (Sennett, 2008). Sociocultural analyses (like Pye's) note that when a maker is in full control of the process, the work bears the imprint of their character and decisions, with a clear epistemological stance: craft values the particular and the singular (1968). The artisanal model accepts that an individual's knowledge and touch will create variation; in fact, it considers handmade differences as carriers of meaning, and knows when an imperfection will add character or authenticity, versus when it will undermine function. This kind of judgment is cultivated through experience and often transmitted through mentorship and stories with masters passing on rules of thumb or heuristics (so-called tricks of the trade). Such heuristics are a form of compressed knowledge, not written in textbooks but critical to the practice. Scholars like Micelli have pointed out that Italian artisanal companies thrive on these inherited "secrets" and skills, which allow them to produce high-quality, innovative products even in small batches, defying the

economies of scale logic (2016) proving that craft know-how can be a source of innovation, because of its flexible expertise, contrarily to large-scale industry. Stefano Micelli and Marco Bettiol have documented numerous cases of artisans collaborating with designers to create unique products that marry traditional techniques with contemporary taste, demonstrating how the artisanal model can be viable and competitive in the modern creative economy (Micelli et al., 2019).

But the artisanal epistemology also welcomes new tools so long as the maker retains a conversation with the material and process (Cristallo & Lucibello, 2019), to the point that true artisanal excellence today involves mastering both ancient knowledge and modern technologies, all in service of an enduring culture of quality. This idea, which has been defined as “Artisanal Intelligence”, implies a mindset that blends tradition and innovation, making craft knowledge an entity in flux, continuously evolving while remaining anchored to its own principles. Crafts’ epistemology of making points out that craft is a way of knowing as much as it is a way of producing, where knowledge is personal, situated, and enacted, and the Wisdom of the Hands (Sapere della Mano) (Sennett, 2008) and the feedback loop between maker and material have great value. This determines Making as an open-ended process, where each act of creation becomes an opportunity to learn something new or improve one's technique. This epistemology has social dimensions due to knowledge being shared in communities, passed through generations, and often collectively refined, and cultural dimensions being embedded in the local context, and contributing to the making of a place’s identity, and it stands in support to pluralism of knowledge, as a form of thinking which embodies the unity of Knowing and Making. This suggests that our human capacity to understand the world is enhanced when we engage with it actively and directly.

1.3 *How can we describe Design's Epistemology of Making?*

1.3.1 Epistemology of Design: from mass production to self-production

Design's epistemology of Making, originally defined by the rise of industrial mass production in the late nineteenth and early twentieth centuries, overlapped for a good part of design's history with the logic of the assembly line (Heskett, 1995). In this paradigm, designers' primary approach to Making was based on the need to design objects that could be efficiently produced at scale, according to ideas of standardisation, optimisation, and reproducibility (Woodham, 2004). Peter Behrens, Christopher Dresser and other pioneers exemplified this approach as they applied the knowledge derived from decorative art and engineering to develop products for mass production (Pansera, 1998).

Figure 2.16 *Christopher Dresser proto-design anticipating the development of the design of the XX Century.*

In this paradigm, the act of making was separated from the designer: knowledge was codified in drawings, plans, and design prescriptions that factory workers would follow. The epistemology of design during this era leaned towards scientific rationalisation, treating design as a problem-solving process that could be systematically taught (Maldonado, 2008), as demonstrated by the pedagogical stance of schools like the Bauhaus and later the Ulm School of Design (HfG Ulm). Here, theorists

advocated for a unification of science, art, and industry in design education to create a rigorous intellectual foundation for designing mass-produced goods (Maldonado, 2008).

However, mass production's emphasis on uniformity and efficiency made products ubiquitous and globally standardised, bringing thinkers to question what might be lost in this process.

Walter Benjamin's analysis of mechanical reproduction is illuminating here: although he spoke of art, his observation that reproducing an artefact many times over diminishes its unique "aura" has parallels in industrial design (Benjamin, 1936) where the concept of aura could overlap with that of Genius Loci, as in the intrinsic value derived from the situated making of objects defined by their local character and the craftsmanship that creates them, both endangered by anonymous mass production.

As a consequence, design theorists and practitioners began to explore ways to reintroduce cultural meaning and situatedness, effectively broadening the epistemology of making beyond mere efficiency. As early as the mid-20th century, figures like Enzo Mari championed a return to the knowledge of making at a human scale. For example, Mari's concept of Autoprogettazione (2002) provided furniture designs that people could build themselves with basic tools and wood, thus democratising design and turning users into de facto makers (Mari, 2002).

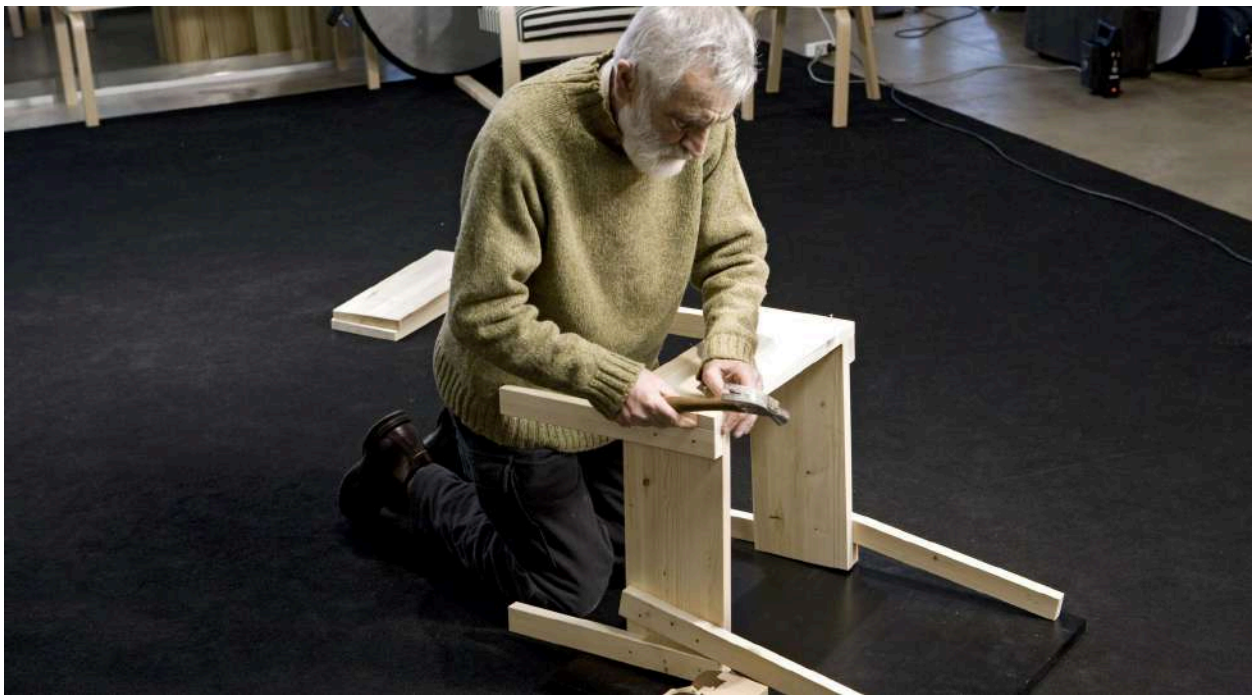

Figure 2.17 *Enzo Mari, Autoprogettazione.*

The core ideas behind this project were both transmitting knowledge, since, through the act of making, non-designers could gain insight into construction, materials, and the design process, and restoration of agency for the end-user, contrasting with the predetermined, codified knowledge typical of mass production (Mari, 2002).

By the late 20th century, the dichotomy between industrial mass production and craft or self-production became a central theme in design discourse. Italian design theorists, in particular, often highlighted the value of craftsmanship and local production in the face of global industrialisation.

Among them, Ugo La Pietra in the 1970s advocated for what he called “the diffuse workshop,” encouraging designers to collaborate with artisans and regional craft traditions as a counterbalance to the alienation of mass-produced goods (La Pietra, 2004), attempting to break the boundary between designer and craftsman. In this sense, design knowledge only arises when the designer is directly involved in the act of making, to fight the impersonal nature of industrial production and imagine alternative futures where designers could operate outside the traditional industrial system (Branzi, 1984). This radical period introduced an epistemological critique: the knowledge systems embedded in industrial design (with its focus on market and technology) were seen as insufficient to address the deeper human and cultural needs that making could fulfil. As a result, designers in this era expanded their perspectives to include anthropological and ecological knowledge, understanding how the process of making objects could relate to communities and environments (Manzini, 2004).

As we see in Part 2, self-production gained again momentum in the 21st century with the rise of portable technologies allowing digital fabrication, and open-source design, all values and tools embraced by the Makers movement, which promotes a bottom-up epistemology where knowledge is co-created by designers, users, and communities through iterative making and sharing (Micelli, 2011). This scenario–characterised by the opportunities provided by portable fabrication tools such as 3D printers and open design repositories–determined a redefinition of the role of the designer/maker/consurem that brought theorists like Ezio Manzini to define our age as the era where

"everyone designs," meaning that the capacity to participate in design and production is widely distributed (Manzini, 2015).

This democratisation of making is fundamentally changing design's epistemology. The act of making is becoming more participatory and situated: for example, a local maker community solving a unique problem will generate context-specific knowledge, which can then be shared globally through networks. Such knowledge is often informal, experimental, and rapid, contrasting with the formal research-and-development knowledge cycles of the industrial era (Villari, 2017).

So we observe an expansion in Design's epistemology of Making that loosens the bond between design and the industrial paradigms of efficiency, to progressively incorporate the tacit, local, and participatory knowledge found in Craft and DIY Making. This shift does not mean, of course, that mass production knowledge has become obsolete, but that contemporary design recognises the multifaceted nature of innovation. As the epistemological base of design widens, designers are increasingly seen as facilitators of Making, curating tools, platforms, and experiences that enable others to generate knowledge through creation (Manzini, 2015; Micelli, 2011).

1.3.2 Design as a Cultural Agent

We just defined contemporary Design as a knowledge-dependent, culturally situated practice, and we have seen how, when we move beyond the close limits of the industrial paradigm, every designed object or system carries meaning while reflecting cultural values. Everything considered, it is safe to say that design functions as a cultural agent by shaping and disseminating ideas within society. To describe design as a cultural agent is to recognise that the process of making in design is less about solving technical problems and more about interpreting and influencing how people live, communicate, and think (Dorfles, 1973). Defining status symbols or challenging social norms, the knowledge produced through design has always had cultural significance, and the success or failure of a design often hinges on cultural resonance.

Historically, the cultural role of design became evident as societies underwent modernisation. For instance, during the post-World War II period, Italian designers used furniture and interiors as a

medium to comment on mass consumer culture, effectively turning design into a form of cultural critique (Branzi, 1984). They treated designed objects as bearers of messages, whether critiquing bourgeois habits or imagining utopian alternatives. As design historian Renato De Fusco said, the evolution of design in the 20th century could be easily read as a narrative of cultural adaptation through design response to the shifts in societal values, spanning from the optimism of early modernism to the irony and pluralism of postmodern design (De Fusco, 1985).

The proliferation of a well-designed product can make certain cultural experiences or practices widespread. For example, the design of the personal computer and smartphone has profoundly altered communication culture worldwide. John Heskett points out that design is a principal means by which values and ideas are materialised; the designed environment around us – from household objects to public infrastructure – encodes notions of comfort, progress, beauty, and so on (Heskett, 2002). Thus, Making in design is a way of crystallising cultural knowledge into a tangible form.

Design's role as a cultural agent also means that designers often assume the role of cultural mediators or translators (Bistagnino, 2008) and, therefore, cultural knowledge becomes a crucial part of the epistemology of making. Manzini (2015) suggests that contemporary design was democratised and made accessible to a plurality of practitioners, thus influencing the making process and leading to solutions enriched by a glocal perspective and identity.

In contemporary practices, Bassi (2017) observes that community-centred design interventions can recalibrate cultural expectations, reinforcing that making is a tool for societal transformation. Similarly, Marinelli (2015) and Capella (2019) argue that design projects embedding culturally situated narratives, de facto connect Making and cultural evolution. We also observe that design's epistemology has expanded towards a sociological and ethical dimension as design theorists like Victor Papanek have argued: for them, creating a new object or service also creates a new story in society, underlining that the act of making has moral and cultural ramifications, and recognising design as a form of cultural production and communication (Papanek, 2021).

1.3.3 Design Beyond the Industry

As we discussed in the previous section, while design's past was strictly industrial and characterised by values directly emanating from the industrial mindset, the scope of design today reaches beyond the limits of traditional industrial manufacturing. Thus, design thinking and Making are applied in distant realms such as services, social innovation, policymaking, and grassroots community projects (Lauda, 2021). In these contexts, the act of designing (and the knowledge it generates) is not aimed at creating a market commodity, but at solving problems, creating experiences, or empowering people in non-commercial terms. The consequence of this process is the redefinition of what design is and is not, and the enrichment of its epistemology, imposed by the fact that designers must integrate knowledge from various fields and collaborate with experts and non-experts alike (Kang & D'Amato, 2013).

One prominent example is service design and design thinking in the public sector. Governments and NGOs have started to employ designers to rethink public services, healthcare systems, or educational programmes. Here, "making" might not produce a commercial artefact at all, but rather a new process or system. The knowledge involved is not just material or visual but also social and systemic. John Heskett noted that design is essentially about shaping human interactions with the world, whether through products or services (Heskett, 2002). Thus, when designers work beyond industry, they carry forward the same principles of user-centred creativity, but they must also master domains like sociology, management, and psychology to effectively 'make' intangible products. The epistemology of making in such cases includes prototyping experiences (like role-playing a service scenario), testing interventions in real-life settings, and iterating based on human feedback – all of which generate insights about human behaviour and social systems (Trematerra, 2020).

Similarly, social innovation design, extensively explored by Ezio Manzini, involves working with communities to co-create solutions for local issues (Manzini, 2015). In these projects, the designer's role is that of a facilitator, as the making itself is the result of a collective effort, where knowledge emerges through the interaction of many stakeholders. A particular case of this type of scenario is described by Stefano Micelli's analysis of contemporary craftsmanship, which highlights that

innovation can spring from small labs and makerspaces where designers, artisans, and users collaborate outside the big industry (Micelli, 2011). He notes that digital platforms now enable these local innovations to “scale out” by sharing designs globally without a traditional industrial supply chain. The result is a distributed form of design production – sometimes called open design or distributed design – which relies on networked knowledge, open exchange and iterative adaptation, which become driving forces of innovation, far from the proprietary, closed knowledge of corporate R&D (Micelli, 2011).

These new forms of design have been intercepted by academic design research in the attempt to formalise and understand them. Villari (2017) argues that design education is evolving to prepare practitioners for roles in which they might be designing policies or community engagements rather than just objects (Villari, 2017), while dissertations like Valentino's (2020) and Coraglia's (2019) identify many case studies where design methodologies inform community development and policymaking, in a dynamic that Tomás Maldonado had foreseen decades earlier, when he argued that designers should embrace cybernetics and ecology to remain relevant (Maldonado, 2008). His insight was that design’s way of thinking could contribute to addressing complex global issues only by going outside the skillset usually associated with industrial decorative arts and embracing the complexity of today's world. Today, we see this manifested in areas like sustainable system design and speculative design, where designers create scenarios and prototypes to explore possible futures and influence policy or public awareness. When design reaches beyond the industry, it also determines a redefinition of what/who is the Designer (Potter, 2010). As design is no longer the exclusive domain of formally trained professionals working in the industry, it becomes a mindset for community members, activists, and local entrepreneurs who use it in the most different fields, without necessarily adopting the definition of designers for themselves (Kang & D’Amato, 2013). This democratisation means that Making knowledge is increasingly co-developed by professionals, users and amateurs. While this might challenge professionals to redefine their role, it also leads to a richer global design culture where multiple epistemologies coexist with the industrial tradition– academic design research, professional practice knowledge, and vernacular design knowledge (Maffei & Bianchini, 2013).

Moving beyond the Industrial paradigm, Design's epistemology of making, as well as design itself as a discipline, has become more reflexive and critical, as, when designing beyond the commercial mindset, designers must question assumptions more deeply to incorporate ethical and philosophical considerations into their knowledge base (Maldonado, 2008).

This reflexivity also influences the traditional forms of industrial production as it makes the pressing discourse on socio-environmental issues mainstream and it encourages all designers to be more thoughtful about the purpose and impact of what they create, beyond its form and function. For instance, companies are adopting circular design principles after being influenced by environmental design thinking that was largely developed outside of profit-driven contexts (Lotti et al., 2020b).

Describing design's epistemology of making requires acknowledging the expanding scope of design practice, as it is no longer sufficient to consider industrial design knowledge which applies to mass-produced products alone. Contemporary design epistemology spans the technical knowledge of materials and production, the cultural knowledge of symbols and meanings, and the systemic knowledge needed to create solutions in complex social landscapes (De Fusco, 2014).

Part 2. Hybridising

|| Synopsis ||

In this second part, we demonstrate the existence of hybrid creative practices operating at the intersection of design and crafts. We define their characteristics and epistemology, and we provide a historical overview of the phenomenon. We proceed to analyse the role of emerging technologies in the process of hybridisation of these creative practices, and we support the thesis that these technologies become vectors of democratisation of Making. We close by analysing the evolution of the traditional forms of crafts into a more general artisanal intelligence embracing new technologies as new tools around which to build new definitions of artisanal making.

2.1 *Can Design & Crafts overlap/cooperate to pursue more sustainable futures?*

2.1.1 Hybrid Creative Disciplines

One of the fundamental assumptions of this research is that the line separating design from craft is becoming increasingly blurred. The same dichotomy, relegating Craft to the realm of the handmade, tradition and tacit knowledge, and design to the realm of abstract planning and industrial problem-solving, seems insufficient to describe the complexity of the different nuances of today's Making phenomena. We observe that these creative disciplines can overlap and even converge in the pursuit of innovation and sustainability, as a growing body of research and practice seems to indicate. In fact, albeit rooted in lines of research dating back to the 70s, this tendency towards hybridity has been a leitmotif with an increasingly strong presence in what Alessi defines as the Design after the Noughties (2014). In 2010, Dorfles celebrated the accomplishment of a long overdue peace between craft and design in contemporary culture, indicating the overcoming of a classic dichotomy resulting as a reductionism with respect to the complexity of today's word, where collaboration and cross-pollination between the two disciplines are becoming more and more common although through different approaches. For instance, Kouhia and Seitamaa-Hakkarainen (2017) show that in contemporary design contexts, we can identify three methods by which contemporary designers incorporate traditional craft into their designs: preservation (preserving heritage techniques), application (mixing and modifying traditions in novel ways), and transformation (radically reimagining or subverting tradition). In this framework, crafts and design are complementary rather than competing forms of creativity, and as such, they can define an entirely new discipline that Kouhia & Seitamaa-Hakkarainen identify as design hybridity (2017). In this landscape, hybrid practitioners capitalise on both the artisanal in-depth knowledge of materials and manual know-how, as well as design's approach to problem-solving and open inquiry.

The strongest driving forces pulling designers and craftspeople towards a space at the intersection of their practices are sustainability and technological advancements. In fact, on one side, artisans are becoming more and more technologically specialised by embracing new tools and methods for their

productions. On the other hand, contemporary designers, under the pressure of sustainability issues forcing them to pursue alternative productive paradigms, are reconnecting with their most experimental roots. In fact, traditional crafts place an emphasis on attributes consistent with sustainable values, such as robustness, ingenuity in the use of materials, and local production and, in order to integrate these values into product development, designers are increasingly working with artisans or learning from them in search of more sustainable solutions (Bettiol, 2021). Branzi (2008) observes that the current state of design, which he refers to as "weak and diffuse modernity," permits a diversity of methods in which designers transcend the purely industrial mindset by incorporating artisanal techniques and cultural narratives. In this pluralistic setting, the designer-maker has resurfaced as a practitioner who combines different roles. We can observe this convergence in movements that value authorship through making, such as the Maker culture, while it is also theoretically supported by many studies investigating the dynamics at the intersection of craft and design, like Zheng and Nitsche's (2017) who examined craftspeople and interaction designers' collaborations to discovered that, despite the differences in mindsets and skillsets between the two fields, organised cooperation can produce effective outcomes, demonstrating that technologists and artisans can learn from each other when they collaborate to create tangible products. Thus, the mediation and translation of practices allow designers to become more aware of materials and context, and craftspeople to embrace new approaches and techniques, extending the reach of what either discipline could accomplish on its own.

The necessity to address the wicked complexity of sustainability issues forces design methodologies to expand towards the realms of resource-mindfulness, design for repair, and locally situated projects, all of which are becoming more and more crucial and that can all be influenced by and learnt from craft knowledge. In fact, in order to imagine more sustainable futures, designers must question industrial conventions and come up with alternatives, according to Dunne and Raby (2013), and this process may entail tapping into craft corpora of knowledge. Additionally, handcrafted prototypes are frequently used in speculative or critical design projects to suggest future scenarios, subtly acknowledging that design and craft can work together to critique and enhance the status quo (Dunne & Raby, 2013).

It's also important to remember that not all design-craft interactions are smooth. Differing priorities can lead to tensions, such as the explicit knowledge of design education versus the tacit, experiential knowledge of master artisans, or the economies of scale frequently sought in design versus the one-off or limited nature of craft. But it is precisely from these distinctions that learning and creativity arise. The "craft versus design" argument is a stale dichotomy, as Cardoso (2010) stated in The Craft Reader, meaning that adhering to a rigid division restricts the creative potential that a hybrid approach offers. Breaking this dichotomy is the current direction of the creative industries, but this development is definitely not new; on the contrary, it is rooted in a certain counter-history of design (Corrado, 2019) far too often overshadowed by the official industrial account of the history of design, but nonetheless rich in experimentation and valid positions. In fact, this conversation between design and crafts takes inspiration from earlier movements like Arts & Crafts and the Italian design tradition of Made in Italy, which we describe in the following section to place these concepts in a historical context.

2.1.2 Historical case studies from the Arts & Crafts to the Made in Italy

The hybridisation of Crafts and Design has deep historical roots, often promoted by societal needs, such as the pursuit of more sustainable or human-centric production, cultural exploration or the reaction to the globalising forces of industrialisation. From the Arts & Crafts movement to the Made in Italy design phenomenon, we see how craft-design cooperation has been pursued in different eras, providing a foundation for today’s evolution of hybrid creativity.

The Arts & Crafts movement originated in Britain in the late 19th century as a reaction to the Industrial Revolution’s effects on the impoverishment of the decorative arts and the inhumane conditions in which industrial production was conducted, and as such the members of the Movement, like William Morris, advocated for a return to handcraft, quality materials. The movement ethos, as effectively said by De Fusco (2007), was fundamentally about aligning aesthetic quality with ethical production, anticipating *de facto* the contemporary argument that wishes a design at the service of social justice through the adoption of craftsmanship as a system of values. Vercelloni (2014) likewise emphasises that the movement sought to restore value to handcrafted work and to infuse products with artisanal

integrity. The ideals of the Arts & Crafts movement were only partly realised as handcrafted goods remained expensive and non-competitive against industrial production, however, the movement's legacy was later reprised by the Wiener Werkstätte while also laying the ideological groundwork for later design reform and education.

Figure 2.18 *Handcrafted teapot from 3-piece tea service, Wiener Werkstätte, 1900/1920, Wien, Austria.*

For example, the Bauhaus school in Germany was directly inspired by these ideas: its curriculum merged fine arts, crafts, and architecture to train a new kind of Thinker/Maker who was as much of a designer as a craftsperson. In the *Vorkurs*, the mandatory introductory course, students learned weaving, metalwork, ceramics, woodwork, etc., not to become traditional artisans per se, but to better inform their design with material understanding (De Fusco, 2012). This pedagogical experiment demonstrated historically that craft skills could enhance design practice, but as industrialisation progressed, design and crafts grew more and more apart, with mass production becoming dominant and craft being relegated to folk art or luxury niches.

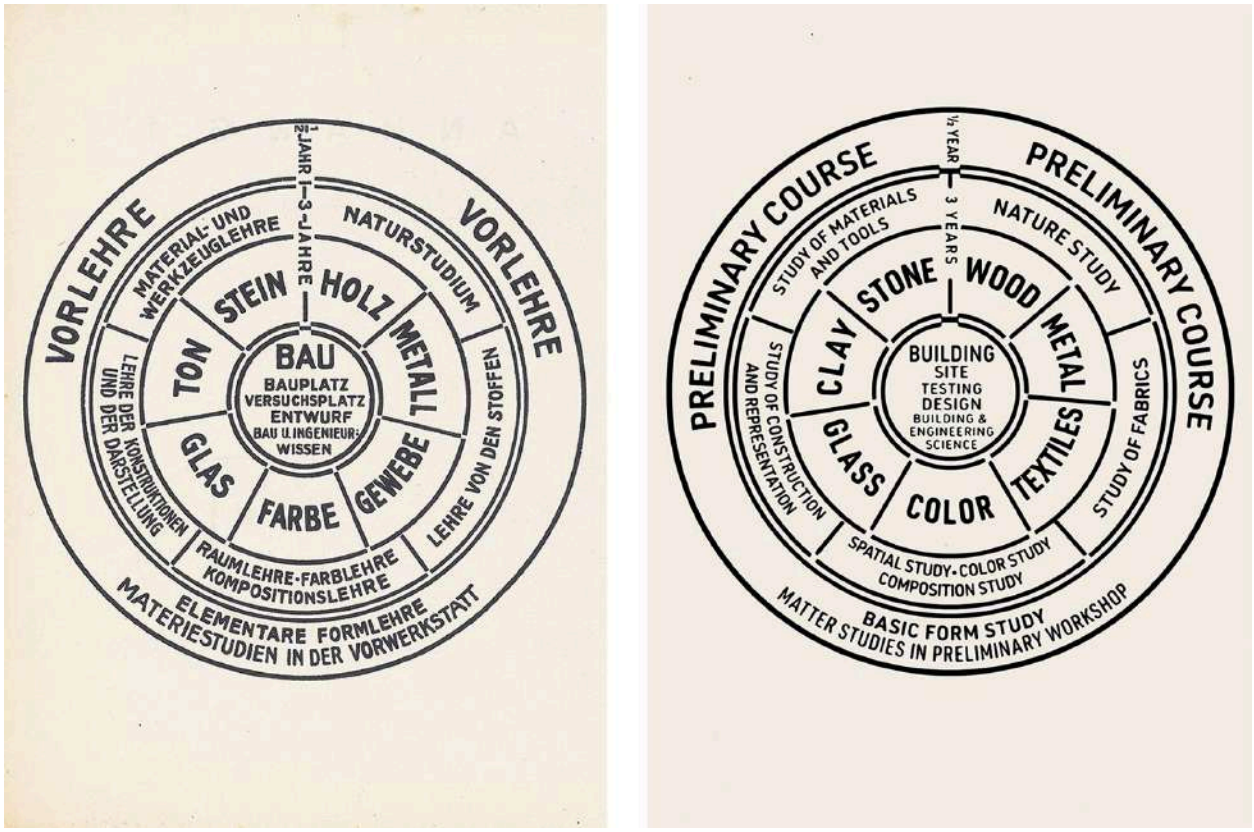

Figure 2.19 *Diagram of the Bauhaus curriculum (adapted, right), Walter Gropius, 1922. Lithograph. 20.2 x 29.3 cm. From Walter Gropius, Satzungen Staatliches Bauhaus in Weimar (Statutes of the State Bauhaus in Weimar), July 1922. Bauhaus Typography Collection, 1919–1937. The Getty Research Institute, 850513. © 2019 ARS, NYC / Bonn.*

As the interaction between design and crafts remained an underground area of exploration for certain design histories, it was only in the mid-20th century that we could see a surge in this idea, marked by extensive experimentation. These experiments resulted in a globally recognised success that would shape the renowned “Made in Italy” identity as, unlike countries such as the United States or Germany, Italy’s post-WWII economic boom did not rely solely on huge industrial conglomerates, but it was mostly driven by small and medium enterprises, many of which were essentially advanced craft workshops (De Fusco, 2009). Italian designers collaborated closely with artisans to produce furniture, lighting, and fashion to the extent of defining what Branzi (2015) called "Italy’s design miracle", which was rooted in its artisanal manufacturing culture. This created the conditions for designers to experiment with forms and materials side-by-side with highly skilled craftspeople, resulting in innovative but culturally situated projects.

Figure 2.20 *Milan Fair, the biggest showcase of all things Made in Italy (1920-1970).*

Projects developed by the Masters of Italian design, like Gio Ponti, the Castiglioni brothers or Gino Sarfatti, exemplified what came to become an Italian style that was defined by the intersection of new, experimental concepts rooted in precise artisanal Making. Benini (2010) effectively describes the success of the Made in Italy as a process that transformed post-war consumer culture into an expression of identity by imbuing everyday objects with imagination and cultural narratives, through the cross-pollination between the expertise of artisans and a clear vision of the Future. Vercelloni points out that many of these Italian design icons were built to last, with an implicit dimension of longevity and emotional attachment (2014). Thus, the relationship between design and craftsmanship in the Italian landscape can be traced across different generational groups, emphasising a constant contamination between industrial mindset and artisanal practice (Dardi & Pasca, 2019).
Pioneers of Italian design like Gio Ponti and Carlo Mollino purposefully included craft experimentation into their work already in the 1920s - 1940s. Ponti's partnership with Richard-Ginori particularly

exemplifies this synthesis, with his hand-decorated porcelain series, Le Mie Donne, which combined artisanal painting with industrial manufacturing and anticipated a new kind of design/craft.

Figure 2.21 *Gio Ponti for Richard-Ginori ceramics, collection Le Mie Donne, "Domitilla" bowl (1923-1933).*

Later, Bruno Munari's ceramic experimentations were probably some of the most influential experiences brought about by this pioneer of Italian design, which led to the definition of the Munari Method that directly drew from the artisanal epistemological principle of learning by doing to define a concept of Making as a pedagogical experience (Munari, 2017).

Post-war Italy's economic expansion in the 1950s and 1960s witnessed a definitive synthesis of industrial production and artisanal techniques. We see this concept embodied, for example, in projects like Zanuso's Lady chair (1951) developed for Arflex, which combined artisanal upholstery techniques with contemporary polyurethane foam technology; or Vico Magistretti's Carimate chair (1959), which fits hand-woven straw seating created by traditional Brianza weavers inside an industrially lacquered red frame. Even projects with an intrinsic industrial soul like Joe Colombo's Universale 4860 chair (1965) relied heavily on the artisanal mould-makers' craft to perfect the injection-moulding procedure, or Mario Bellini's Cab chair (1977), which reinterpreted this idea by combining hand-stitched saddle-leather upholstery with industrial metal frames.

But Designers' engagement with craftsmanship was explicitly enhanced by the radical and post-modern experimentation of the late 1960s through the 1980s, which were characterised by a rebellion against the industrial paradigm and a wild experimentation with form, materials and techniques. For example, tantric symbolism and traditional glazing were combined in Ettore Sottsass' Yantra ceramics (1969), which were handcrafted by Bitossi artisans and reflect a conscious artistic and artisanal dimension.

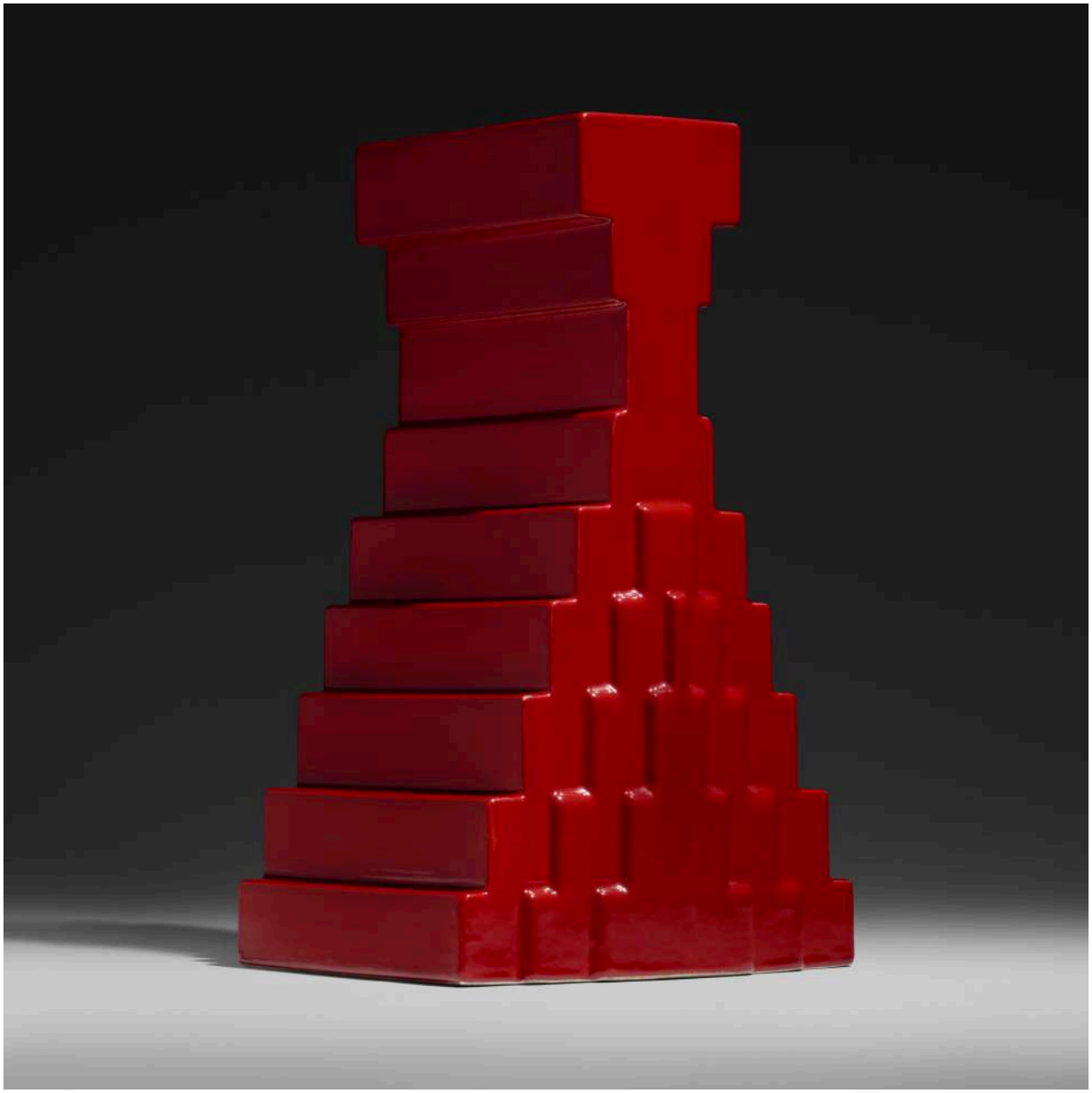

Figure 2.22 *Ettore Sottsass, Vase, model Y37 from the Yantra series. Bitossi ceramics (1969).*

Superstudio's Quaderna tables (1970), on the other hand, used Tuscan carpenters' abilities to hand-laminate checkerboard-patterned plastic surfaces onto wood, as a form of critique towards the industrialised consumer culture. Andrea Branzi's Animali Domestici series (1985) combines raw wooden branches with recognisable artificial design forms in a deliberate mix of natural and artificial, recalling the junction of craft and industry. A different take on the idea of contamination of disciplines was that adopted by Alessandro Mendini with his hand-painted Proust armchair (1978), whose hand-painted pointillist decoration applied on a traditional Baroque frame exemplified the idea of a juxtaposition of languages and codes belonging to different realms of Making.

Figure 2.23 *Alessandro Mendini, Poltrona di Proust. Poltrona policroma in legno intarsiato e tessuto dipinto a mano, 100x100x100 cm. Edizione limitata. Ph Carlo Lavatori – Archivio Alessandro Mendini. (1978).*

Lastly, promoting craftsmanship as a kind of resistance against consumerist industrialisation, Enzo Mari's *Autoprogettazione?* (2002) offered open-source timber furniture designs to inspire public involvement with carpentry, paving the way to conversations on the concept of ownership, authorship, user engagement and co-creation still relevant to this day.

Design began to diversify during the 1980s to 1990s as technology began to combine with craftsmanship. From 1990 on, Michele De Lucchi's Produzione Privata project exemplifies intentional artisanal exploration, such as the hand-turned walnut Primavera lamp, which purposefully contrasts traditional lathe craft with contemporary energy-saving technology. By fusing custom upholstery craftsmanship with modular metal structures, Antonio Citterio's Sity sofa (1986) continued this artisanal-industrial fusion. Alberto Meda stands out among his generation believing that "the more complex the technology, the more it is suitable for the production of objects for simple use, with a unitary image, almost organic", and demonstrating this idea with the Light Light armchair, a carbon–fiber chair, manufactured in a small series.

These generational overviews together give a sense of how Italian designers consistently used artisanal techniques for different reasons, from the improvement of industrial goods, to the challenging of consumerist values, or the investigation of emerging technological and craft hybrid approaches, ultimately bringing about a rich conversation between design and craft all during the twentieth century and beyond.

An absolute protagonist of this conversation has been and still is Ugo La Pietra, whose work over the past five decades has been defined by an active effort to bridge traditional craftsmanship and contemporary design, configuring itself as an ongoing research conducted through the collaboration with artisans and manufacturers across the entire Country. These collaborations allowed La Pietra to explore how the skills and aesthetic values of craft can be integrated into design practice (La Pietra, 2021). Throughout his career, La Pietra treated crafts as a driving force of design innovation in open opposition with the industrial narrative that sees crafts as a nostalgic phenomenon anchored in an underdeveloped craft, re-framing artisanal production as an essential dimension of design itself (Orazi, 2020). This attitude, still strongly present to this day, is evident in both his theoretical writings

and his practical projects. In his book Storie con gli artigiani (2021) La Pietra explicitly narrates dozens of partnerships with Italian craftspeople ranging from ceramic artists in Caltagirone to mosaic makers in Spilimbergo, partnerships that he leveraged to continuously challenge the design world's neglect of craft, arguing that small-scale production is a vital enterprise of design and not merely an inferior alternative to mass industry (Orazi, 2020).

Figure 2.24 *Ugo La Pietra, ritratto.*

La Pietra's collaborations span an immense array of artisanal workshops and accounted for the production of over 2500 projects in over fifty years of activity spent exploring almost every crafts tradition active on the Italian territory. One of his first collaborations allowed him to experiment with woodwork through the collaboration with Mobilificio Fratelli Boffi, with projects such as Mobili interrotti (Interrupted Furniture) (1984) shown at the 2014 Triennale Monograph exhibition. At Cooperativa Ceramica d'Imola, he explored ceramics production, experimenting with textures and patterns with his project Una Casa di Mattoni (A Brick House) (1987). Later, he designed pieces with the silversmiths of Argenteria De Vecchi (1990) and Ceramiche Fusella e Gatti (1990), integrating precious metalwork and ceramic techniques with contemporary forms. In stone and tile, La Pietra collaborated

with the Luxembourg-based Générale du granit and Mosaico Akomena (Venetian terrazzo), reinterpreting hard natural materials through playful patterns. With La vetreria di Artemide (Artemide's glassworks), he explored glassblowing and illumination (1992). These partnerships often involved co-design, where La Pietra brought bold conceptual ideas to traditional forms of making, and in turn let the material logic and local Saper Fare (know-how) shape the final outcomes. His career extends beyond the year 2020, but a characteristic in La Pietra's praxis has remained constant throughout his journey, that is to say, the attempt to bring design and crafts closer together as part of a continuous processes that brings to the definition of culturally situated objects that bear both the rooted cultural value of the artisanal making and the designer's future-oriented intent (Orazi, 2020). At the core of these practice-based experiments is La Pietra's conceptual stance that "Craft is Design" and that "Design must reconnect with the Cultura del Fare [Culture of Making]" (La Pietra, 2020). From the late 1970s onward, he insisted on the idea that the aesthetic autonomy of craft could be recognised as a legitimate form of locally rooted design thinking. As he noted in a 2020 interview, the push to focus on craftsmanship in the 1980s had been a moment of disappointment towards the design world, as Italy's post-war turn toward industrial design had sidelined applied arts. He points out that until the 1940s, many artisans were still shown at major design exhibitions like the Triennale, but after the war, discovering industrial design had signified a rejection of this artisanal past (Orazi, 2020). By the 1980s, this neglect had left the craft sector weak and reactive rather than innovative. To counter this, La Pietra adopted a deliberately provocative concept of 'artistic design for business' at the Brera Academy around 2000, creating an academic department meant to cultivate a production category that was neither industry nor design but something in between (Orazi, 2020). In his later writings (such as Argomenti per un dizionario del design, 2019), he explicitly places "craftsmen" in the realm of enterprise and small-scale production. He emphasises that small artisan enterprises are a form of design-oriented business that must be valued as small businesses also mean small production, which is extremely relevant in today's sustainability issues (La Pietra, 2019).

La Pietra expresses his belief that design shouldn't necessarily be about mass market innovation but about the creativity of artisans by frequently describing how traditional craftsmen inject a sense of

place and culture into objects, a kind of living "Mediterranean sign" (La Pietra, 2004). Reflecting on his theoretical and practical journey, today La Pietra identifies tourism as the next culprit in the failure of the evolution of Italian Crafts as tourism often infantilises craft, in contrast with craft traditions abroad, especially in Northern Europe or Japan where applied arts have a vibrant market, for which he believes Italy should re-engage its artisans with serious design experimentation.

La Pietra's ideas intersected and were also influenced by those of the Sicilian School of Design, founded by Professor Anna Maria Fundarò. Fundarò, who established the Palermo design curriculum in the 1970s, similarly championed for a *design per lo sviluppo* (design for development) in Southern Italy and the broader Mediterranean context (Trapani, 2018). Marinella Ferrara's studies of Fundarò note that, despite being associated with Radical Design thinkers, Fundarò did not simply follow their aesthetics but instead coined the idea of *design per lo sviluppo* to stress how design should address local production and identity (Ferrara, 2017a).

Figure 2.25 *A. M. Fundarò's team. From the left: A. Cottone, A. M. Fundarò, M. Balsamo, A. Martorana, M. Argentino. (Ph. E. Sottsass). (1980-1981). (Archivio Argentino, Palermo).*

La Pietra has often been counted among Fundarò's collaborators and intellectual peers, as Fundarò actively maintained relationships with designers and design theorists, valuing these external interactions to broaden her thinking beyond Palermo's local scene (Ferrara, 2017a). In practice, this means that when Fundarò ran conferences and workshops on design in Sicily, she brought in voices like La Pietra's to articulate a national and international perspective to help create "a dimension of thought free from personalism" in Fundarò's circle like we can see in the accounts of the 1983 symposium on "*Design per lo sviluppo*" which took place in Palermo but featuring both Sicilian participants and key design protagonists from outside Sicily (Ferrara, 2015).

Both Fundarò and La Pietra shared the conviction that design must help revitalise local material culture, and Fundarò spoke of "design as a necessity" to reconquer modernity's material culture, and promote " a new craftsmanship, to trigger development of local productions toward national and international levels" (Ferrara, 2017a). Like La Pietra's, her work demonstrated how design could invigorate regional craft industries, extending these expressions of creativity beyond the vision of a "Southern design" into an identity for a Mediterranean Hybrid creativity (Ferrara, 2017b) that could open new dialogues within Italian design culture, emphasising the importance of small-scale production, regional identity, and the social role of craft.

Many designers have picked up the legacy of Ugo La Pietra, and in the contemporary Italian design landscape, the line between design and crafts remains blurred, as designers continue engaging with traditional making practices to root their work in local culture.

Where post-war design was often synonymous with industrial production, recent research highlights a renewed craft-design dialogue that revives indigenous knowledge while innovating form, a phenomenon rooted in the DNA of the Made in Italy. As Catharine Rossi observes, "craft was vital to the conception, realisation and interpretation of Italian design practice in all manner of ways: a rich reserve of artisans and workshops that often collaborated with industry", and this continues to provide a rich reserve of artisans for contemporary projects (Rossi, 2015).

Undoubtedly, we have described how one of the first design thinkers to see craft as strategic includes Ugo La Pietra, who already in the 1970s staged events like *Abitare il Tempo* to promote a virtuous

dialogue between the culture of Making linked to territories and design culture (La Pietra, 2021). There, La Pietra and others (Dalisi, Natalini, Palomba & Serafini) framed the notion of "*fatto ad arte*" ("artfully made") against industrial simplification, weaving networks of designers, architects and artisans to strengthen regional identity (Burkhardt, 2010). From these roots emerged a discourse that Italian design should valorise the *Saper Fare* – the artisanal know-how at the heart of Italian style (Benini, 2010) – as a driver of innovation (Micelli, 2011). By the 2010s, scholars like Follesa note a broad consensus: design must connect tacit craft knowledge with new technologies and protect territorial diversity. In other words, in Italy today, "design" often means negotiating between global visions and the hands-on expertise of local makers (Follesa, 2014).

In practice, this hybrid approach inspired the work of many of the protagonists of the contemporary design landscape. For the sake of this review, we focus on the names that, more than others, have expressed not just their design expertise through their projects but also a theoretical stance on the discourse on the possible hybridisation of the design practice.

We start with the work of Giulio Iacchetti, a Milan-based designer born in 1966, who sees the relationship of design and craft as "a subterranean river – flowing and acting deep below, even while it remains invisible" (Dirceo, 2023). A relevant proof of his commitment to the empowerment of heritage craft is his project Internoitaliano, a network bringing together small artisan workshops and designers to produce furniture and accessories. With a similar intent, his Tempo Artigiano project (in partnership with the Municipality of Sarule in Sardinia and the Nivola Foundation) reinterprets Sardinian weaving and ironwork, modernising traditional forms so they can reach new markets beyond the island, with a clear inspiration drawn from the work of Eugenio Tavolara (Altea, 2005). Both these projects deliberately imagine a bridge between an international idea of design idea with local craft skills. For example, for Tempo Artigiano, Iacchetti moved with his family to the Sardinian town of Fertilia to create relationships with local artisans and design together with them (Dirceo, 2023). A successful partnership was established with Diego Moretti, woodworker of Ebanisteria Meccanica, under the assumption that the most fruitful interaction would have been one between equals: no design saviour complex, but peer-to-peer cooperation between conceptual design and heritage craftsmanship.

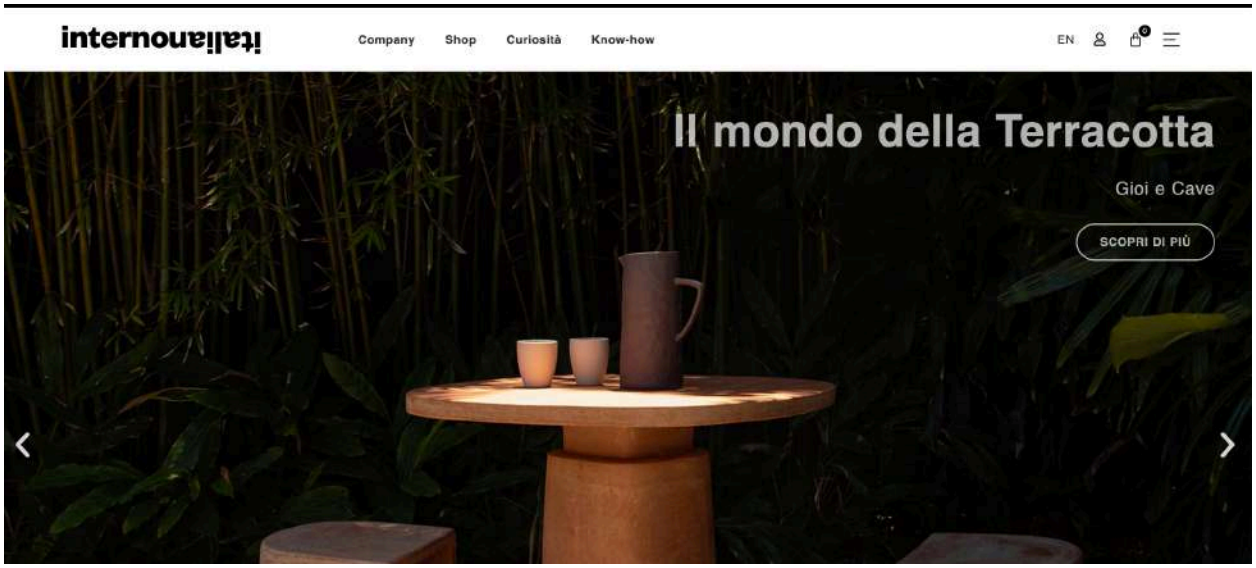

Figure 2.26 *Homepage of the platform InternoItaliano, a project by G. Iacchetti.*

This co-creation model recalls Ponti's vision of an Italian product identity as "designers adopt Ponti's purpose of seeking an identity for the Italian product in a wise dialogue between artisanal making and industrial making, between formal purity and expressive richness" (Follesa, 2014).
A similar resonance with the crafts ethos and praxis characterises the work of Tuscan designer Paolo Ulian, defined "Italy's father of sustainable design" (Massoni, 2023) for his commitment to connecting the craft discourse to environmental and social concerns. Like Iacchetti, he investigates Italy's specialised monoproduct regions, especially Carrara's marble quarries, Vicenza's gold foundries, and Tuscany's textiles, which he seeks to innovate without losing the area's material identity and often recycling what industry discards. In Ulian's words, he operates from an "innate" design basis but exerts authority to experiment on issues of ecology and new techniques (Massoni, 2023). Most importantly, he emphasises that design is an ethical act, and this axiom reflects his approach of collaborating with artisans who control niche processes, proposing alternative production methods to reduce waste. Similarly to La Pietra's, these experiments aren't about mass-market competitiveness but about proving that respectful, resource-aware making is viable working hand-in-hand with traditional makers as much for their local expertise as for their commitment to material longevity, while remaining "culturally relevant and locally situated" echoing Follesa's call to design for place (2015a).

Figure 2.27 *"Introverso" sink, Carrara White Marble, Design Paolo Ulian.*

Peeking outside Italy's borders, similar trends confirm that design-craft hybridity is a global phenomenon. For example, the Brazilian Campana Brothers have made their relationship with collaborative craftsmanship a hallmark: their studio employs dozens of weavers, welders and embroiderers to realise the designers' visions in tactile form. Humberto Campana explains that from the very start, they valued the need to connect mind and hand, looking at their discipline through the eyes of craftsmen (Chislett, 2019). Their Hybridism exhibition explicitly celebrated the blending of design and crafts, showing furniture made with both high-tech processes and traditional craftsmanship. Chislett observes that what once seemed "water and oil – craft vs design – is no longer the case" (Chislett, 2019) as today designers around the world pursue the authenticity and "human fallibility" of hand-making as essential to uniqueness.

Figure 2.28 *Campana Brothers, "HYBRIDISM", Friedman Benda, NYC, 2017.*

This can also be achieved through transnational collaborations, as Hands on Design, a brand co-founded by Japanese and Italian designers Kaori Shiina and Riccardo Nardi in 2015, connecting "ancient artisan crafts to the fast-moving world of contemporary design" wants to demonstrate (Fondazione Cologni dei Mestieri d'Arte, 2021). Hands on Design's formula is to give equal prominence to the artisan's identity as to the designer's, coordinating their dialogue to produce high-quality products for discerning international markets. As the founders put it, "reconnect[ing] Design to Craftsmanship within a contemporary sensibility" – allowing artisans access to new markets and young people to meaningful, skilled work while designers "recapture the synergy of the early days of Design in craft ateliers" (Fondazione Cologni dei Mestieri d'Arte, 2021).

A similar example of transnational collaboration is Pretziada, a Sardinian venture led by a the artist Ivano Atzori and the American designer Kyre Chenven who have been inspired by the island's wealth of

local craft and paired local craft masters with international design talent, with the aim to bring Sardinian traditions to a wider design audience (Parsons, 2022).

These projects show that the Italian craft-design discourse has inspired a global conversation: the material and cultural qualities of the 'handmade' are seen as antidotes to the homogenising tendencies of mass production, and thus worth celebrating, reinterpreting and learning from. The results are the expressions of a hybrid discipline where "making" and "designing" are not opposites but intimately entwined, producing work that is future-oriented yet deeply locally situated.

Figure 2.29 *'Marria' vases Pretziada for Valentina Cameranesi Sgroi and Walter Usai. (2017).*

2.2. *Are emerging technologies a medium for the Hybridisation of design and crafts?*

2.2.1 Emerging Technology and the Democratisation of Making

The advent of new portable technologies like digital fabrication tools and web platforms has collaterally produced a phenomenon of democratisation of making, which fundamentally altered the boundaries between crafts and design practices. These technologies are making manufacturing accessible to a much larger population, as they have freed it from the dependency on skilled artisans or factory production, allowing local production, high customisation, and community-led innovation, and thus promoting an ever-increasing design-craft hybridisation. The Maker Movement, which gained traction in the early 2000s, is one of the main expressions of this change characterised by individuals and small groups now empowered with the ability to design and manifacture complex objects without a large industrial setup thanks to inexpensive 3D printers, CNC machines, laser cutters, and open-source microcontrollers like Arduino (Monterosso, 2013). Over the last twenty years, a growing number of public workshops equipped with these tools, known as "FabLabs", have appeared all over the world, making design and manufacturing accessible for a broader number of individuals.

Figure 2.30 *A typical set-up of a fablab including different technologies for manufacturing and prototyping.*

According to Micelli et al. (2019), this phenomenon is a new artisanal renaissance, where a new generation of Makers frequently combining design and craft sensibilities are empowered by digital tools. These makers are either students or new business owners, hobbyists or traditional craftspeople, united by accessible means of production and a do-it-yourself mentality. In this democratised setting, design itself moves beyond the creation of a blueprint, and it entails the designer's own hands-on making, combining the roles of design and craft into a single individual or group. Digital platforms, such as online forums, file-sharing websites for designs, and social media, according to Gutierrez Contreras et al. (2022), contribute to this democratisation by disseminating information about how to make things. In addition to learning techniques from online courses or YouTube, aspiring makers can download open-source design files and even ask a global community for feedback or collaboration. On a global level, this unrestricted exchange of information is similar to the collective character of traditional craft guilds. To put it another way, new technology has made it possible for many people to engage in craft-design hybrid activities by facilitating a collective craft practice where knowledge is shared widely rather than kept secret.

The effects of these changes are evident. First, the distinction between amateur and professional is blurred: an individual with the right tools, mindset and internet access can design and produce objects with a level of precision similar to that of industrial products. Second, traditional artisans have new opportunities to enhance or scale their work (Micelli et al., 2019). For example, pottery is going through a deep redefinition of processes and tools thanks to the use 3D printing, which allows the creation of complex moulds for slip-casting, or the use of automatic clay-feeders, used in sync with a robotic pottery wheel. Similarly, a weaver might use a digital jacquard loom to produce intricate patterns designed on a computer, doing things that were previously extremely laborious or impossible by hand. Lotti and Trivellin (2018) observe that when technologies like 3D printing and CNC machining entered the craft domain, there was some initial hype portraying the “digital artisan” as a fundamentally new figure who might even displace the traditional one. Fab labs in Europe around the 2010s were often talked about in almost revolutionary terms, suggesting that everyone could become a maker and that old skill-based craftsmanship might become less relevant. However, with time, a

more nuanced understanding has emerged. The introduction of these new tools did not automatically raise the quality of design or craft outputs in general; having a 3D printer doesn't guarantee good design. In fact, they argue that the so-called digital artisan is "closer than it appears" to the traditional artisan, meaning that the core qualities needed to produce excellent work (an eye for detail, material understanding, iterative refinement) remain the same but applied through a different technological toolset, still requiring human judgment and skill to avoid the risk of flooding the world with mediocre objects which would undermine respect for true craft (Lotti et al., 2022).

Another impact of technology on democratising making is changing the social structure of craft and design. Traditionally, craft could be seen as a solitary practice, with the artisan put at the head of a small workshop through master/apprentice relationships (Sennett, 2008). Adopting the values of networked technology, open access, and co-creation, contemporary crafts have become a collective, rather than an individual practice (Lotti & Trivellin, 2018). Specifically, Making results the centre of many communities of practice (Lave & Wenger, 1991) formed around shared interests like manufacturing, hacking, or new crafts, often bringing together professionals and amateurs.

As described in the historical reconstruction via projects like InternoItaliano or Hands on Design, designers and craftspeople can find each other online and collaborate remotely, essentially recreating a creative microcosm bringing together different skill sets to create something neither could alone (Zheng & Nitsche, 2017). Such cross-disciplinary teaming isn't limited by geography or institutional projects, as it can happen informally through online meetups, open-source projects, or at local maker gatherings. The democratisation of tools and knowledge thus also means a democratisation of participation: design and crafts are no longer confined to an elitist design world or artisan guilds, but they open up for people from varied backgrounds to participate. The European Craft Alliance (2025) has recognised this trend and used it to inform their planning at a policy level, supporting initiatives to train artisans in digital skills and to set up networks where traditional makers can exchange knowledge with designers or, more generally, makers, to future-proof the craft sector.

However promising, democratisation is not automatically complete or perfect, since many challenges remain. For example, albeit enlarged by portable technology, the accessibility to tools, education and

resources is still affected by social and economic divides (Noel, 2023), while the definition and maintenance of quality and safety in self-made products is still not standardised. These factors add to the risk of superficial “craft-like” results that justify the persistence of the need for design expertise and craft training, especially within a democratised Making landscape: mentors in makerspaces, open education, and collaborations help steer the broad maker community towards meaningful, culturally-relevant outcomes. Encouragingly, initiatives like the European Craft Alliance (2025) are addressing these by blending design, engineering, and craft curricula, reflecting an understanding that the best results come from cooperation across disciplines and skill levels.

In summary, emerging technologies have expanded the circle of Makers, effectively democratising the act of Making. This has led to a new intersection between design and craft practices: designers are embracing hands-on making, while craftspeople are adopting more and more technological tools. Despite its complexities, at the core of this process we find the idea that design and craft can cooperate on a much larger, more inclusive scale than ever before, defining new kinds of Making practices emerging from the blending of traditional craft with emerging technologies.

2.2.2 New kinds of Crafts: When Crafts Meet Technology

As design and crafts are pulled closer by the emergence of portable technologies enabling at-home self-production, we also witness the rise of new craft types, sometimes known as digital crafts, hybrid crafts, or post-digital crafts, born from the fusion of traditional artisanal techniques with new technological advancements. As a consequence, the creative landscape is being expanded by such hybrid practices, which also have important ramifications for the future of sustainable design and cultural preservation.

As early as 2015, the phenomenon had already solidified into tangible results as demonstrated by the decision to organise a Hybrid Craft exhibition on the occasion of SIGGRAPH 2015, where Amit Zoran and associates curated 15 projects combining digital fabrication with traditional craft techniques (Zoran et al., 2015). Each project showed how artisans could produce results that were neither entirely machine-made nor entirely hand-made by combining manual techniques with equipment like 3D

printers or CNC machines. According to Zoran et al. (2015), this could have redefined a holistic approach to contemporary making, integrating digital and physical elements and made by makers who are able to juggle between 3D modelling, coding, chisels or brushes. Specifically, these practitioners are able to combine design and craft into a single process by using technology as an additional "material" or extension of the craftsperson's hand, to obtain, for example, 3D printed ceramics geometries that would be impossible to mould by hand, or digitally knitted textiles with embedded sensors. It's interesting to notice how, beyond the novelty of its outputs, maker interrogate themselves about the possibility of imagining entirely new disciplines, redefined by their tools but preserving the ethos of artisanal making.

Several domains exemplify this hybridisation, like, for instance, the new realm of smart textiles where textile designers and artisans now work with engineers to weave electronic components into fabric, creating smart wearables, thus blurring the line between what we can define as a fashion designer, a craft weaver, and a technologist; or the world of ceramic, where ceramists are empowered by 3D clay printers with the ability to experiment with shapes impossible to replicate by hand, although the printed objects still require manual finishing for the glazing, detailing and firing.

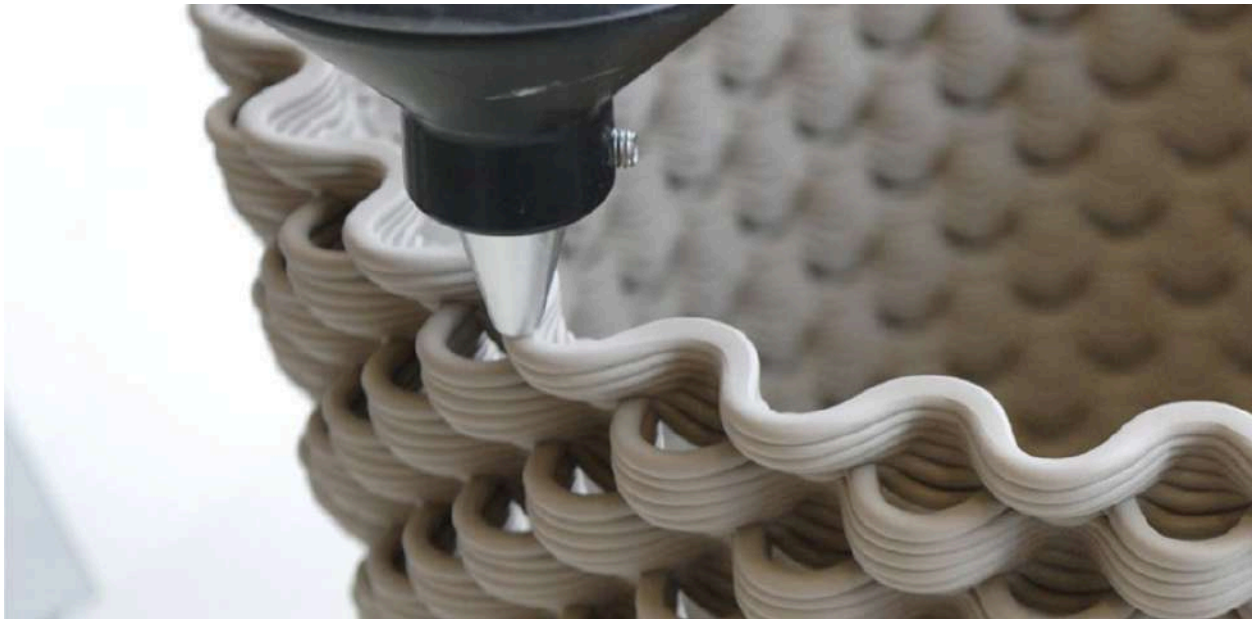

Figure 2.31 *Ceramic delta printer, WASP Delta 2040. (Photo via James Clarke-Hicks, the University of Waterloo.*

These hybrid scenarios exemplify what Parodi (2022) defines as a new craft requiring the "mastering of both software and sawdust". These new craft forms often require new skills and mindsets, as practitioners must become as proficient with digital tools as with material behaviour and tacit processes. This is leading to hybrid professionals sometimes defined as designer-craftsmen or computational craftspeople. Micelli et al. (2019) note that in Italy, many small artisan businesses have started to integrate digital fabrication, giving rise to what they call Artigianato 4.0 (Craftsmanship 4.0) that's to say a craftsmanship involving Industry 4.0 technologies like 3D scanning, laser cutting, or even AR/VR for prototyping (Lotti et al., 2020a).

As a counter-argument to the optimistic view on the empowerment of crafts through technology, researchers have tried to understand if the use of technology in crafts diminishes or increases the value of traditional craftsmanship. The evidence points primarily towards an increase in value, but with some necessary precautions. For example, Lotti & Trivellin (2018) warn against putting too much emphasis on the tools rather than the makers, which could diminish the perceived value of the human skills involved in the making, including the distinctive regional or individual forms of craft, which may be lost if everyone uses the same algorithms. On the other hand, research shows that artisans continue to be essential even in a hyper-tech context, since quality cannot be guaranteed by machines alone but requires a continuous control by the artisanal mindset, which includes improvisation, in-depth knowledge of materials, and cultural storytelling, to ensure that technology is used for intentionally and for a purpose (Branzi, 2015), and in this context of "new crafts", the designer's becomes a mediator between traditional know-how and technology (Celaschi, 2008).

As a collateral benefit, Bettiol (2021) describes how the technological hybridisation of design and craft can produce more sustainable systems and products. In fact, a technologically advanced craft workshop can reduce overproduction by producing items in small batches or on demand, based on real needs, as opposed to traditional production processes sometimes result in wasteful flows. Companies that use digital tools to accomplish mass customisation often employ CAD/CAM to quickly modify designs in response to customer requests or material availability, also preventing surplus inventory, while guaranteeing the repairability of the production.

Emerging technologies can also contribute to the safeguarding of heritage crafts by enabling digital documentation and fabrication to capture traditional patterns or techniques and reintroduce them in contemporary designs, and, in this way, technology becomes a medium through which the past and future of craft communicate. Kouhia and Seitamaa-Hakkarainen (2017) would call this a transformative application of tradition, that is to say, the use of contemporary tools to reinvent craft in a way that still honours its origin.

At the opposite side of this perspective, Dunne and Raby (2013) express their concern regarding a perspective on technology as a panacea, since emerging technologies can't simply impose a top-down high-tech paradigm on craft, stripping away its locality and humanity. Dunne and Raby also express a concern regarding the fetishisation of technology, that's to say the risk of focusing on the tools and neglecting crafts: essentially, the centre of their argument is the need to question how technology is applied, to understand if it actually creates a more desirable future or simply a new consumeristic model from a social, environmental, and cultural perspectives.

Hence, emerging technologies are proving to be a powerful medium for the hybridisation of design and crafts. These hybrid practices carry forward the traditional dialogue between hand and mind (Sennett, 2008) into the digital age. They show that rather than replacing craftsmanship, technology can empower it, providing new tools for creativity and new avenues for keeping craft relevant. Moreover, this hybridisation offers promising routes towards sustainability, and it does so by enabling customised, on-demand production, facilitating repair and longevity, and engaging more people in mindful making. Design and craft are co-evolving into something richer and more resilient, whose way forward may lie in reclaiming and reinventing the intrinsic values of the practice.

Part 3.
Making for Socio-Environmental Justice.

|| Synopsis ||

In this last part, we address the necessity to construct an inclusive definition of justice, taking into account the different Spheres of Value of Sustainability. We introduce two old frameworks separately addressing the social and environmental dimensions of sustainability, followed by a new holistic approach to socio-environmental justice. We present the ethos and manifesto of the Design Justice Network, advocating for a political commitment of the design practice, and we close with a review of Distributed Design and Hybrid creative disciplines as vectors of socio-environmental justice.

3.1. *How can we define socio-environmental justice?*

3.1.1 Two old frameworks for Socio-Environmental Justice

Historically, sustainability issues have often been addressed through independent paradigms separating the ecological, social, cultural and economic spheres of values of Sustainability (Weber, 2013). The first attempt at a social-justice framework, which might be termed as an anthropocentric equity model, focused on human rights and equitable distribution of wealth, opportunities, and protections among people which described Justice in terms of income, education, and legal rights (Margolin, 1998), while environmental factors - such as natural resources - were seen as external economic inputs. In design terms, the anthropocentric approach often led to assistive or universal design practices, as described by Papanek's idea of the necessity of a social-justice spirit, urging designers to meet the essential needs of everyone (2019). However, despite Papanek's effort to advocate for the "Green Imperative", his anthropocentric approach could reinforce a view of nature as a backdrop, by improving people's lives without fundamentally challenging growth-driven consumption patterns (Escobar, 2018).

On the other side, we have the traditional environmental-conservation framework (often termed the ecocentric model). Rooted in ecology and sustainability, this framework emphasises preserving ecosystems, biodiversity, and long-term resource sustainability. It arose from conservationist movements and later sustainable development discourse. Policies under this framework might focus on pollution controls, protected areas, or carbon reduction targets. Justice here is often framed as intergenerational equity (leaving a viable planet to future generations) or the intrinsic rights of nature.

However, this framework may have limitations, allowing us to see how environmental burdens and benefits are unequally shared in the present. Classic environmental regulation might impose blanket standards without considering, for example, how poor neighbourhoods might suffer more during implementation gaps (Costanza-Chock, 2020), emphasising technical solutions more than the social transformations needed. Thus, in this ecocentric model, local social context or power imbalances can be secondary concerns.

Each of these older frameworks – tackling the different spheres of sustainability independently – has merits but especially limits, risking to fall in a wicked conundrum that purely focuses on social-justice lenses risking to ignore ecological constraints, or environmental ones risking to ignore the social and cultural dimensions of sustainability (Mang & Reed, 2020). In fact, neither paradigm fully accounts for systemic justice since, as Escobar explains, classical development models often treat nature as separate from society (2018). In practice, these frameworks often assume a top-down approach, which might result, for example, in environmental interventions mandating efficiency improvements without asking how communities can influence design, or social ones redistributing income but still allowing polluting factories to operate in low-income districts. Several design researchers and activists have pointed out these shortcomings.

For instance, Margolin (1998) warned against design imperialism, that is to say, the imposition of Western technological solutions on communities without their input, thus affecting both social programs and environmental strategies. Nielsen and Bjerck (2022) likewise contrast older functional or utilitarian models of design (focused on outputs, metrics, and profit) with emerging “relational” models, noting how old paradigms typically treat users as passive data points, whereas a relational perspective insists on understanding the interwoven nature of design's human, social, and material contexts (Nielsen & Bjerck, 2022).

Similarly, Hanna et al. (2019) examine how climate adaptation strategies' traditional risk-based models often marginalise indigenous voices, thus reproducing injustices even when aiming to protect communities; while Matos et al. (2019) critique conventional environmental education and policy for being expert-driven, arguing instead for participatory approaches that build local capacity. Likewise, Monteiro (2020) highlights how many public-sector initiatives, still operating in silos dealing with either socio-economic issues or environmental issues, are rarely bridging both, thus resulting in strategies which benefit the richer and more powerful more often than not. Only when we adopt a holistic, integrated approach to justice can justice be fully served. Socio-environmental justice thus emerges by recognising that any sustainable solution must simultaneously rectify social and environmental inequities. As Wise (2022) emphasises, moving beyond these outdated dichotomies

means teaching designers to think in systems already during their design education, that is to say, connecting climate, culture, and class in analysis and action. In the next sections, we provide a review of the most relevant points of view on an integrated approach to sustainability.

3.1.2 The Principles and Evolution of Socio-Environmental Justice

Socio-environmental justice can be defined as the simultaneous pursuit of justice in both social and ecological realms. In general, it dictates that all people have a voice in decisions affecting their environment and that no group or community should bear disproportionate environmental burdens or be denied equal access to environmental benefits (Escobar, 2018; Costanza-Chock, 2020). In other words, it combines the fundamental concepts of environmental justice, that's to say, equitable distribution of environmental benefits and disadvantages, and social justice, that is, equitable distribution of resources and opportunities. The fundamental assumption behind this idea is that environmental problems like pollution, resource depletion, and climate change are closely related to social injustices, such as those based on race, class, gender, or indigenous status, as intersectional feminism is here to demonstrate. In fact, to use Escobar's words (2018), environmental issues should be addressed taking into account the complexity of the social structures that support them. Accordingly, socio-environmental justice emphasises interdependence between ethical solutions and the planet's and people's welfare, which are inextricably linked (Escobar, 2018).

This perspective is the foundation of several important concepts pertaining to socio-environmental justice, and starts by acknowledging the difference between equity and equality to aim for equity and fairness in policymaking and design (Mang & Reed, 2020).

Secondly, it establishes the centrality of the ideas of empowerment and participation by stating that the people who will be most impacted by decisions should have a significant voice in how decisions are made (Jenkins et al., 2016). Using Costanza-Chock's words, the motto "*nothing about us without us*" encapsulates this ethos (2020).

Moreover, design practitioners and policy-makers need to acknowledge how various forms of marginalisation, such as those based on race, class, gender, or disability, intersect (Costanza-Chock, 2020). An intersectional approach allows us to understand, for instance, how a low-income woman of

colour may be exposed to significantly different environmental risks (poor housing quality, polluted neighbourhoods) than a wealthier white man.

Additionally, socio-environmental justice needs to aim for long-term ecological health, which means that policies and designs should prioritise resilience, prevent pollution, and conserve resources over short-term green-washing (Mang & Reed, 2020).

Lastly, socio-environmental justice strongly rejects universal prescriptions and values pluralism and respect for local knowledge by encouraging "pluriversal" methods in which various communities use local ecologies and cultures to develop context-specific solutions (Escobar, 2018). Adhering to these guidelines amplifies the potential for policy-making and design to change from top-down, universally applicable models to collaborative, to site-specific paradigms (Manzini, 2015).

Similarly, Victor Margolin highlighted a social model of design (Margolin, 2002) wherein goods and services are influenced by social demands as opposed to just business considerations. According to Margolin, design can never be a neutral social force as every artefact has moral and political connotations and implications(1998). These concepts contributed to a shift in design discourse towards inclusivity and responsibility. Arguments concerning systemic versus human-centred design also reached a mature stage by the late 1990s (Jenkins et al., 2016), which collaterally promoted the rise of participatory culture in the 2000s as a result of globalisation and the growth of digital networks. Participatory culture is a culture of empowerment via cooperation and sharing, where people actively co-create knowledge rather than being passive consumers (Jenkins et al., 2016).

This idea of social empowerment sparked new kinds of public networked participation in social and environmental issues, like that effectively exemplified by Ezio Manzini’s (2015) idea of "cosmopolitan localism", described as international networks of regional projects working together on social innovation. Specifically, the main actors in Manzini's design-for-social-innovation framework are small-scale, dispersed networks of change-makers tackling sustainability and equity in their communities. More recently, in response to the ideas of authors like Mang and Reed (2020) supporting an integrated ecology of design pushing for a simultaneous social and environmental stewardship,

design has gone from industry service to potential social catalyst, shifting from being based on an expert-driven model to relational and participatory ones (Nielsen & Bjerck, 2022). Understanding the "politics of the artificial," as defined by Margolin, is crucial because designers now need to be activists who bridge the gap between technology and society (Margolin, 1995). All things considered, socio-environmental justice now rests on the tenets of sustainability, pluralism, fairness, and participation, reflecting a historical trajectory from Papanek's ecological ethics through participatory social design to the current design justice movement.

3.1.3 The Design Justice Network

The Design Justice Network (DJN) is a community and movement that puts the principles of socio-environmental justice into practice in the field of design. The network was originally created and still coordinated by nonbinary, trans* femme researcher and activist Sasha Costanza-Chock, who works to support community-led processes that build shared power, dismantle the matrix of domination, and advance ecological survival. The Network was born out of community organisers, academics, and design activists who realised that to combat inequality, design spaces needed to change (Costanza-Chock, 2020). To put equity and marginalised people at the centre of design work, the DJN outlines a set of principles and practices which reinterpret design as a collaborative process led by those most impacted by its results rather than as an objective toolkit for "experts." The first of the guiding principles of design justice states, "We use design to sustain, heal, and empower our communities, not to exploit them" (Costanza-Chock, 2020, p.6), and here, community needs and values become the starting point for design projects and discourse. The movement draws principles from intersectional transfeminism, addressing the concept of minority in an agnostic way. For example, from disability justice movements, it adopts the "Nothing about us without us" principle, according to which, people who will be affected by a design choice must be involved in its definition. The movement openly embraces this pluralism in its second principle which presents a commitment to celebrating cultural pluralisms, an idea resonating with Escobar's (2018) call for a "pluriversal

design", equally implying that design should respect and draw from various cultural knowledge systems in the articulation of it contextual factors (Costanza-Chock, 2020, p.6).

Figure 2.32 *Design Justice Network, Framework and Principles.*

The movement also advocates for an open nature of the design practice, promoting the redistribution of design resources and decision-making authority, and specifically requesting that equity principles should be implemented in defining how access to open-source tools and design education should be guaranteed to communities (Costanza-Chock, 2020).

The Design Justice Network sees design as a radically political force, claiming that designers "are accountable to communities" and can use their "power to dismantle racism and sexism wherever we find it" (Chock-Costanza, 2020,) and forcing designers to consider their own presumptions and the structural privileges that influence their work critically. The DJN contends that since every design decision has ethical implications, it is important to deliberately select designs that reframe issues as extensions of autonomy rather than limitations. This entails using an intersectional lens in practice: as noted by Costanza-Chock (2020), a transportation design project should take into account economic

class (what fares are affordable), gender (who travels when and where), and race (which neighbourhoods receive transit upgrades) all at once rather than independently.

Additionally, the network fosters a learner-centred, participatory culture -consistent with the notion of participatory culture proposed by Jenkins et al. (2016)- which encourages community learning circles where participants exchange resources and information horizontally, similarly to what happens in the online peer-led communities of practice analysed by Jenkins.

But most importantly, the DJN connects environmental and social issues. For example, in the wake of a hurricane, a design justice approach would, with affected residents at the forefront, address racial injustices and displacement concurrently with rebuilding infrastructure. But a truly just design response must also incorporate gender in its broader definition of social equity, as noted by Noel (2023), who states that an ecofeminist design perspective is needed to tackle issues regarding communities more affected by power-dynamics like for example women in marginalised communities, who frequently bear the brunt of climate disasters. In other words, the DJN system of values draws from disability justice, Black feminism, indigenous sovereignty, and other movements, as Costanza-Chock (2020) herself explicitly links design justice to anti-oppression movements, due to its core mission to eradicate systemic racism and sexism. Knowledge production is also covered by the DJN, which disavows the ivory-tower theory that says problems can only be resolved by corporate or academic "design experts". Rather, it encourages community-led design research, in which locals create the definitions of success and the data (Wise, 2022), an idea in line with Escobar's (2018) emphasis on "radical interdependence", that's to say the belief that one can learn from multiple ways of knowing, thus advocating for a co-production of knowledge. The Design Justice Network develops new frameworks that go beyond the traditional dichotomies, treating society as a part of nature rather than as a separate entity from it, and asking designers to design with communities rather than against them. The network serves as an example of how design can be a force for justice, able to advocate for the leadership of historically marginalised groups, demand fair resource distribution, and embrace the social aspects of ecological issues, embracing a commitment to changing decision-making processes in a way that benefits communities and restores ecosystems collectively.

3.2. *What role can hybrid design play in pursuing socio-environmental justice?*

3.2.1 New Values for a New Design

In order to achieve socio-environmental justice, design values must fundamentally change, and this is due to the call for a departure from the conventional consumer-oriented design values of novelty, style, and profit to embrace new imperative values like equity, solidarity, ecology, and cultural diversity. This change of values starts with the redefinition of sustainability in terms of justice, which expects design to become an advocate of the reduction of ecological damage as well as a fair distributor of the costs and benefits of sustainable strategies among the involved communities.
In line with Langer's observations on social acceptability which claimed that "we will only attain ecological conversion when it becomes socially desirable" (1994), the 2023 Design Economy report by Symbola highlights how design can drive "the impacts of human activities on ecosystems" and make sustainability "socially desirable" (Fondazione Symbola, 2023a). More than that, contemporary design ought to encourage environmental stewardship, embracing care, commons and relationality (Magistretti, 2004). In this sense, sustainability is now framed by many theorists as the interdependence of humans and nature, requiring compassion for both human and non-human societies. Particularly aligned with this idea is Azouzi & Di Lucchio's research (2023) on the design's responsibility in commoning resources rather than commodifying them to advocate for a design that supports the empowerment of communities by moving from a "extractivist growth economy" to a "resource economy". The inspiring principle for this approach is a spirit of decolonialism or, in Costanza-Chock's words (2020), the idea that the opinions of under-represented minorities directly affected by design's outputs should inform the design processes, rather than top-down imposed knowledge. This requires special attention to positionality and pluriversality, which entails acknowledging that various groups possess various realities and knowledges (Escobar, 2018).
As recommended by Sadowska & Hanrahan (2023), contemporary designers should be equipped to handle "pluriversality, positionality, and ontological design", as well as be aware of existing power dynamics, ultimately decentering Western techno-solutions in favour of solutions originating from

local, indigenous, or minoritarian perspectives. Similarly speaking, the reciprocity of design and cultural heritage is another central value of this redefinition of a design that honours and incorporates traditional practices rather than eradicating or replacing them. Such a holistic view combining nature and culture could promote community well-being and, citing Carta (1999), redefine cultural heritage as an "identity matrix" and development tool. In practice, this implies a redefintion of design processes that take into account local ecology, craft, and history (Sica, 2022): for instance, an architectural project could embed vernacular forms or use traditional materials in a new way, or product designers might revitalise local craftsmanship by infusing it with new functionality, According to Rinaldi (2015, p.222), successful businesses in Italy create innovation through a "osmosis between artisanal technique and cutting-edge technology" by fusing "the Saper Fare [know-how] with new technological knowledge", and this combination inspires innovative products, while also preserving regional identities and jobs. Thus, justice in design also entails acknowledging cultural ecosystems: acknowledging that people's sense of place and history give work and technology meaning. In other words, these new design paradigms value participation, humility, and a sense of interdependence where designers act as catalysts or facilitators, rather than independent decision-makers (Bistagnino, 2008), acknowledging that experts cannot solve complex issues like inequality or biodiversity loss alone; instead, grassroots knowledge and lessons from lived experience must be incorporated. This is encapsulated by Manzini (2015), who describes a "social definition of design" in transition, where design is not the product of a single genius but rather a distributed social activity. Thus, "*metis*" (local wisdom) and "*techne*" (technical skill) combine to form a collective narrative in justice-oriented design. But in order for the act of design to truly benefit society and the environment, making sustainability a fair and common objective, it is crucial that these values can be taught and upheld and, as Noel (2023) insists, institutions and educators must change as well in order to prepare designers for a pluralistic world.

3.2.2 Distributed Design and Emerging Technologies for Socio-Environmental Justice

A new paradigm for addressing socio-environmental justice is offered by the Distributed Design movement, a networked, cooperative approach to design and making across communities, resonating with all the values introduced in the previous paragraph. The Distribute Design Platform empowers communities to co-produce solutions by utilising digital tools, local knowledge and contextual resources, promoting programs that empower practitioners with 21st-century skills, such as circular and inclusive practices, ensuring relevance to local challenges and opportunities (Distributed Design Network, 2024).

Figure 2.33 *Distributed Design logo.*

The Distributed design approach to problem solving is based on the creation of networks of makers, designers, and activists who exchange open-source resources, employ digital fabrication tools, and hold community workshops and, overall, play outside of the rules of the industrial paradigm to develop context-specific tools and solutions achieved by blending these technologies with traditional methods (Distributed Design Network, 2024).

Thanks to these technologies, practitioners can detach themselves from the conditions imposed by industrial production, hence dismantling its traditional hierarchies thanks to the distributed design, open and networked nature. Through online platforms, maker spaces, and co-design workshops, design knowledge is horizontally shared. According to Jenkins, Ito, and Boyd (2016), new kinds of civic engagement and collective creativity are spawned by participatory, networked culture, which allows

young people, non-creative practitioners, and artisans to collaborate with designers to modify technologies to suit their requirements. Also, in democratising who gets to design and what issues are to be addressed, Distributed Design becomes a catalyst for justice, in line with Azouzi and Di Lucchio's call for a new design which, in the Anthropocene era, needs to embrace a "decolonial" perspective connected to local autonomy rather than staying trapped in consumerism (2023).

This process of decolonisation is made possible by technology, which links distant communities and facilitates local production through the institution of Fab Labs, maker hubs, etc (Leinonen, 2016). To understand the democratising power of technology, it is sufficient, for example, to consider the European Crafts Alliance's effort to "strengthen the craft community by advocating for the integration of digital fabrication and traditional craft techniques," combining traditional skills with emerging tools. Nielsen and Bjerck (2022), advocating for a new Relational Design, define an approach based on society's interdependencies and dynamics, thus shifting the emphasis from the design of individual artefacts to the ways in which these are integrated into the social landscape. Tackling social-ecological problems, Relational Design takes into account networks of people, institutions, and the environment, in a way that recalls Lutz's idea of a Life-Centred Design (2022), and reflects a Distributed Design approach to the delegation of responsibility to ensure that technology meets people's actual needs and resources. Emerging technologies essentially become hybrid platforms that support empowerment and transparency by fusing digital data flows with tangible civic infrastructure, and, therefore, technology and hybrid distributed design work together to promote socio-environmental justice. Here, Design becomes a group, location-based activity which utilises digital tools and networked knowledge to address environmental issues with bottom-up solutions and rebalance power from corporate-led design to citizen-led innovation (Leinonen, 2016).

But the democratisation of making has potential also from an environmental sustainability perspective, since it has allowed more people to create, modify and repair their objects, encouraging a culture that advocates for customisation and repair over disposal. As such, it cuts waste and challenges the industrial idea of planned obsolescence over permanence and long-term performance (Gutierrez Contreras et al., 2022). Furthermore, digital fabrication tools can allow local craft businesses

to reduce waste, carbon footprint and overproduction as they enable on-demand production instead of inventory stockpiling. (Micelli et al., 2019). Additionally, because of the open sharing culture, sustainable design concepts, such as open-source blueprints for do-it-yourself, proliferate more readily, enabling local communities to take action without waiting for large corporations to do so. Hence, new technologies have made it easier to participate in the processes of design and making, as it has opened up a greater pool of creative potential where everyone becomes a maker and designer, thus creating an ecosystem where craft and design coexist harmoniously.

3.2.3 Hybrid Design as a Vector of Justice, Cultural Heritage & Local Identity

The coexistence of traditional making and technological innovation determines the rise of a Hybrid creative practice which blends traditional making, local knowledge and emerging technologies, and acts as a powerful vector for socio-environmental justice and cultural continuity. In hybrid projects, we see experimentations focused on ensuring that innovation does not come at the expense of identity or livelihoods, thus regenerating cultural heritage and addressing contemporary needs. This is particularly important if we think about craftspeople and small producers, for whom achieving an "osmosis between artisanal technique and technology, with design as engine of innovation" (Rinaldi, 2015, p.222) often means unlocking new strategies for survival, generating new economic opportunities in rural or peripheral areas while maintaining environmental and social sustainability. These hybrid approaches are explicitly advocated by networks like the European Crafts Alliance, which "fosters innovation and knowledge-sharing within makerspaces" and "advocates for the integration of digital tools and traditional craft techniques" (European Craft Alliance, 2025b). Thus, digital fabrication labs partner with craft associations to protect and evolve heritage skills, aligning justice with cultural pride. In fact, hybrid practices also legitimise "glocal" identities (Manzini, 2004), rejecting the notion that global technology erases local difference. Instead, technologies are adapted to fit local contexts (languages, symbols, materials) to achieve a form of "glocalisation". Hybrid design ensures that technology does not become a colonial imposition but a tool under community control, and this is achieved by embedding local narratives and social needs into design outcomes, thus allowing projects

to gain legitimacy and sustain themselves ethically by leveraging local assets and resources. For example, Follesa notes that the artisanal “saper fare” (know-how) is one of Italy’s unique assets (2015b): hybrid creative practices can leverage this asset by collaborating with elder craftsmen, fostering intergenerational equity and skill transmission. Here, social justice is guaranteed by the empowerment through design of underserved groups, like artisanal guilds and peripheral communities, while environmental sustainability is obtained by valuing local, low-impact practices. Hence, hybrid creative practices become a bridge connecting justice, heritage, innovation, and community empowerment, thanks to their ability to weave together the technical and human aspects of Making, project local identities on global networks, and support “solidarity-based and non-hierarchical relationships between inhabitants, producers and local societies” (Sica, 2022, p.51).

Figure 2.34 *Made by Insects Project, Design Ori Orisun. Shellac substitute from insect by-product (ph. Y. Harel, 2023)*

2. Chapter Conclusion

The literature review has addressed the central research questions to explore the complex dynamics between Making, Design, Crafts, Hybrid Practices, Technologies, and Socio-environmental Justice.

Table 2.1 *Research Questions.*

Part	Section	Research Questions
1	1.1	Why do people make things?
	1.2	How can we describe Crafts' Epistemology of Making?
	1.3	How can we describe Design's Epistemology of Making?
2	2.1	Can Design & Crafts overlap/cooperate to pursue more sustainable futures?
	2.2	Are emerging technologies a medium for the Hybridisation of design and crafts?
3	3.1	How can we define socio-environmental justice?
	3.2	What role can hybrid design play in pursuing socio-environmental justice?

We opened the investigation looking into the motivations for Making (1.1), revealing that Making is fundamentally tied to cultural sense-making and survival strategies, evolving from basic tool production to complex social and symbolic practices. Analysing the anthropological and ecological perspectives on Making we defined it as a relational process deeply embedded in the interaction between people, materials and environments. We also discovered that this interaction can range across a spectrum, going from a cooperative dialogue with nature to its domination (Sennett, 2008; Ingold, 2013).

Exploring Crafts' epistemology (1.2), we learnt that Crafts' knowledge is embodied, context-sensitive, and transmitted through practical, hands-on experiences. It integrates tacit and explicit dimensions, making crafts both carriers of cultural heritage and dynamic agents of social cohesion and local identity (Sennett, 2008; Mellegård & Boonstra, 2020). In contrast (1.3), we discovered that Design's epistemology, initially based on the ideals of industrial efficiency, standardisation, and mass

production, has progressively shifted towards a more self-aware, culturally engaged approach that embraces experimentation, sustainability, and social responsibility (Heskett, 1995; Margolin, 1998).
Addressing the potential overlap and cooperation between Design and Crafts (2.1), our research confirmed the existence of significant opportunities deriving from the fusion of artisanal know-how and technical innovation, which can produce socially and environmentally sustainable outcomes. In particular, the analysis of historical case studies demonstrated a lasting success in the integration of crafts' principles within design frameworks (De Fusco, 2009; Micelli, 2016).
Assessing emerging technologies as mediums for the hybridisation of design and crafts (2.2), the literature identifies two main merits, that is to say, technology’s ability to democratise Making and innovate traditional craft methods. Digital fabrication and distributed manufacturing tools showed us how craft values can blend effectively with contemporary needs and practices to define new forms of artisanal intelligence and new sustainable production paradigms (Cristallo & Lucibello, 2019).
Subsequently, the definition of socio-environmental justice (3.1) was progressively constructed through the revision of traditional frameworks and emerging movements like the Design Justice Network, which has led us to define it as an equitable distribution of environmental benefits and burdens, achieved through meaningful participation of communities, and recognition of diverse epistemologies, which underscores design's potential role in promoting inclusive, culturally responsive, and ecological practices (Costanza-Chock, 2020; Mang & Reed, 2020).
Lastly, our research confirmed the potential of hybrid practices as vectors for socio-environmental justice (3.2). This is due to their ability to simultaneously align with local cultural heritage, community-driven innovation, and sustainability principles, allowing them to become catalysts of local identities, environmental resilience, and equitable economic opportunities.Distributed design approaches and emerging technologies further strengthen these capabilities, enabling scalable, decentralised, and inclusive production systems (Follesa, 2014; Azouzi & Di Lucchio, 2023).
Despite these insights, the literature leaves some insufficiently analysed points, necessary to understand the specific challenges and opportunities faced by hybrid practitioners operating at the intersection of design and crafts. The driving values, design principles, and processes guiding their

practice, as well as the specific object of their research, require further exploration in order to correctly position these practitioners within the discourse on socio-environmental justice.

In the following chapters of this dissertation, we introduce the methodology, the steps taken and the results obtained in addressing the literature gap to fully understand and advance the knowledge on the transformative potential of hybrid creative practices in supporting more just and sustainable futures.

3.

Methodology.

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1. Chapter Introduction

In this third chapter, we introduce the Methodology of the research, that is, the process, rationale and techniques that brought us from the Design Research Problem to the definition of a Manifesto for New Design Craft. The Design Research Problem that this thesis wanted to address was: ***"How can New Design Craft blend local craft and emerging technologies to support environmental and cultural sustainability by adopting a design justice approach to enable more just and sustainable futures?".*** Specifically, with this research, we investigated the differences and similarities in the epistemology of Making in Design and Crafts, the role of technology in shaping the relationship between them, as well as the possibility for Design and Crafts to cooperate and overlap to generate material cultural value. We also researched a definition of Socio-environmental Justice to try to understand if such a multifaceted idea of sustainability could be pursued by design. We built this theoretical framework to understand the contemporary design landscape and its new hybrid paradigms. We analysed these paradigms to define a Manifesto for a new hybrid design discipline able to encapsulate the values and best practices of instances of creativity taking place at the intersection of Design and Crafts, Tradition and Emerging Technologies. For the systematic description of the methodology implied in this research, we reference Blaxter et al.'s (2016) suggested taxonomy, which sees methods organised in hierarchical order in Research Families, Approaches and Techniques (See Figure 3.1).

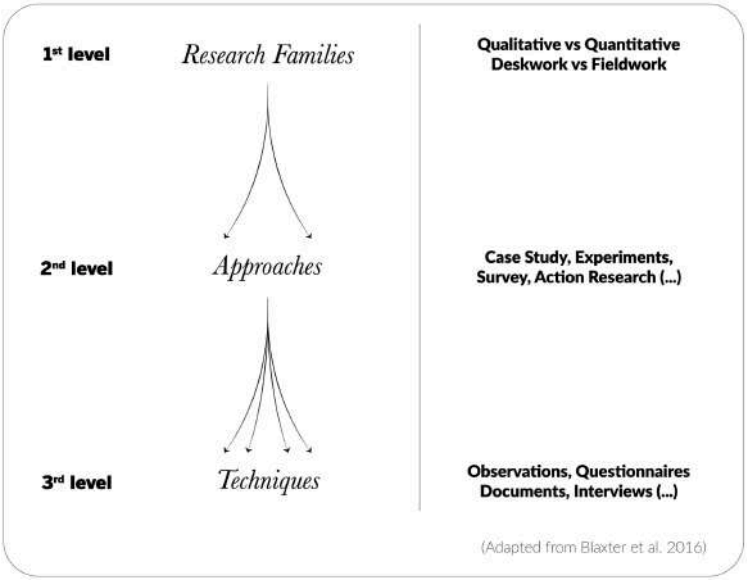

Figure 3.1 *Taxonomy of Research Methodology according to Blaxter et al. (2016)*

We adopted this conceptual framework to clearly and uniquely distinguish specific methods and overarching approaches to the research.

Specifically, this research draws from post-positivism, arguing "*that we can only know social reality imperfectly and probabilistically. While objectivity remains an ideal, there is an increased use of qualitative techniques in order to 'check' the validity of findings"* (Blaxter et al., 2016, p.60).

Hence, the adopted research family –that's to say, the general strategy for the research– was primarily Qualitative, with some minor elements of Quantitative analysis. Qualitative research seeks to collect and analyse information, focusing on exploring smaller numbers of instances or examples to achieve depth in the understanding of a social phenomenon rather than breadth (Blaxter et al., 2016, p.64).

In its fundamental qualitative nature, the research sought to collect data through both deskwork and fieldwork, often happening simultaneously.

In this research, techniques belonging to the Deskwork research family such as the Literature Review were often used to build theoretical or conceptual frameworks to support the Fieldwork which, on the other hand, remained fundamentally connected to the post-positivistic need to meet the actors of the analysed phenomenon, that's to say, hybrid design practitioners.

On a deeper level, my research strategy was based on two approaches: Survey and Action Research.

Citing Aldridge & Levine (2001, p.5), Blaxter et al. define Survey as an approach requiring "*a strategic decision about the way to set about gathering and analysing data. The strategy involved in a survey is that we collect the same information about all the cases in a sample. Usually, the cases are individual people, and among other things, we ask all of them the same questions*" (2016, p. 76).

In this case, a Survey approach was used to collect data regarding the relationship between hybrid design practitioners and the three pillars of the research, that is Material Culture, Emerging Technologies and Socio-Environmental Justice to build an understanding of the Values and Processes guiding their practices and inform the definition of a Manifesto for New Design Craft. Data was collected via two different techniques –Questionnaires and Interviews– and analysed through a set of both quantitative and qualitative data analysis techniques spanning Statistical Analysis, including

both descriptive analysis and measures of correlation, and data visualisation, as well as computational linguistics and close reading techniques.

For what concerns the Action Research approach, Crouch & Pearce define it as an approach whose *"goal is to develop practical and relevant solutions to the problems identified. (...) Action research might provide strong evidence that affirms the quality or success of existing practices"* (2012, p. 144). This strong evidence is usually built through cycles of Observation, Reflection, Planning and Acting that iteratively build on previous knowledge and the development of new practices increasingly more effective and efficient (Crouch & Pearce, 2012, p. 145). In this case, an Action Research approach was used to test the validity and replicability of the Manifesto for New Design Craft, defined as a result of the synthesis and evaluation of the data collected through the Survey. It involved the planning and execution of a Design Workshop with a local artisan for which I wore both the hats of the designer, responsible for the design of an innovative concept, and of the design researcher, responsible for the conduct of Observations and Documentation. As a designer researcher, I observed the overall process and used it to benchmark the validity of the suggested model. These observations supported the further refinement of the Manifesto to enhance its effectiveness and replicability. The Making of the Manifesto, which sat at the heart of this research already in its programmatic intention, was also at the heart of the Methodology, connecting the two adopted approaches (Survey and Action Research) through a nexus of cause and effect. If the Survey and the research questions contributed to the crafting of the Manifesto by setting a framework for the collection of information constituting its core, the Manifesto became the justification for the need of an Action Research approach intended as a testing device for its validity and the reason for its revision and second implementation. Figure 3.2 illustrates the taxonomy of my research methodology, while Figure 3.3 illustrates the logical connection between all the methods, approaches and strategies involved in this research. In the following sections, we introduce the rationale and the strategy adopted for each approach and method. For descriptive purposes, we present them in a linear and chronological order, although the research process and the different approaches often coexisted and complemented each other.

Fig. 3.4 provides a visual guide to the approaches and methods that are introduced in the chapter.

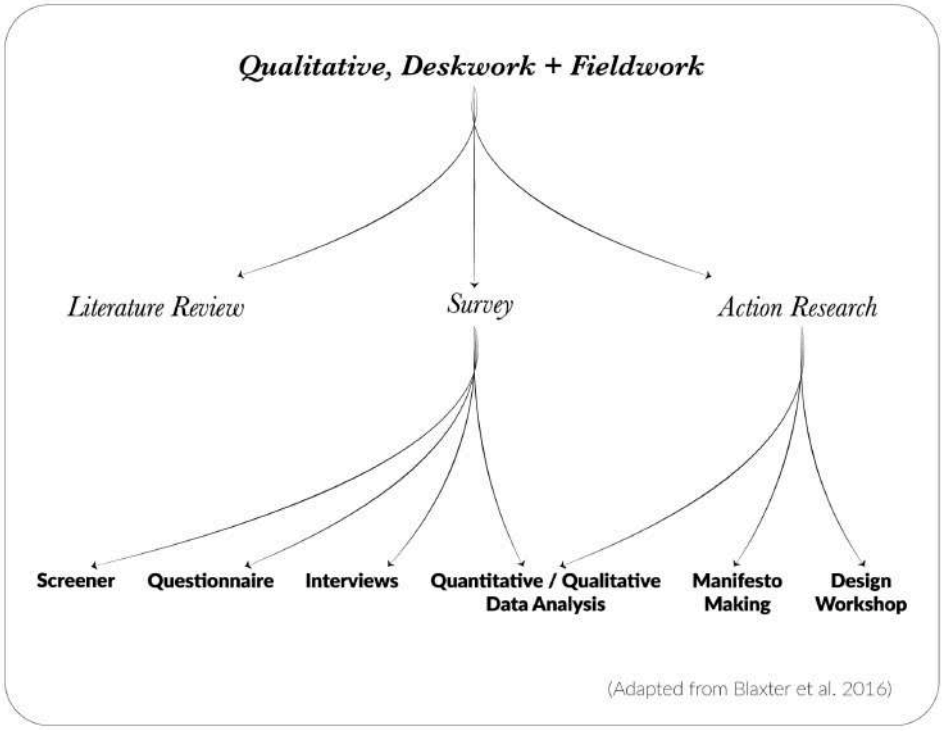

Figure 3.2 *Taxonomy of our Methodology based on Blaxter et al. (2016)*

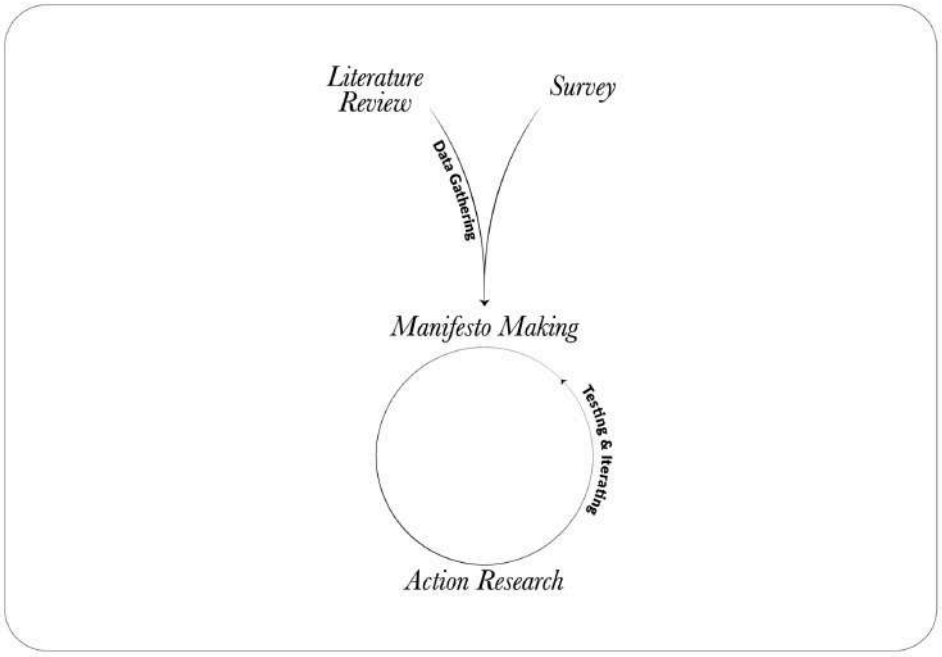

Figure 3.3 *Relationship between the different approaches in our research strategy.*

Figure 3.4 *Methodology Workflow.*

2. Literature Review Methodology

The literature review was the backbone of the research as it served three main purposes, guiding the first three phases of the research process.

During the Macro-Scanning phase (0) –as already described in the introduction chapter– the literature review was used to identify the context and the gap that the research needed to address.

During the Micro-Scanning phase (1), it served the exploration of the topic on a micro-level analysis, wherein historical case studies were examined and mapped out to reveal recurrent patterns at the intersection of design, crafts, technology, and socio-environmental justice.

Lastly, during the Screening phase (2), the literature review informed the definition of the inclusion and exclusion criteria that supported the selection of the cases that needed to be sampled and surveyed. The literature review was designed to systematically explore both the theoretical and empirical foundations that inform the connected domains of Making, Hybrid Creative Practices, and their relationship with Emerging Technologies and Socio-environmental Justice. This review was integral to the overall research, which sought to answer the central question: *"How can New Design Craft blend local craft and emerging technologies to support environmental and cultural sustainability by adopting a design justice approach to enable more just and sustainable futures?"*

In alignment with this goal, the review focused on critical areas such as understanding how contemporary design's values came to be, the social role of crafts, the role played by emerging technologies in bringing design and crafts closer, and a multifaceted approach to sustainability. Each of these areas directly engaged with my research questions and key themes (e.g., the epistemologies of Making in craft versus design, the potential for cooperation between design and craft, and the definition and role of socio-environmental justice).

2.1 Literature Review Strategy

A comprehensive search strategy was implemented to capture a wide range of relevant literature references. I systematically searched established academic databases and sources, including JSTOR, Elsevier, and Google Scholar, whose results were amplified using the AI-powered academic search

engine Connected Paper, which highlights both proximal sources to a given topic and their relationship. The search utilised a set of targeted keywords —such as “New Design Craft”, “Hybrid Design”, “Design Justice”, “Post-industrial design”, “Emerging Technologies”, “Distributed Design”, “Cultural sustainability” and “environmental sustainability”—to ensure thorough coverage of the interdisciplinary themes underpinning my research.

2.2 Literature Review Inclusion/Exclusion Criteria

The temporal scope of the review was set from 1970 to the present, a period that captures the evolution of postmodern perspectives and the emergence of critical debates regarding alternatives to traditional Western industrial paradigms.

To maintain the review’s focus and academic rigour, stringent inclusion and exclusion criteria were applied. I included studies published in peer-reviewed academic journals, edited volumes, and reputable conference proceedings. Priority was given to sources that explicitly address the intersections of design and crafts, the emergence of hybrid creative disciplines, and alternatives to conventional industrial approaches. Only literature written in English or Italian was considered, ensuring linguistic consistency and accurate interpretation of complex theoretical arguments. On the contrary, non-peer-reviewed materials such as magazines, blogs, and industry reports were excluded, as were studies that focused exclusively on the technical aspects of design without engaging with broader cultural or socio-environmental dimensions. In cases of duplicate content, only the most recent sources were retained. This work of curation aimed to ensure the relevance of the literature review as well as its methodological soundness.

2.3 Data Extraction and Record

The process of data extraction and analysis was carried out through both digital and manual methods to ensure systematic organisation and in-depth analysis. I employed Zotero to manage and catalogue all consulted sources, creating a comprehensive digital library. In parallel, I used Excel to develop a thematic database that allowed for the categorisation of sources according to key themes, debates, and theoretical perspectives. Manual coding techniques, including the use of index cards to record key

quotes, arguments, and insights, supported the thematic analysis. This analytical process involved identifying recurring themes, noting areas of convergence and divergence within the literature, and mapping gaps in current knowledge. From this analysis, a synthesis of diverse perspectives on Making, the Hybridisation of Creative Practices, and Design's role in pursuing socio-environmental justice was derived, which fostered a first comprehension of the complex nature of a new hybrid approach to design and production we called New Design Craft. Additionally, the insights derived from this literature review significantly influenced the subsequent stages of my research as they shaped the design of the fieldwork research strategy. Specifically, the review provided a solid foundation for establishing inclusion and exclusion criteria for case study selection, and it offered critical design references that have guided the design of an experimental framework for a pilot experience.

3. Survey Research Approach

The scope of the Survey approach was to collect primary data about core values, processes and principles regulating the activity of hybrid creative practices to integrate the findings of the literature review and summarise them in a general definition of a Manifesto and Process for a new hybrid approach to design. The techniques involved in this phase were primarily qualitative and based on collecting and interpreting primary data: specifically, Screening and Structured Questionnaires and Interviews were utilised to collect data, while both statistical and computational linguistic techniques were used to analyse data. The approach was articulated in six steps as detailed in Figure 3.5.

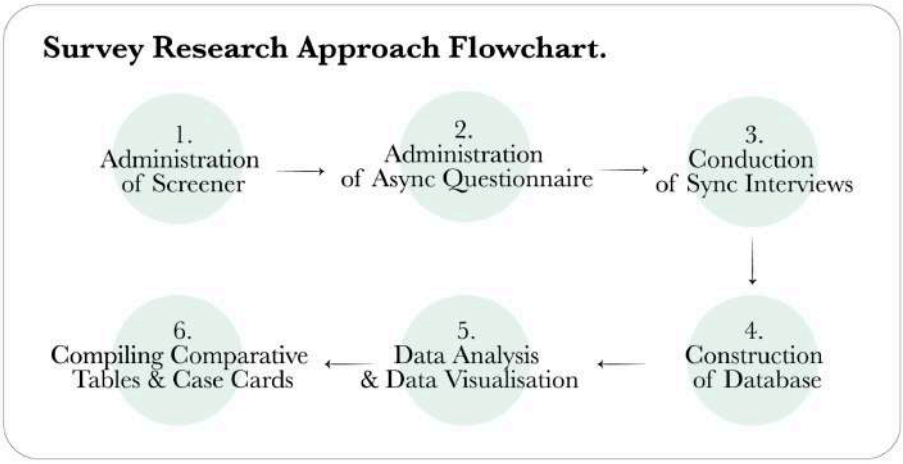

Figure 3.5 *Survey Approach Flowchart.*

3.1 Questionnaire and Interviews: Selection Criteria and Selected Cases.

The initial step of this process of systematic mapping involved the definition of clear inclusion and exclusion criteria that would guide the selection of potential leads. These criteria were directly informed by the research gap and derived from its three core pillars. Specifically, criteria were defined to ensure the exploration of the socio-environmental responsibility of Design, the concern regarding emerging technologies and their relationship with the hybridisation of creative practices, and the need for a new post-industrial design paradigm rooted in material culture. Accordingly, the inclusion criteria targeted **Indie designers and studios engaged in research on self-production, bio-materials, local identities, and material culture.** To ensure practicality and relevance, additional geographical and chronological criteria were applied, specifically, **focusing on EU and Ukraine-based Indie design studios and designers with a track record spanning the last ten years.**

Concurrently, an awareness emerged from the preliminary literature review of cases that superficially aligned with the research values; hence, exclusion criteria were set to **filter out designers affiliated with large brands or those involved in practices such as greenwashing, mass production, and distribution.** This structured approach to mapping ensured that only the most relevant cases were shortlisted for the subsequent survey phase.

To identify cases and leads, a systematic approach was employed to gather data from a variety of online sources. This process began with the leveraging of information available on social media platforms, practitioners' websites, and a broad array of specialised articles and events. Specifically, leads were sourced through active engagement on widely used social media channels such as Instagram and TikTok, where creative hybrid practices are frequently showcased. Additionally, specialised online forums and websites– including the Isola Design District and the Distributed Design platforms– were integral to accessing curated networks and targeted content relevant to emerging hybrid design practices. Direct networking also played a crucial role, as it provided opportunities to connect with professionals and experts in the field.

This phase of data collection spanned over twelve months and resulted in the initial selection of over 200 cases, each of which was subsequently entered into a preliminary database specifically designed

to capture creative hybrid practices in alignment with the research's inclusion criteria. Every potential case was assessed to evaluate the nature of the activity and its underlying values, ensuring that each entry was measured against the inclusion and exclusion criteria. These criteria, derived directly from the core pillars of the research—namely, the socio-environmental responsibility of design, the role of emerging technologies in hybridising creative practices, and the need for a post-industrial paradigm rooted in material culture—ensured that only practices committed to these values were retained. Practices were included if they demonstrated active involvement in self-production, bio-materials, local identities, and material culture. On the contrary, any case associated with large brands, greenwashing, mass production, or distribution was systematically excluded.

To effectively organise the collected data, we built a database structured around seven specific data categories, that is (1)The name of the practice; (2) The main field of application; (3) An exemplary project that highlights the practice's approach; (4) The practice's website or social media; (5) The primary contact details; (6) The country of residence; (7) The city of residence.

To focus the study on productive alternatives to the industrial model, the fields of application (2) were strictly limited to the area of physical product design. This was further standardised into five distinct classes representing the most active in terms of experimentation as supported by the literature review: Material design, Product design, Conceptual design, Textile design, and Speculative design. The areas of visual communication design and digital product design were deliberately excluded, as they did not align with the targeted investigation of a new alternative post-industrial paradigm.

The overarching objective of this phase was to build a first database of leads to answer a structured questionnaire exploring their unique challenges and values.

3.2 Screening Questionnaire

The next phase of the study involved the design and administration of a Screening Questionnaire, which played a pivotal role in refining the initial database of over 200 cases. This questionnaire was designed to investigate key aspects such as demographics, values, and the nature of each practice's activity, as it served as a tool to filter and validate the potential cases by gathering detailed,

self-reported data to be cross-checked against the previously established inclusion and exclusion criteria. An asynchronous, unmonitored survey was developed and administered using Typeform, chosen for its intuitive interface and data collection capabilities, which allowed respondents to complete the survey at their convenience and pace.

3.2.1 Screening Questions

The survey was structured around a list of five questions, each focusing on specific information to capture the geographical distribution, demographic diversity, and academic background influencing the practice, as well as the longevity and evolution of the design studio/practice and insights into the core values and guiding principles that underpinned it. The first four questions covering the demographics of the respondents were closed-ended questions with a single-choice logic. The last question covering the design mission and values of the design practice was an open-ended question to capture, at this stage, a nuanced spectrum of possible drivers of hybridisation. See Screening questions in Table 3.1.

Table 3.1 *Screener Questions per Type/Scope.*

Type	**Questions**	**Scope**
Close-Ended / Single Choice.	Q1. In which country are you currently based? Q2. What is your age group? Q3. What is your most relevant level of education? Where have you learnt the skills you are currently using in your design practice? Q4. When was your design studio/collective founded?	• To further assess practitioners against demographic criteria. • To collect demographic data for analysis.
Open-Ended / Long Answer.	Q5. What is your design mission? What are your design principles? Think about your main values and the drivers of your practice (e.g., social justice, sustainability, material culture, etc.)	• To further assess practitioners against value/mission-specific criteria. • To collect data about values and mission for analysis.

The rationale behind these questions was to obtain a multidimensional profile of each case, allowing for an assessment of their alignment with the research's thematic pillars –the socio-environmental responsibility of Design, the concern regarding emerging technologies and their relationship with the hybridisation of creative practices, and the need for a new post-industrial design paradigm rooted in material culture.

As a direct effect of this screening process, the sample was narrowed from over 200 initial cases down to a more focused set of 150 cases, consistently serving the research objectives, and ensuring that the subsequent phases of research and analysis were built on a solid foundation of highly relevant, accurately profiled cases, to enhance the validity and reliability of the research findings.

3.3 Questionnaire

The second phase of data collection involved the design and administration of a Structured Questionnaire, which was intended to capture primarily qualitative data on the relationship between practitioners and their relationship with the three pillars of the research, that's to say their relationship with traditional crafts/material culture, emerging technologies, and socio-environmental justice in collect data necessary to build the core principles and knowledge for a Manifesto of New Design Craft.

3.3.1 Questionnaire Questions

The asynchronous and unmonitored questionnaire was administered via Typeform and sought to build a comprehensive profile of each selected practice/studio, to contribute to the development of a multifaceted database and an abacus of relevant projects. The questionnaire was structured into four sections, with Part 1 focusing on the relationship with local crafts and material culture, Part 2 focusing on the relationship with emerging technologies, Part 3 exploring the relationship with socio-environmental justice, and Part 4 focusing on the collection of projects and consent forms.
All of the multiple-choice options in the questionnaire were derived from the insights gained during the initial deskwork, with the observed recurring themes, typologies, and specific practices that informed the design of the questionnaire. For instance, the diverse typologies of traditional crafts encountered in the literature and evidenced in real-world practices provided a basis for the list of craft

options. Similarly, the categorisation of emerging technologies and their varied applications in creative practices emerged from the analysis of the relevant literature and practitioner profiles. Out of the 150 selected practices/studies, 52 agreed to participate and completed the structured questionnaire. This sample size was considered sufficient to provide a general understanding of the phenomenon while also accommodating the practical constraints of data collection.

The questionnaire involved the use of twelve closed-ended and eight open-ended questions. Three of the closed-ended questions implied a Boolean logic; one of them, a single choice; four, a multiple choice logic; two, a 5-point Likert Scale; and two more, a 10-point assessment scale. In the last two questionnaire questions, we captured availability for follow-up surveys and interviews and consent to use the provided answers and materials for research purposes (See a detailed characterisation of the questionnaire's questions in Table 3.2). The captured data was primarily structured and qualitative, and it was used to build a comprehensive database to monitor the ongoing progress of the Survey and to organise the collected data.

Table 3.2 *Structured Questionnaire Questions per Section/Type/Scope.*

Section	Type	Questions	Scope
Part 1: Relationship with Local Crafts & Material Culture.	Close-Ended Boolean (Y/N)	**Q1**. Is your design approach influenced by any form of traditional craft?	To assess practitioners' relationship with the Material culture, traditional techniques and heritage crafts and to collect data for analysis.
	Close-Ended Multiple Choice	**Q2**. Which types of traditional crafts have the strongest influence on your work? Q4. What is your main field of application?	
	Close-Ended Single Choice	**Q3**. How long have you been practising this craft?	
	Close-ended, 5-point Likert scale.	**Q6**. On a range from design-oriented to craft-oriented, how would you define your approach? Q8. How often do you use traditional techniques in your work?	
	Open-Ended Long Answer	**Q5**. How would you describe the phases of your design process? **Q7**. How would you describe your relationship with your local crafts, materials and traditional expressions of design/production?	
Part 2: Relationship with Emerging Technology	Close-Ended Multiple Choice	**Q11**. Does your practice involve any of the following technologies?	To assess practitioners' relationship with emerging technologies and hybrid approaches to design, and to collect data for analysis.
	Open-Ended Long Answer	**Q9.** What's the role of technology in your process? **Q10.** Do you use any innovative technology? How does it constitute an advantage or a disadvantage?	
Part 3: Relationship with Socio-environmental Justice.	Close-Ended Multiple Choice	**Q14.** Are you involved in any of the following areas of research?	To assess practitioners' engagement with sustainability issues and design activism principles, and to collect data for analysis.
	Close-ended, 10-point Scale.	**Q12.** On a scale from 0 to 10, how much do you and your work relate to the following statement? *"Victor Papanek and Victor Margolin were among the first to call attention to ways that design could be practised outside the market and become a design for social good in the context of a developing world, as well as a design for people in need. They described these aspects as part of a dysfunctional social and political system that itself was badly in need of a redesign."* **Q15.** How important is it to you to use sustainable materials in your work?	
	Open-Ended Long Answer	**Q12.** What's the main focus of your research? **Q13.** How would you describe the political dimension of your design research? How does it manifest on a tangible level? Do you take part in any form of design activism? Does it influence your choices? **Q16.** How do you source the materials you use?	
Part 4: Projects	Open-Ended Long Answer	**Q17.** Could you share a brief description of 1-3 projects, explicative of your approach?	To collect data to build a repository of hybrid design projects.
	Link/File Upload	**Q18.** Would you share a link to a selection of pictures of your most significant projects?	

3.3.2 Construction of Database

A database was built to record all the data obtained from the structured questionnaires, serving both as a tool to monitor the progress of the survey and as a repository to organise the data obtained from each selected practitioner/ practice in preparation for the subsequent data analysis. Data recorded into the database was sourced both from manual input and syncing the administered Typeform Questionnaire with Google Sheets to capture responses in real-time. Following this automated import, every entry was subjected to a manual review to identify any errors or missing information. This step was crucial in verifying the accuracy of the responses and ensuring that all relevant details were properly recorded. Once the manual check was complete, the data underwent a process of data cleaning, during which inconsistencies in formatting were corrected, wrong data types were fixed, and smart chips, along with tables, were introduced to standardise entries and enhance overall readability. To further facilitate the analysis, pivot tables were generated to target specific queries and extrapolate specific insights from the dataset. To accurately describe each case study, the final database was structured in 25 columns, each representing a distinct data category. See Data Categories in Figure 3.6.

Figure 3.6 *Database Data Categories.*

3.3.3 Questionnaire Data Analysis & Visualisation

The process of data analysis and visualisation was designed to transform raw data into actionable insights to guide and inform the definition of a manifesto/process for New Design Craft, as well as to plan a pilot experience. Initially, the raw data, which had been inducted into the database through manual input and syncing of survey results, underwent a phase of data cleaning. During this phase, the dataset was checked for inconsistencies and missing data on a column-by-column basis. In such cases, follow-up emails were sent to respondents to integrate the missing information. Duplicated entries and rows were deleted, and the answers received from Italian-speaking respondents were translated into English to ensure uniformity across the dataset. Following the cleaning phase, the data analysis stage began, during which I employed Google Sheets to run statistical tests and calculate synthesis measures to summarise the findings of the closed-ended questions, as well as measures of correlation to prove dependencies between aspects of the phenomenon. See Figure 3.7 for a synopsis of the combinations of themes explored through the quantitative data analysis.

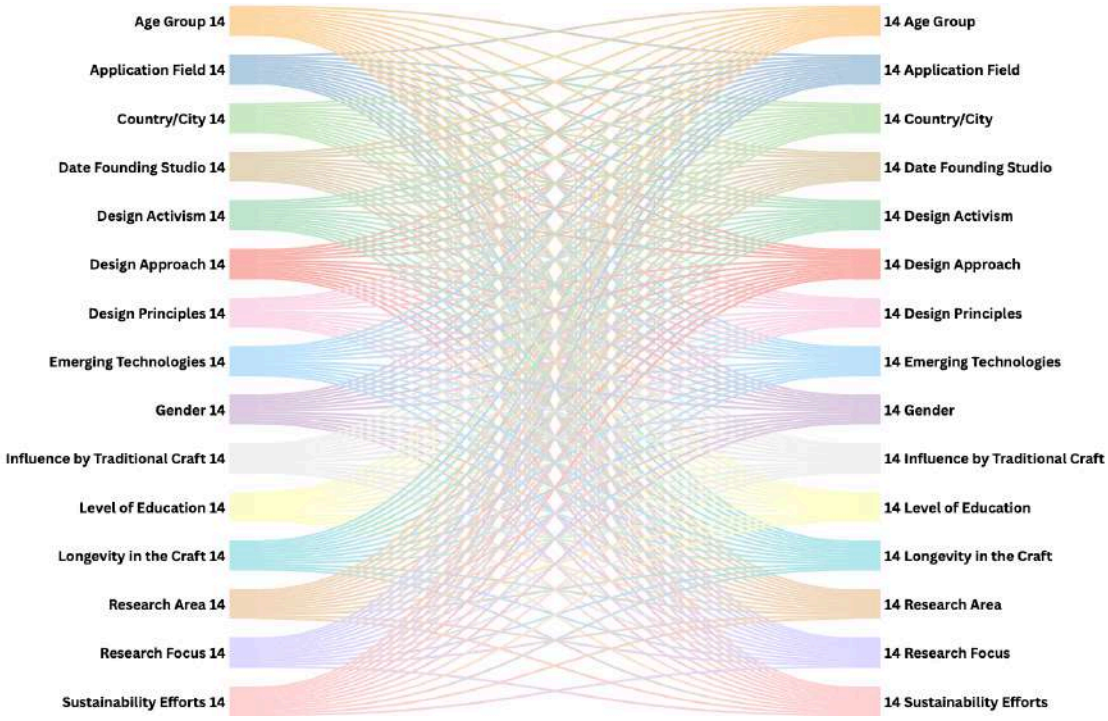

Figure 3.7 *Combinations of themes explored through quantitative data analysis.*

For the open-ended responses, I structured an analytical algorithm (See Figure 3.8) and applied computational linguistic techniques to identify recurrent trends and patterns, specifically to analyse the data relevant to “Design Mission”, “Research Focus”, “Design Activism Focus”, “Design Process”, “Relationship with Heritage and Material Culture”, “Research on Heritage Craft techniques”, and “Role of Emerging Technologies”. For these data categories, I used the LLM *DeepSeek* to run Frequency and Sentiment analysis, as well as word mining and Latent Dirichlet Allocation (LDA) techniques, and generate reports using Python’s library NLTK (Natural Language Toolkit) for statistical natural language processing.

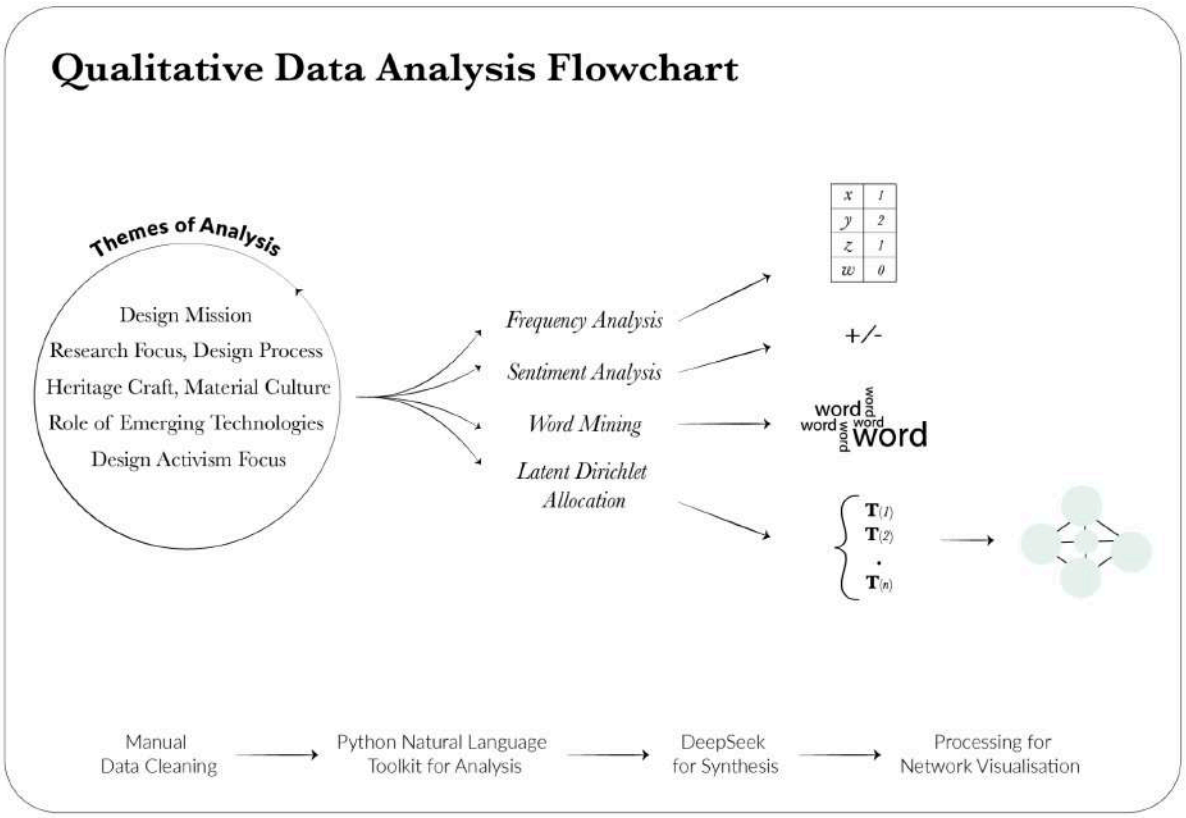

Figure 3.8 *Qualitative Data Analysis Flowchart.*

In these types of analysis, an algorithm is built and deployed to analyse the frequency of recurring expressions within a textual database and the overall sentiment through the analysis of sentiment-carrying expressions. Word mining refers to the process of extrapolating the in-text most frequently used words and expressions. Lastly, the Latent Dirichlet Allocation (LDA) technique analyses the frequency and relationship of the most frequent keywords to extrapolate key topics.

The results of these analyses were articulated in a shortlist of the most frequent words/expressions and topics, which I later processed with a Python script to turn them into visual flowcharts and network charts.

The final phase involved data visualisation. Here, we used both Google Sheets and the web-based platform Flourish to generate static data dashboards to summarise the results of the analysis. These visualisations explored the collected data from the perspectives of the three pillars of my research –Role of Material Culture, Role of Emerging Technologies and Socio-environmental Justice– to build narratives around the relationships between the selected practitioners and the core themes of my research, as well as assessing any possible correlation between them. In addition to generating said visualisation, the data was also summarised in a series of comparative tables and case cards using a LLM AI model. Both the Case Cards and the Comparative Tables were structured around eight categories, as per Table 3.3. This breakdown of information helped us summarise insights and compare these dimensions side-by-side, allowing us to identify common trends and distinctive variations among cases.

Table 3.3 *Thematic Structure of Comparative Tables and Cards.*

Location and Longevity of Practice	Gender and Age Group	Design Mission and Values	Design Process
Relationship with Local Material Culture	Relationship with Emerging Technologies	Relationship with Sustainability Issues	Description of Explanatory Projects.

3.4 Interviews

Contextually, we planned a series of synchronous interviews to gather deeper, qualitative insights into the experience of practitioners with a demonstrated impact on local and artisanal communities achieved through their work. This analysis was built upon the earlier deskwork by applying more stringent inclusion criteria that focused on practitioners whose work transcended personal experimentation and generated tangible impact. The metric of impact was defined both as economic activation of the community and/or the creation of cultural value.

3.4.1 Interview Strategy and Questions

Thu, we sampled a set of ten practitioners and, for each of them, I conducted an in-depth analysis of their background, which informed the development of an Interview tailored to their specific experiences, contributions, and the unique contexts of their practice. On a high level, the questions were designed to explore the specifics of their methods, the challenges they encountered, and the impact of their initiatives. Out of the ten planned interviews, six were not conducted for the lack of availability of the interviewees. Four were conducted with the following participants:

1. Ugo La Pietra
2. Giulio Iacchetti
3. Martinelli-Venezia Studio
4. Prof. Annalisa Cocco

All interviewees were identified during the literature review for their remarkable contribution to the conversation on design and crafts, alternative design paradigms and/or their relationship with the themes of Material Culture and Genius Loci.

Ugo La Pietra represents a fundamental reference in the discourse on design and craft, as his work, spanning over sixty years, defined an entirely new approach to design. In his activity, Ugo La Pietra collaborated with every possible artisanal guild, travelling Italy from North to South to experiment with traditional forms of crafts and local material, ultimately producing over two thousand objects.

Giulio Iacchetti is one of the most interesting voices in the experimental side of contemporary Italian design. His approach, bridging crafts and design, is exemplified by his project InternoItaliano, a platform to connect craftspeople, designers and the market.

Martinelli Venezia Studio was founded in 2015 by architects Carolina Martinelli and Vittorio Venezia, who operate between Milan and Palermo. The studio explores the relationship between tradition, local culture, material properties, and manufacturing processes. Their work –often incorporating elements of Sicilian heritage, reinterpreted through contemporary design– aligns with the principles and values of this research.

Prof. Annalisa Cocco is an Italian designer and educator with over two decades of experience in weaving and artisanal design across Japan and Sardinia (Italy). Her work emphasises the importance of local traditions, sustainability, and ethical considerations in design, while her approach reflects a deep respect for traditional crafts, combined with a willingness to adapt and evolve these practices. The interviews were conducted synchronously, either in person or remotely using Zoom, for approximately one hour each. See Table 3.4 for the strategy of the Interviews.

Table 3.4 *Interview Strategy.*

Interviewee	Date	Mode	General Topics	Specific Topics
Annalisa Cocco	13/01/2023	Sync / Remote	Design Mission Creative Process Craft Inspiration Role of Technology in Bridging Tradition Personal Definition of Sustainable Design Design Activism Impact of Artificial Intelligence and the Future of Design	Experiences with Japanese Artisans and Sardinian Craft Tradition.
Giulio Iacchetti	06/11/2023	Sync / Remote		Early Experience and Challenges Interno Italiano
Martinelli Venezia	21/03/2024	Sync / In Person		Experiences with Artisans in Palermo and Caltagirone
Ugo La Pietra	22/02/2025	Sync / Remote		Untold Stories of Italian Design Experiences with Italian vs EU Craft

3.4.2 Interview Data Analysis

Every Interview session was video/audio recorded and transcribed using Turbo Scribe –an AI-powered transcription tool– that facilitated an accurate conversion of the spoken word into written text for subsequent analysis. The transcriptions were analysed applying close reading techniques to highlight both important ideas and contradictions, as well as noting down important quotes to support the making of a manifesto for New Design Craft.

4. Making of a Manifesto

Hanna & Ashby define a Manifesto as “a public declaration issued by a group or individual that declares certain aims or principles” (2022, p.24). In the academic activism context, it helps researchers working in the area of urgent issues –such as the socio-environmental crisis– “speak collectively, build consensus, raise awareness, advocate for and accelerate change, speak for and from the margins, disrupt the status quo, unsettle stuck discourse, sidestep conventional modes, expose broken promises” and other similar purposes (Ashby et al., 2019, p.2). It is again Hanna & Ashby who also identify the key elements of an equation that justifies the need for the Making of a Manifesto, which becomes a preferable tool in all those scenarios in which we deal with a mix of “future vision + practical social application + community” (2022, p.27). This last contextual definition could easily be adopted to define the scope and spirit of this research that is grounded in the awareness of the socio-environmental necessity to understand new post-industrial paradigms to drive social change and community empowerment through a tangible redefinition of the social dynamics for hybrid creative practices operating at the intersection of Design and Crafts. Hence, it was only normal for the production of a Manifesto to be put at the centre of this analysis of contemporaneity. The Making of a Manifesto implied the definition of several different components: specifically, the Identification of Shared Values and Guiding Principles, the Definition of an operative Process, the definition of a specific nomenclature as well as a visual identity to establish a shared identity and enhance its visibility, while enabling its study and advocacy. As already covered in the introduction of this chapter, the Making of a Manifesto for a new hybrid approach to design was the central node connecting Literature Review, Survey Strategy and Action Research. A first definition of Values, Principles and Process derived directly from the analysis of data collected through literature review and questionnaires/interviews: from this perspective, the Manifesto also played the role of a synthetic device used to summarise and systematise the findings of the first phases of the research. Data pertaining to the relationship between hybrid practitioners and material culture, emerging technologies and socio-environmental justice directly informed the definition of the manifesto in highlighting shared values and recurrent design principles and best practices.

4.1 A Visual Identity for New Design Craft

Consequently, A visual identity for the manifesto/movement was designed by building on the results of the work of identification of values and principles contained in the Manifesto and expanding on their representation from the perspective of the power of symbols in social movements.
The justification for the need for a visual identity was supported by research in branding and design, which shows that a well-defined visual identity can significantly enhance recognition and credibility (Wheeler, 2017; Neumeier, 2006). Moreover, studies on social movements highlight that visual symbols play a pivotal role in rallying communities and communicating complex messages in a concise, impactful manner (Jenkins, 2018). Specifically, a coherent visual identity is essential for establishing a clear representation of any movement, serving as both a communication tool and a symbol of shared values. In the context of this research, New Design Craft was the nomenclature chosen to indicate the hybrid design movement. An effective visual identity should be able to encapsulate the movement's commitment to blending traditional crafts with emerging technologies in a socio-environmentally just and sustainable way, to provide the hybrid design community with a recognisable sign to engage with both the academic community and broader society.

4.2 Manifesto Testing and Implementation Strategy

Once the first iteration of the Manifesto had been defined using data collected via literature review and survey, an Action Research strategy was developed as a testing device to verify the validity of the suggested process and principles. The rationale behind this strategy was the need to verify if, besides being a descriptive device for the hybrid design phenomenology, the Manifesto could also become an operative tool guiding a design intervention between a non-hybrid designer and a local artisan.
The testing phase, detailed in the following paragraphs, focused on specific metrics measuring the interaction between designer and artisan, assessed by capturing direct observations and quotes, the effectiveness of the design process, assessed by measuring the concept-product conversion rate, and the satisfaction of both parties, assessed via direct self-evaluation. The assessment of these metrics informed a revision of the first iteration of the Manifesto to address areas of improvement identified in

the testing phase. Collaterally, a questionnaire was administered remotely to the previously selected 150 cases, and in person to the hybrid practitioners attending the Milan Design Week 2025. They were asked to evaluate the Manifesto according to five key areas: the need and recognisability of a name and identity for New Design Craft, the Manifesto's ability to capture their specific values and the specifics of their design principles, the applicability of the suggested Design Process for New Design Craft, and the Manifesto's North Star ability to inspire them. The questionnaire was structured into five closed-ended questions and one open-ended question for further suggestions and feedback. See Table 3.5.

Table 3.5 *Manifesto Testing Questionnaire.*

Type	**Questions**	**Scope**
Close-Ended, 5-point Likert Scale.	Q1. Do you agree with the need for a new nomenclature and identity for hybrid practitioners? Q2. Do you see your work values reflected in the Value Section of the Manifesto? Q3. Do you find the Principles listed in the Manifesto Design aligned with your own design principles? Q4. Do you find the proposed Process applicable to your work? Q5. Do you feel inspired by the North Star of New Design Craft?	To capture how effectively the manifesto can capture the specific values, principles and processes followed by existing hybrid practitioners. To capture how effectively the manifesto's North Star can inspire future practitioners.
Open-Ended, Long Answer.	Q6. Do you have any suggestions for the future implementations of this Manifesto?	To prompt collaborative iteration on the revision of the Manifesto.

4.3 Manifesto Promotion Strategy

One last component of the strategy designed to support the making and iteration of the Manifesto for New Design Craft was to define a structured promotion plan. The Manifesto and the Pilot Project were promoted through the design and launch of a dedicated website, the production of an Atlas of New Design Craft (See Appendix C), and the dissemination of papers in scientific journals and conferences, culminating in a showcase during Milan Design Week 2025.

5. Action Research Approach

Once the first iteration of the Manifesto for New Design Craft was defined through the evaluation and synthesis of the Data collected through the Survey, the Action Research approach was used to test its validity and replicability. It involved the planning and execution of a Design Workshop with a local artisan for which we wore both the hats of the designer, responsible for the design of an innovative concept and its visual communication, and of design researcher, responsible for Observations and Evaluation.

5.1 Pilot experience: Generative Craft. A hybrid Project.

A pilot design experience to test the previously defined Manifesto for New Design Craft was planned and executed as the heart of the Action Research approach.

The process began with the identification of a suitable local artisan: the criteria guiding the identification were based on the goals of my research. Specifically, we were looking for artisans living in the Sicilian hinterland, with a demonstrated history of experimentation in their field and a longevity of at least 20 years. Additionally, we prioritised artisans with a clear view of the challenges they were facing and their concerns for the future. After close analysis, we identified ten possible candidates, but –being impressed by the strengths of their commitment and openness to external inputs to imagine ways to let their practice survive– we opted for Carlo Guttilla and his son Gianluca, who have maintained a four-generation legacy of blacksmithing in a workshop established in 1930 in Lercara Friddi, 60 km away from Palermo. Recognising their concern regarding the drastically declining interest among new generations in traditional blacksmithing, we initiated a series of meetings with them to discuss their daily challenges and potential opportunities. During the initial visit, we observed that the workshop maintained a rigorous system for organising metal scraps from previous works. When we asked them about their system, Gianluca explained that every remnant was carefully preserved because, in the hands of a skilled blacksmith like his father, even small pieces could be re-welded to become viable, workable material. This observation prompted us to explore methods for upcycling these metal scraps in a way that transcends the ordinary blacksmithing process.

5.2 A Process for a Hybrid Collaboration between Design and Craft

We began by mapping the geometries of all the available metal scraps in the workshop. This involved measuring dimensions, capturing high-resolution images, and recording physical properties (such as thickness, curvature, and texture) using callipers and keeping detailed records. The collected geometrical data were catalogued in a structured format to serve as input for the following computational analysis. Using the coding language Processing, we developed a generative algorithm designed to create random compositions from the recorded geometrical shapes. The algorithm was programmed to accept the geometrical data as parameters and generate multiple iterations of potential compositions by varying factors such as rotation and juxtaposition of the scraps. We conducted initial test runs to calibrate the algorithm, ensuring it produced outputs that were both varied and within the realm of technical feasibility. The geometrical data from the metal scraps was systematically fed into the algorithm. The algorithm generated sets of random compositions, each evaluated against predefined criteria including composition balance, aesthetic harmony, and technical feasibility for welding and assembly.

We organised sessions with Carlo and Gianluca to review the generated compositions. During these collaborative sessions, each output was examined to anticipate possible issues in terms of structural integrity, visual appeal, and alignment with Carlo and Gianluca's craft values. Based on feedback from the artisans, we shortlisted the compositions that met the established criteria. The algorithm was iteratively refined, modifications were made to adjust parameters, improve balance, and enhance the feasibility of the compositions, ensuring that subsequent iterations better reflected both design innovation and artisanal feasibility. In the production phase, selected compositions were produced in real time through a collaborative process. We worked side-by-side with the artisans, integrating our design input with their craft expertise. Throughout this phase, we maintained a detailed record that included photographs, hand-written notes, and direct quotes from the artisans, documenting every step of the production process for future analysis. Figure 3.9 illustrates the process in five phases that we designed for the scope.

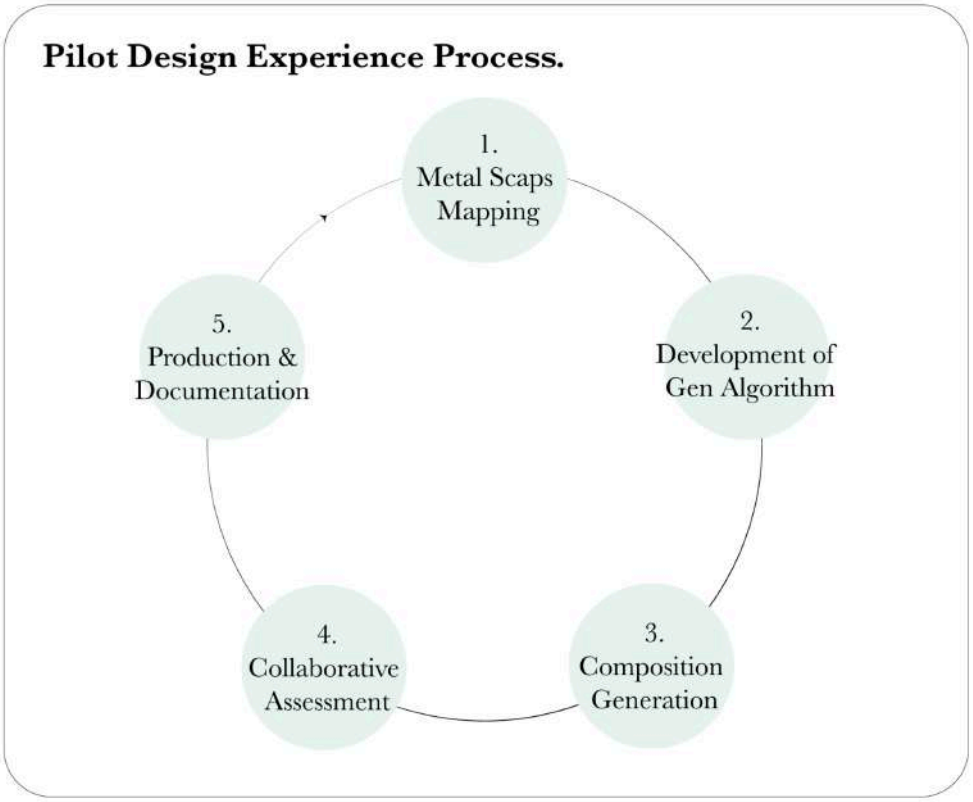

***Figure 3.9**. Pilot design experience process.*

5.3 Project Promotion Strategy

Concurrently, I elaborated a project promotion strategy involving the development of a visual identity for the pilot experience that was called *Generative Craft*. Secondly, a video documentary to disseminate experiential knowledge of a day in the life of the blacksmithing workshop was curated from the audio/video recordings. The resulting collection was submitted for selection for the Milan Design Week 2025 “Design is Human” exhibition. Additionally, a web platform for the dissemination of New Design Craft culture was designed and launched together with an offline counterpart, the Atlas of New Design Craft. Lastly, a series of published papers was produced, as well as attending seminars and conferences to share concepts and results pertaining to New Design Craft culture.

6. Chapter Conclusion

In this chapter, we have explored the methodology, the process and the methods adopted to collect the necessary data to answer the research questions and support the development of a possible strategy to address the Design Research Problem. In the next chapter, we analyse the collected data, which are summarised and evaluated in Chapter 5.

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4.

Analysis of Results.

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1. Chapter Introduction

In this fourth chapter, we introduce a detailed analysis of the data collected through the shortlisting of two hundred eligible case studies, the administration of the two questionnaires–the screener and the structured questionnaire–and the interviews. For the **screener questionnaire**, we provide a statistical analysis to contextualise the sample population in terms of its adherence to the inclusion criteria. Specifically, we describe the geographical distribution of the shortlisted practitioners, their field of application and design approach, as well as possible high-level correlations between applications, approaches and countries. Lastly, we share information regarding the questionnaire completion/pass rate and all the relevant data visualisations. For the **structured questionnaire**, we delve into a detailed analysis of the data organised into two main sections. We start with an analysis of data derived from **closed-ended questions** for which we apply statistical analysis techniques. Specifically, we adopt both descriptive and inferential methods, and we structure the analysis in seven sections derived from the pillars of this research, which also guided the design of the questionnaire. The sections cover the high-level analysis of Demographics(1), and the description of the practitioners' relationship with Material Culture, Sustainability, Emerging Technologies and Design Activism (2); we proceed then with more detailed Focus on the Practitioners' Field of Application (3), their relationship with Traditional Crafts (4), Emerging Technologies (5), Design Activism (6). We close the analysis by illustrating some measures of Correlation to investigate whether the different themes of this research can have some form of influence on each other. For the **open-ended questions,** instead, we adopted computational linguistics analytical methods as already detailed in the methodology chapter. Similarly to the data derived from the close-ended questions, also in this case we clustered the answers around six main themes exploring the Practitioners' Design Mission (1), Research Focus (2), Relationship with Material Culture (3), Emerging Technologies (4), and Design Activism (5), and the Practitioners' Design Process (6). Lastly, for the interviews, we provide an overview of the most recurring themes and perspectives, as well as contradictions and contrasting perspectives that emerged from the dialogue with the selected interviewees.

2. Survey Results Analysis

As already mentioned, the Survey Approach was articulated in four main phases: a shortlisting phase culminating in the selection of over two hundred practitioners, the administration of a screening questionnaire, the administration of a structured questionnaire, and the conduction of structured interviews with particularly relevant practitioners. Here we present an analysis of the collected data in each phase.

2.1 Analysis of the Data Collected in the Shortlisting Phase

In this section, we provide an overview of the population shortlisted in the initial screening process. We examine the geographic context of the practitioners to identify areas with higher concentrations of hybrid practices. We then proceed to explore the different fields of application and design approaches adopted within the sample to identify patterns and trends. We also analyse the intersection of these main data types to explore how applications, approaches, and geographic locations influence each other. Lastly, we present the questionnaire completion/pass rate, offering insights into respondents' engagement and overall data reliability, complemented by the relevant data visualisations.

2.1.1 Statistical Analysis and DataViz of Close-ended Qs

We start the statistical analysis of the sample with a study of the geographical distribution of the selected hybrid practices across Europe, Türkiye and Ukraine.

Data show that Italy, the Netherlands, and the United Kingdom present a high count of practices, with Italy having the greatest number of hybrid design practices, followed closely by the Netherlands.

The UK also shows significant representation, although to a smaller extent, followed by Germany, France, and Spain, which also show significant, albeit modest, representation. This geographic distribution implies that certain national settings—like those of Italy and the Netherlands—may offer more favourable circumstances or cultural settings promoting hybrid design practices or research.

Looking at the application fields of the selected sample, Product Design notably prevails, accounting for more than half of all the records. Also showing significant representation, we have Material Design

and Conceptual Design. On the other hand, data regarding a focus on textile design and speculative design results to be less significant within the sample. Methodologically speaking, a vast majority of the practitioners adopt an approach focused on the development of New Applications of Traditional Crafts, or of New Bio-Materials. The development of New Technologies for Traditional Crafts maintains a high significance in the sample, while approaches focusing on the Re-use of Waste, Organic Design and Informal Design result to be scarcely adopted.

An intersectional study between application fields and methodological approaches shows that Product Design combines the widest range of approaches, often blending conventional crafts, bio-materials, and more technology-based practices. While Conceptual, Speculative, and Textile Design domains show a more general but less focused use of approaches, reflecting more specialised practice areas, Material Design practices seem to solely adopt a Bio-material Development approach. Further research on the geographical spread of these Application Fields and Approaches reveals specific national trends. The Italian Application Fields show great variability, mostly emphasising Product Design, but also showing interesting involvement in Conceptual and Material Design. Likewise, UK professionals often focus on Product Design but also work with Material, Conceptual, and Speculative Design. While France mostly focuses on Product Design, German practitioners show balanced profiles adopting Product, Material and Conceptual Design to a comparable degree. Methodologically, Italian activities often adopt traditional craft approaches as well as new technologies, whereas UK practitioners show a more even methodological profile that includes bio-materials and waste reuse in addition to traditional crafts and new technologies. Indicating regional specialisation trends, smaller nations like Portugal and Spain have concentrated methodological interests mostly in traditional craft applications and bio-material research. Finally, a study of respondent interaction with the questionnaire reveals some methodological constraints. Of those initially shortlisted, only one-third of the selected addressees finished or passed the screener. Nonetheless, the number of final respondents (52) was deemed sufficient to support the consecutive phases of the study. Figures 4.1-4.8 present the visualisation of the data utilised for this initial analysis.

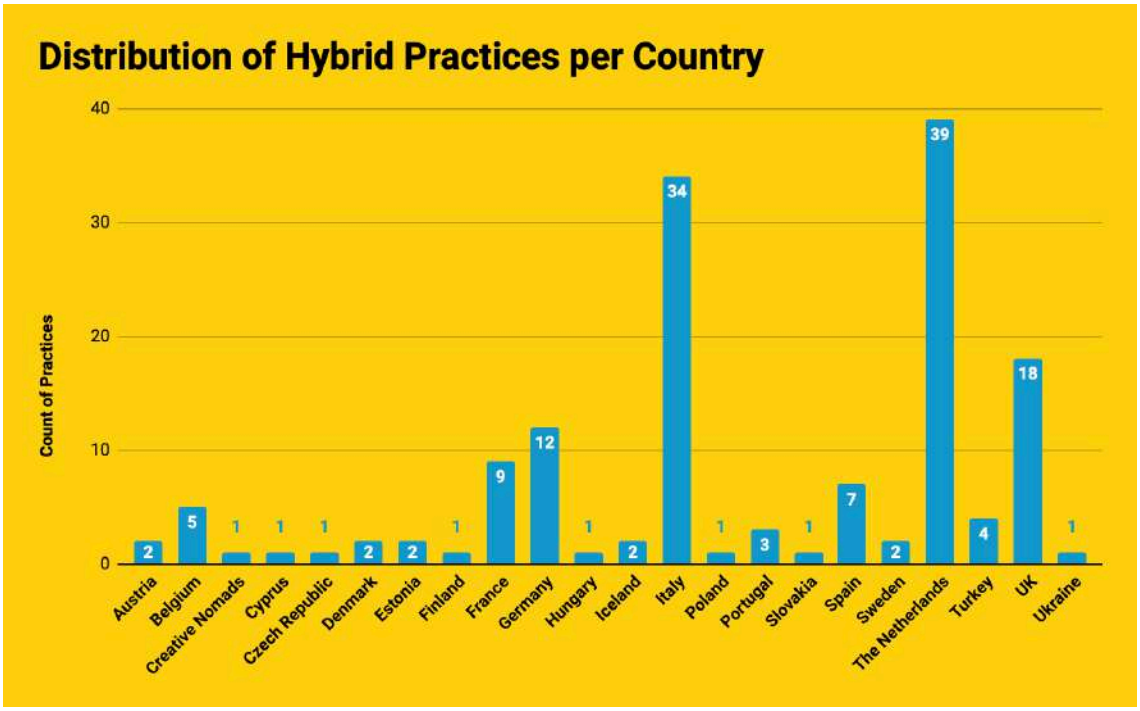

Figure 4.1 *Bar chart showcasing the distribution of Hybrid Practices per Country.*

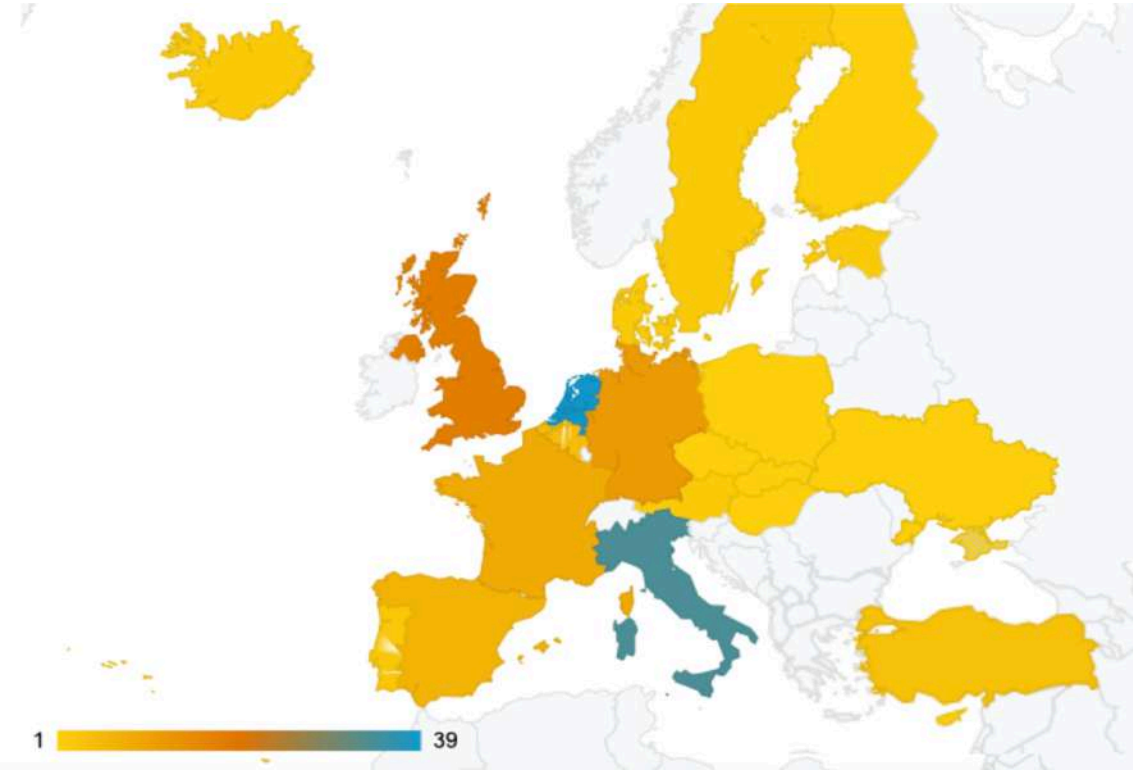

Figure 4.2 *Heatmap showcasing the distribution of Hybrid Practices per Country.*

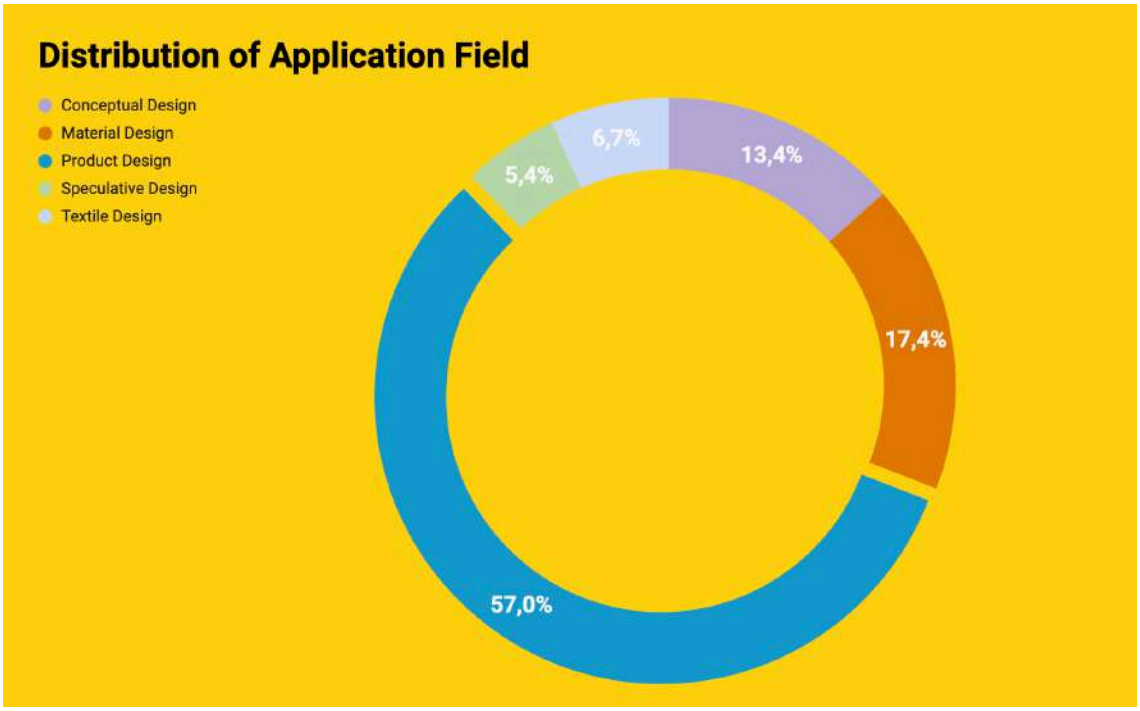

Figure 4.3 *Pie chart showcasing the Distribution of Application Fields adopted in the sample.*

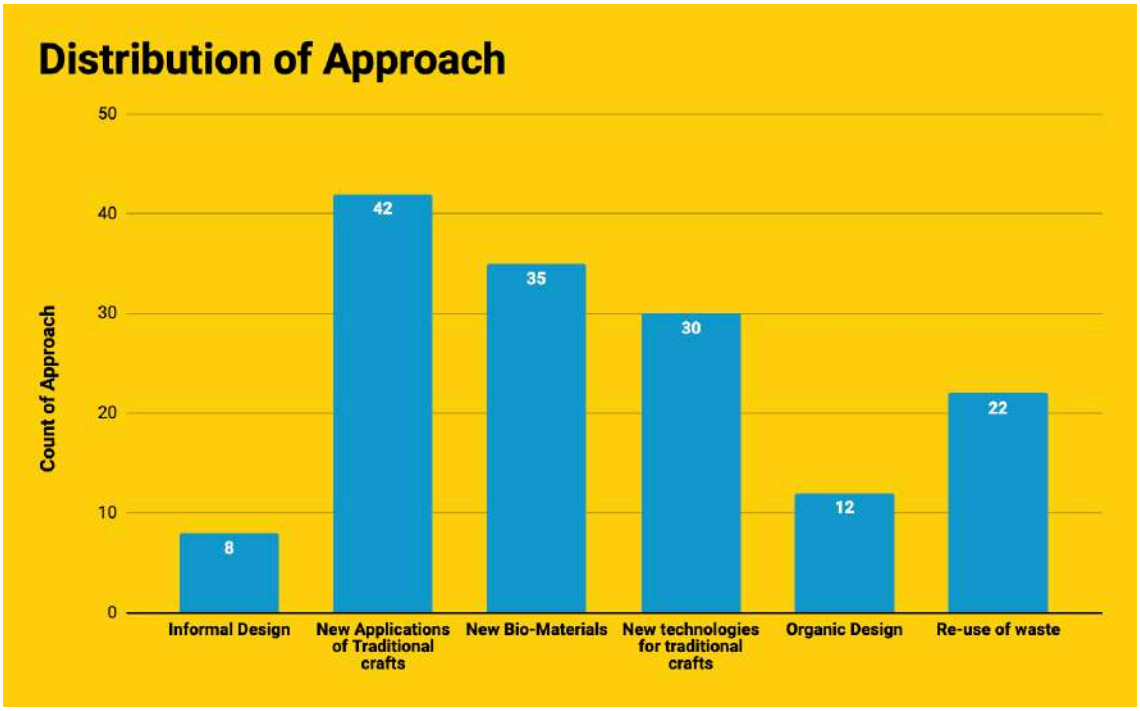

Figure 4.4 *Bar chart showcasing the distribution of Approaches adopted in the sample.*

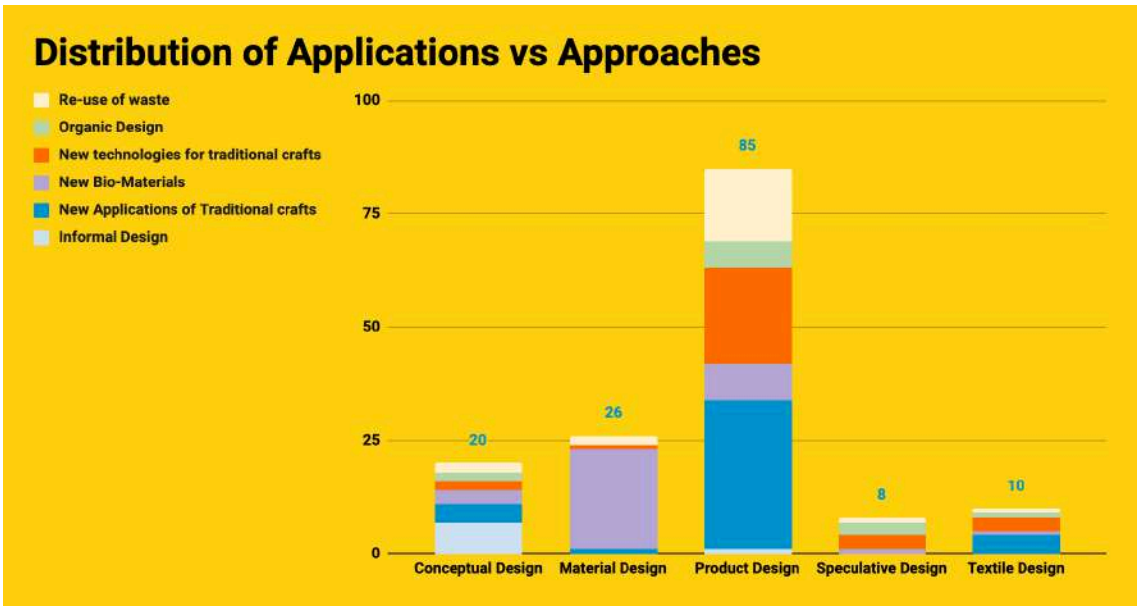

Figure 4.5 *Stacked columns chart showcasing the distribution of Application Fields vs Approaches.*

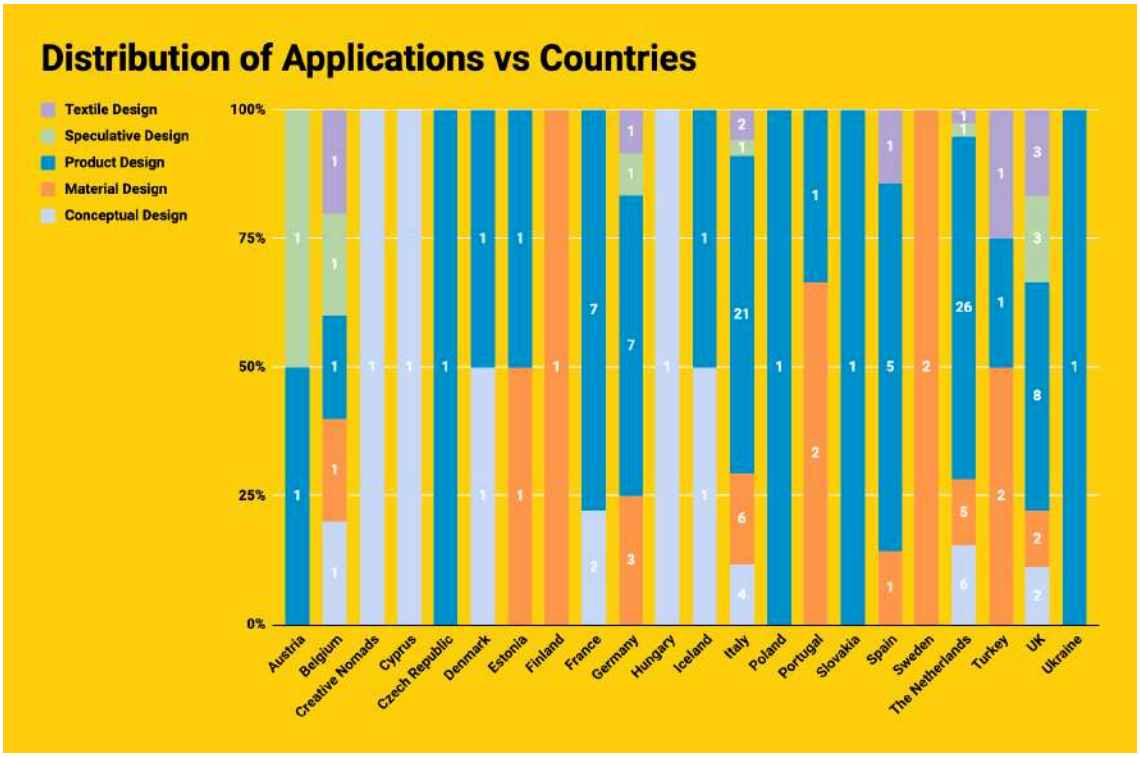

Figure 4.6 *Stacked columns chart showcasing the distribution of Application Fields vs Countries.*

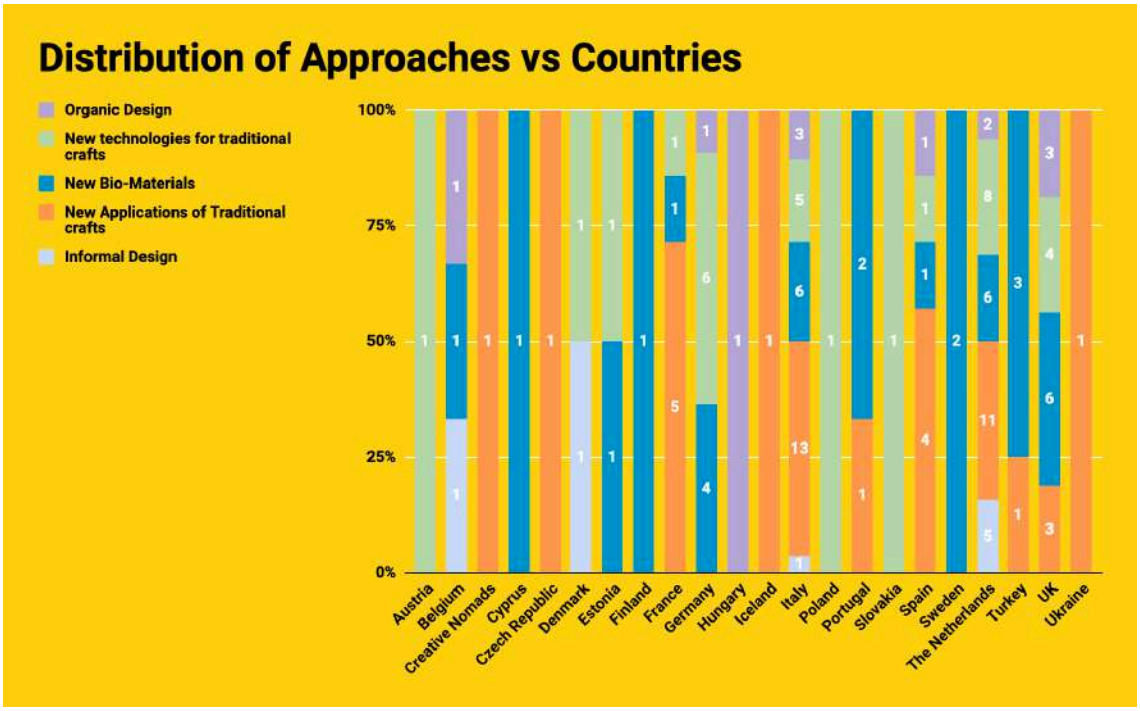

Figure 4.7 *Stacked columns chart showcasing the distribution of Approaches vs Countries.*

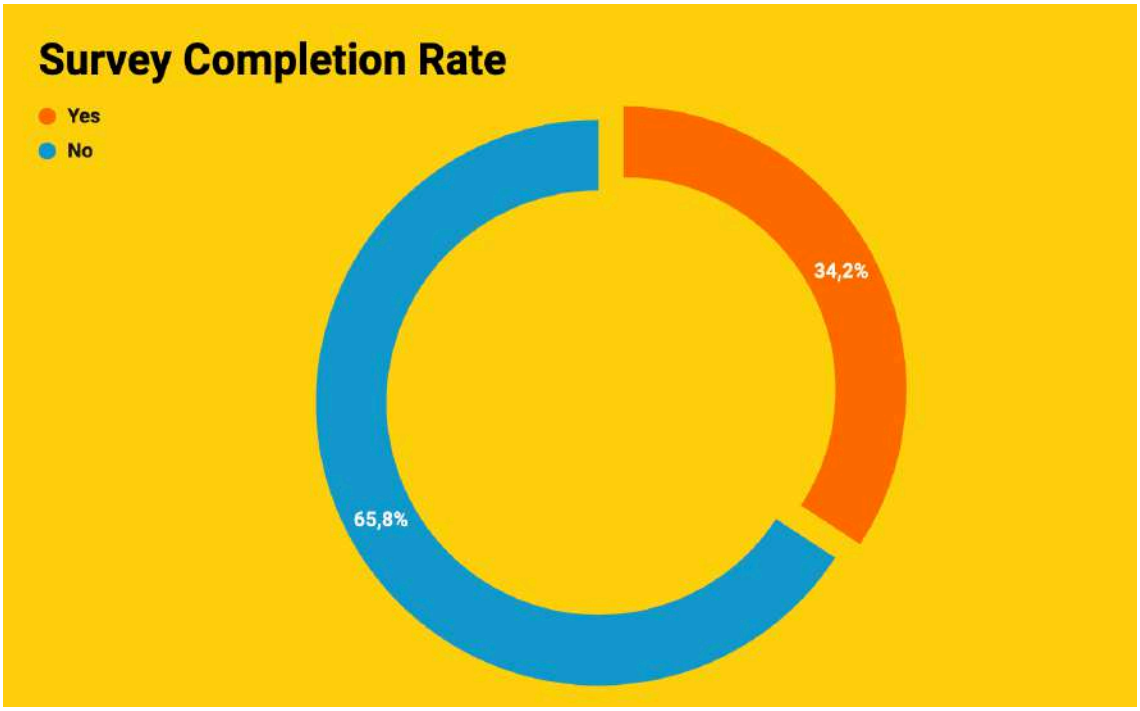

Figure 4.8 *Pie chart showcasing the percentage of Screener Completion/Pass Rate.*

2.2 Analysis of the Data Collected via the Structured Questionnaire

In this section, we introduce the analysis of data collected via the structured questionnaire, articulated into two parts. Firstly, we analyse data from closed-ended questions using both descriptive and inferential statistical methods. This exploration is organised around seven central themes: we begin with a demographic characterisation of the pool of respondents, and then we examine the practitioners' high-level relationship to Material Culture, Sustainability, Emerging Technologies, and Design Activism. Secondly, we build an in-depth focus on specific themes such as the Practitioners' Fields of Application, their relationship with Traditional Crafts, Emerging Technologies and Design Activism. We close this statistical investigation with a correlation analysis to determine potential influences or interactions between the thematic areas.

We then proceed to analyse the responses from the open-ended questions through the application of computational linguistic methods, as elaborated in the Methodology chapter. Similarly to the previous section, this qualitative analysis is segmented into six thematic clusters that reflect crucial dimensions of the practitioners' work, including their Design Mission, Research Focus, Relationship with Material Culture, Engagement with Emerging Technologies, Design Activism, and Design Process.

2.2.1 Analysis and Data Visualisations of Closed-ended Questions

The **Demographic analysis** shows insights on age, gender, education, and seniority. From an Age Group perspective, the data shows a strong majority of practitioners positioned in the 25-34 age group, which makes up 71.2% of the total respondents. The next most significant age group is 35-44 years, which makes up 15.4% of the sample; younger individuals aged 18-24 make up a lesser portion at 7.7%. Practitioners in the 45-54 age range (3.8%) and those over 55 (1.9%) constitute a less significant subset, showing that mostly younger practitioners typically engage in the hybrid practices. Gender distribution-wise, the sample shows a clear majority of female respondents accounting for 61.5% of the pool of respondents. At 30.8%, male practitioners make up over one-third of the replies. Additionally, Collaborative duos account for 5.8% of respondents, while an additional, small subset of respondents choose not to disclose their gender identity.

Regarding educational levels, a master's degree is the most frequent educational level among respondents, accounting for 55.8% of the sample; closely behind are those with bachelor's degrees at 36.5%. 5.8% of the respondents hold a doctorate, so the distribution shows a significant prevalence of advanced academic education among the studied population.

Lastly, looking at the Longevity of Practice of the respondents, results show that a significant proportion (44.2%) established their practices between two and three years prior to the survey. Moreover, this segment is followed by even newer practices (established within the last year), comprising 28.8%. A quarter of the sample (25%) is made up of practitioners with more extensive experience—those who have been active for more than five years—implying a combination of early-stage and more seasoned practitioners within the sample. Figures 4.9-4.12 present the visualisation of the data utilised for this demographic analysis.

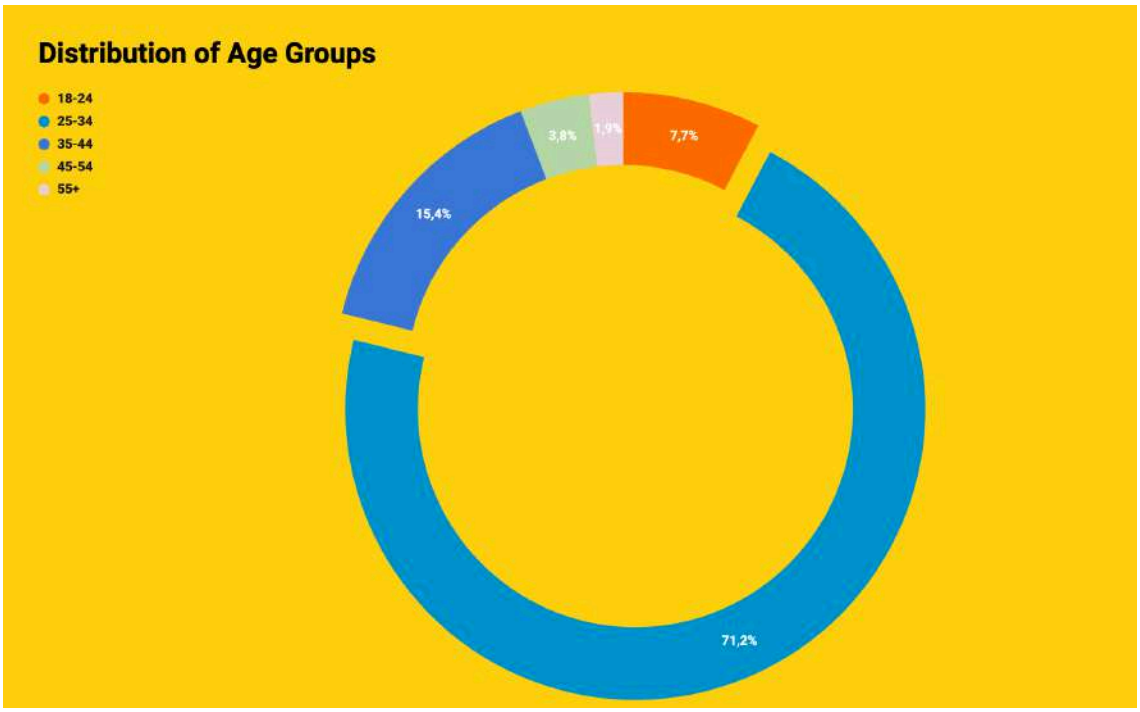

Figure 4.9 *Pie chart showcasing the percentage of Screener Completion/Pass Rate.*

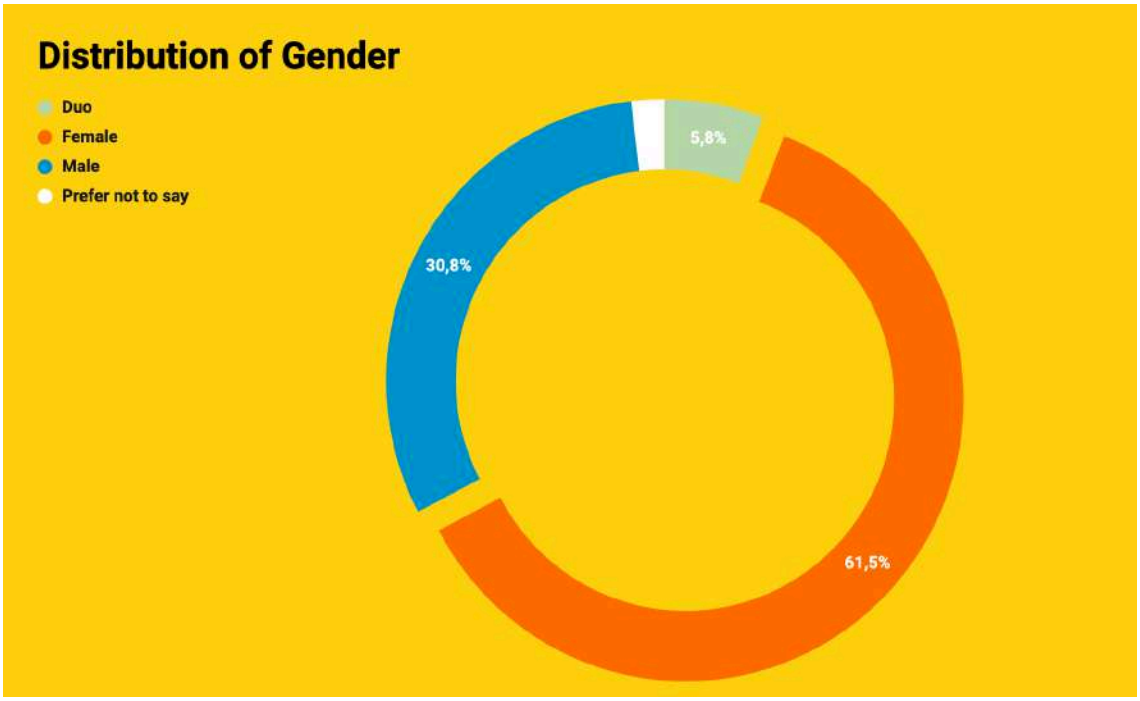

Figure 4.10 *Pie chart showcasing the percentage of Screener Completion/Pass Rate.*

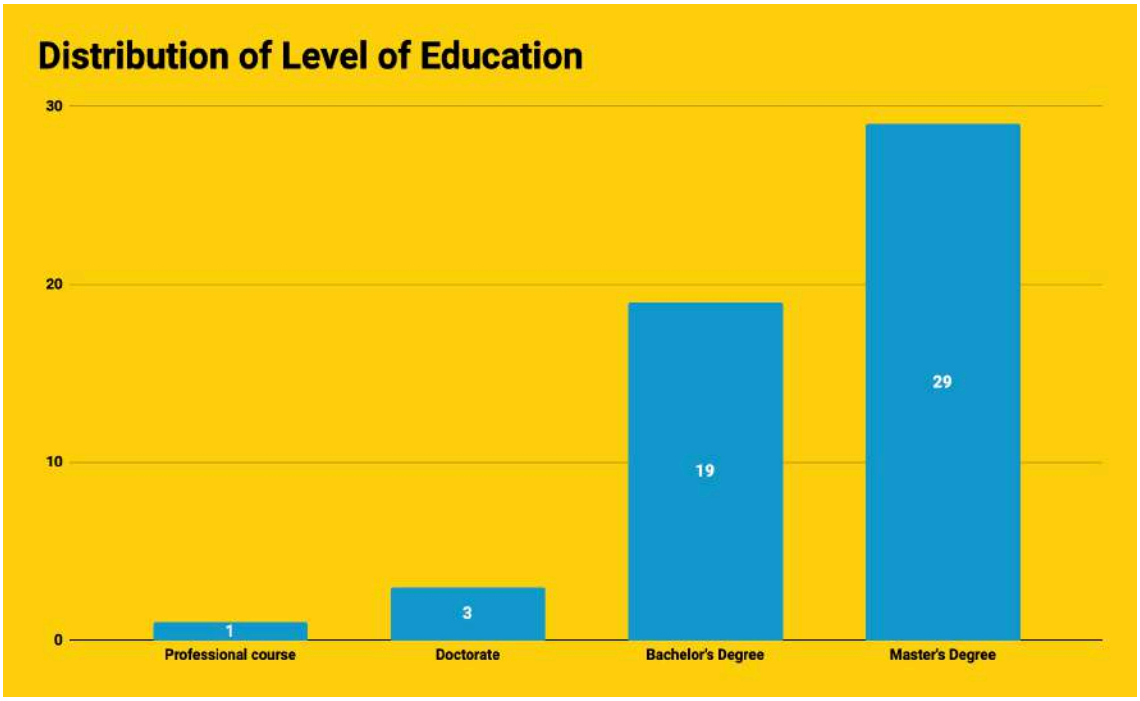

Figure 4.11 *Pie chart showcasing the percentage of Screener Completion/Pass Rate.*

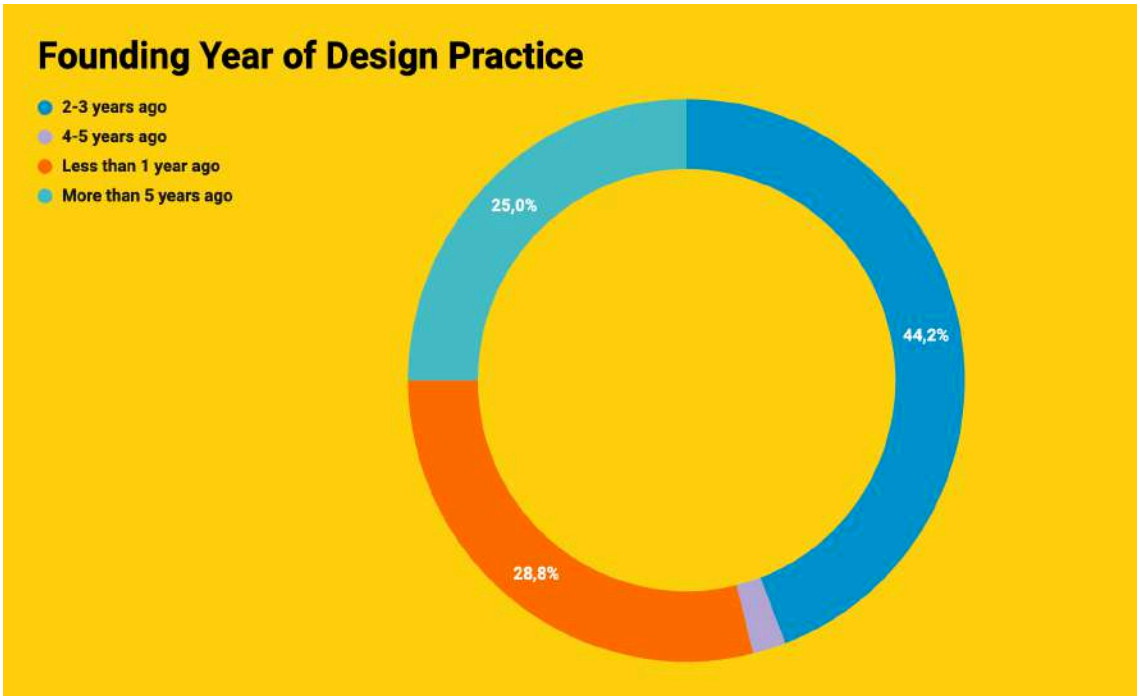

Figure 4.12 *Pie chart showcasing the percentage of Screener Completion/Pass Rate.*

The analysis of the Respondents' **relationship with material culture** shows some clear trends, as the majority of the sample (75%) claims that their approach to design is shaped by traditional crafts. Among the suggested craft categories, respondents most frequently practise woodwork (8), pottery (6), weaving (6), metallurgy (5), and glasswork (3). Less often practised crafts include basket weaving and tapestry, each noted by two respondents. A single respondent noted other practices because of their experimental approach, drawing inspiration from embroidery, knitting, lace-making, lapidary, papier-mâché, stitching, and stained glass.

Most of the participants (60.5%) who are influenced by crafts disciplines have between 1 and 5 years of experience in their specific craft disciplines. 21% have 6 to 10 years of experience, while 7.9% have 11 to 20 years of experience. Lastly, 5.2% are practitioners with less than one year or more than 20 years of experience.

Practitioners mostly apply their craft skills to Product Design (35%), Material Design (29%), and Conceptual Design (21%). 12% experiment with either Textile Design or Interior Design, and 3% investigate craft applications in Speculative Design.

These Practitioners are often involved in research about the development of New Bio-Materials (33%), New Applications of Traditional Crafts (23%), and New Technologies for Traditional Crafts (21%). 13% of the respondents investigate the reuse of Waste, while Organic Design (6%) and Informal Design (4%) are the least prevalent research areas.

When asked to self-identify their practice on a scale from craft-oriented to design-oriented, most of the respondents (65.5%) describe themselves as 'Hybrid Oriented' (ranked 3 on a scale of 1-5). While design-oriented responders (ranking 1 and 2 on the scale) constitute 13.5% of the total, those leaning towards craft-oriented identities (ranking 4 and 5) account for 21%.

Secondly, when asked to assess the importance of local heritage in their practice on a scale from 0 to 10, respondents mostly evaluated this influence quite highly, as scores from 7 to 10 combinedly reflected about 57.7% of their answers, with scores of 8/10 making up for 21.5% alone. While 25% chose the middle score of 5/10, suggesting neutrality, answers achieving the lowest scores (1 to 4) total just 7.7%.

Finally, when asked to assess the frequency of use of traditional artisanal techniques on a scale from 0 to 10, most respondents confirmed they often use them, as scores from 6 to 10 combinedly reflected over 65% of their answers. Only 8% reported minimal use or avoidance (ratings from 0 to 2), implying that hybrid practitioners widely adopt traditional methods. Figures 4.13-4.21 present the visualisation of the data utilised for this analysis.

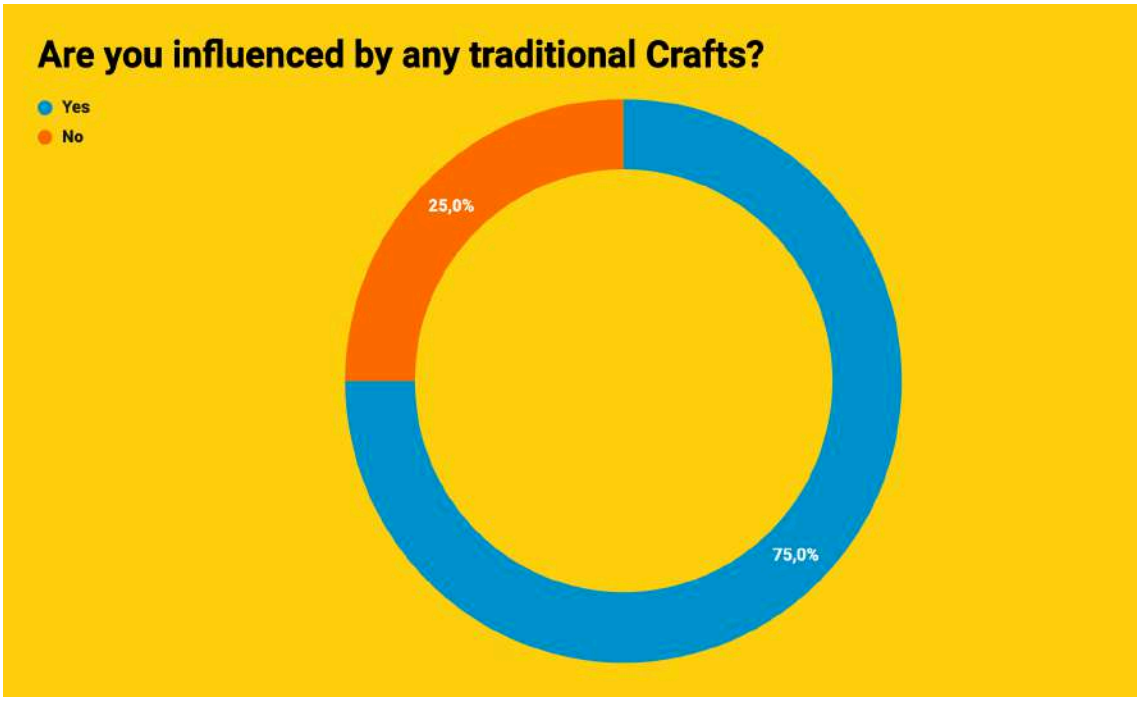

Figure 4.13 *Pie chart showcasing the percentage of Practitioners influenced by Crafts.*

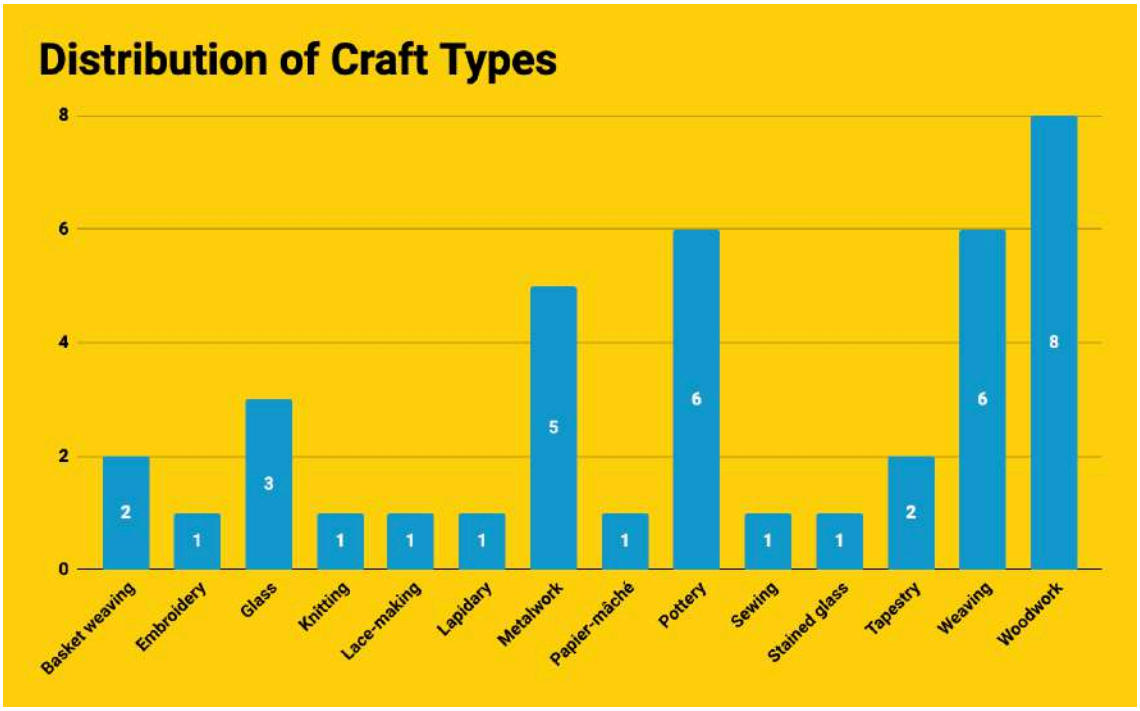

Figure 4.14 *Bar chart showcasing the distribution of the most frequent Craft Types.*

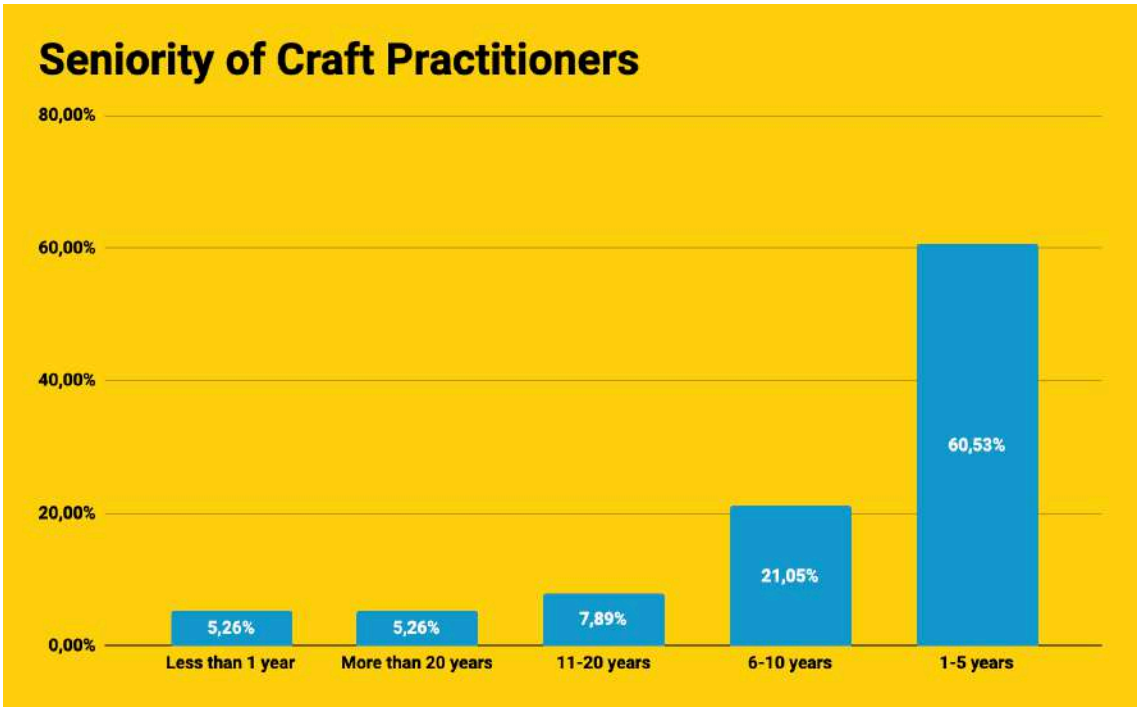

Figure 4.15 *Bar chart showcasing the distribution of seniority of Craft Practitioners.*

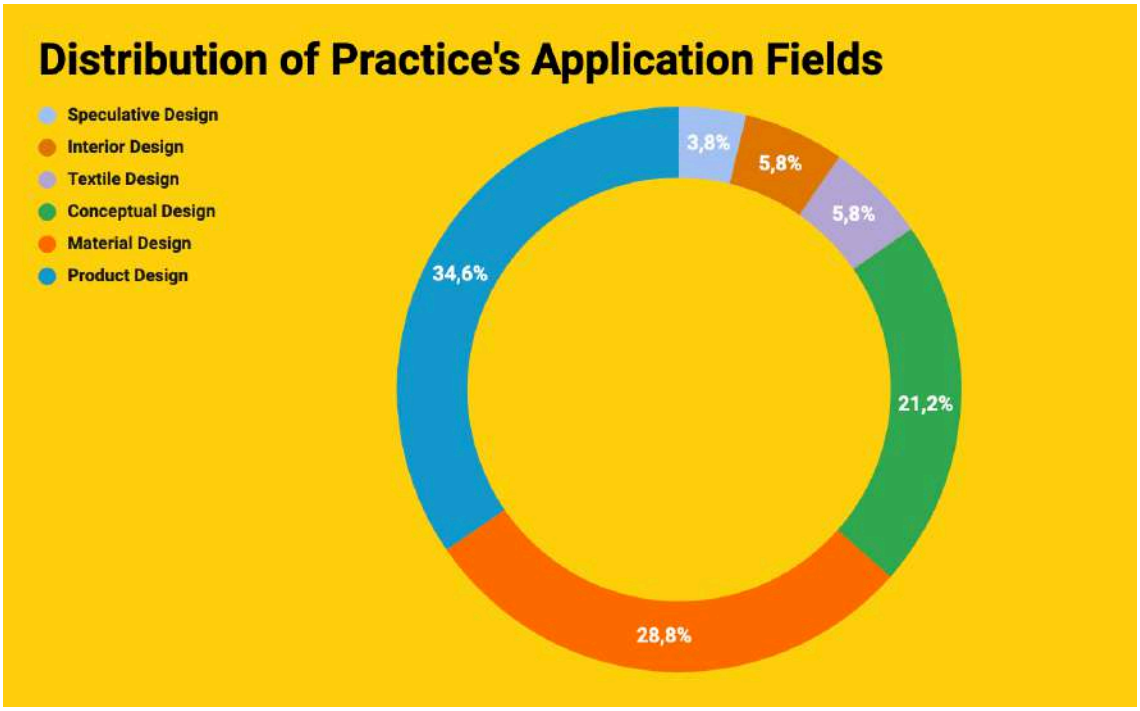

Figure 4.16 *Pie chart showcasing the distribution of Practice's Application Fields.*

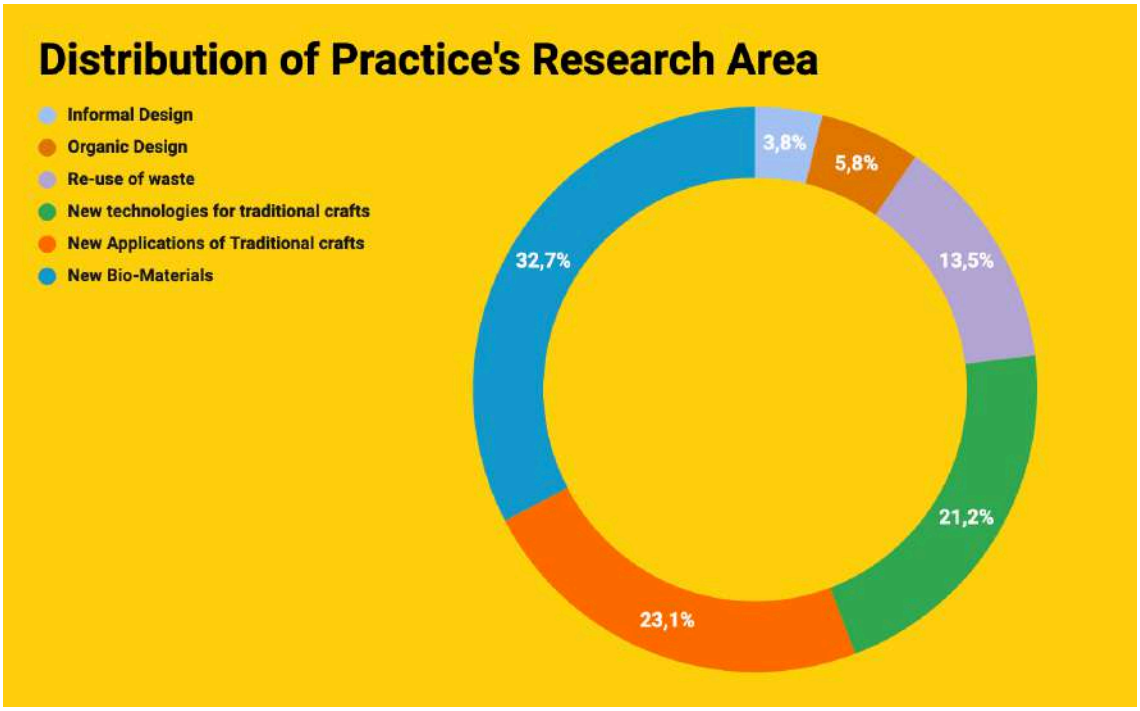

Figure 4.17 *Pie chart showcasing the distribution of Practice's Research Area.*

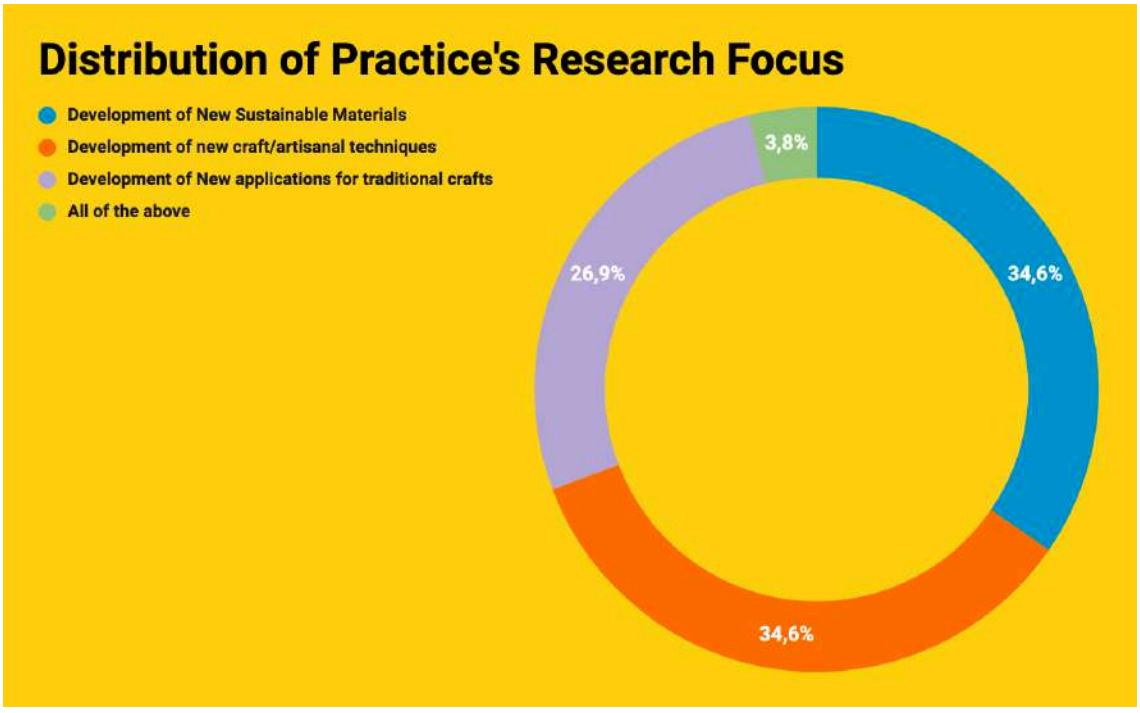

Figure 4.18 *Pie chart showcasing the distribution of Practice's Research Focus.*

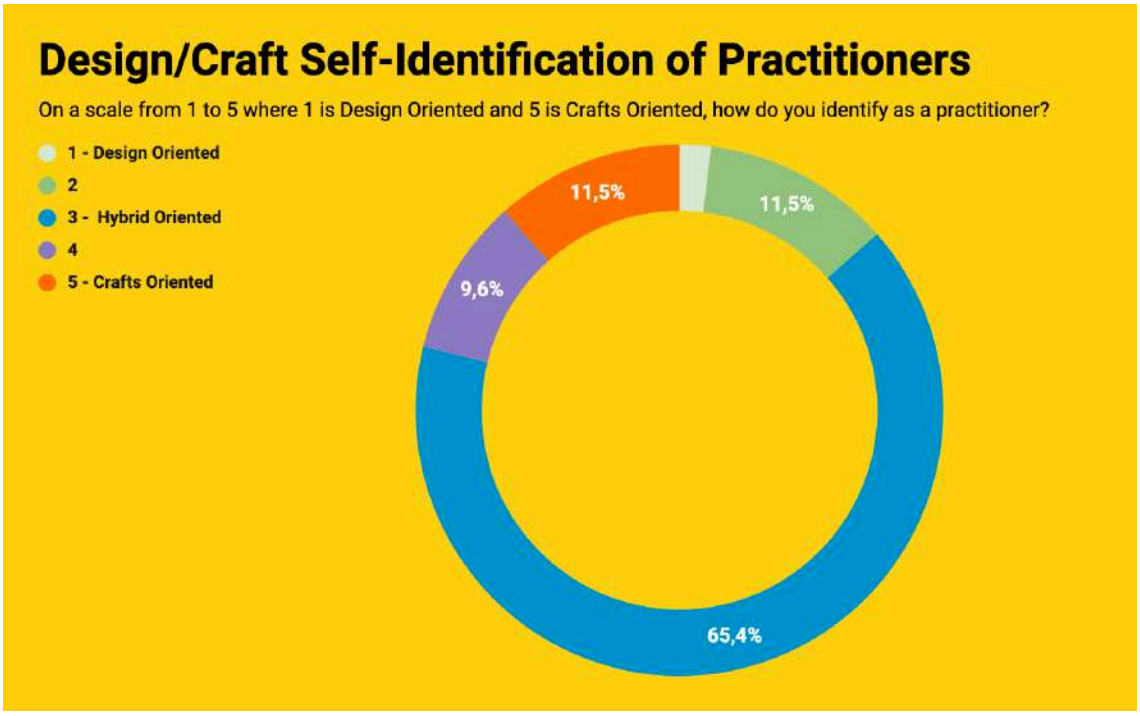

Figure 4.19 *Pie chart showcasing the distribution of Practice's Design/Craft Self-Identification.*

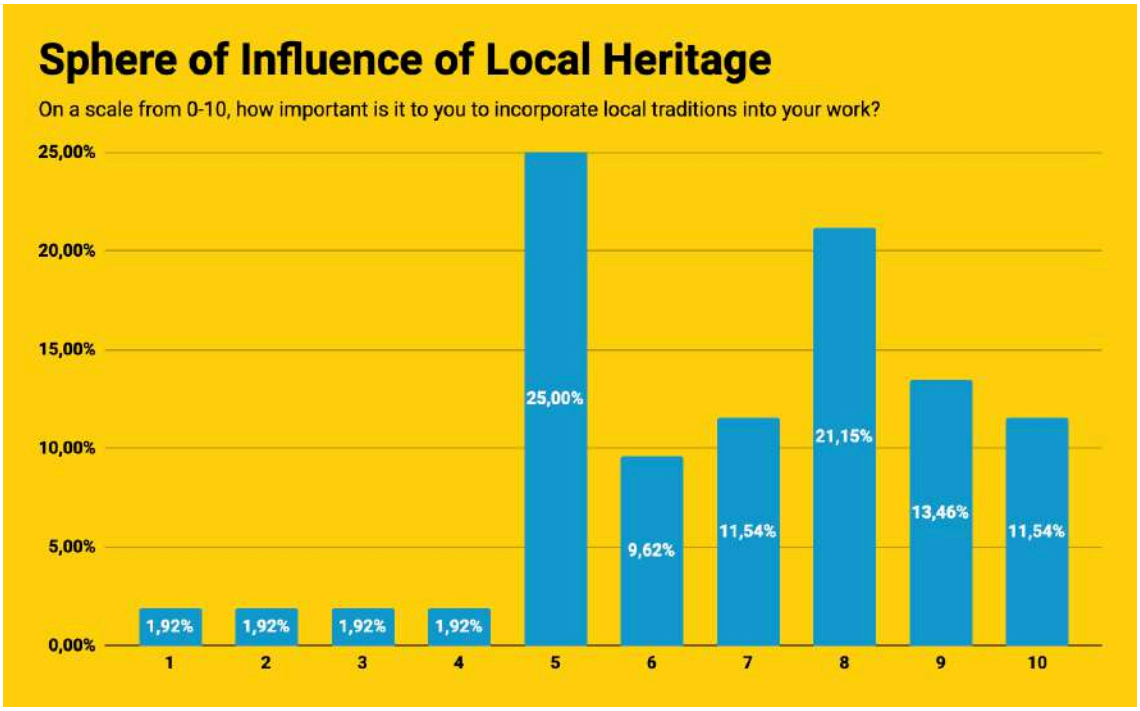

Figure 4.20 *Bar chart showcasing the distribution of Local Heritage Influence Sphere.*

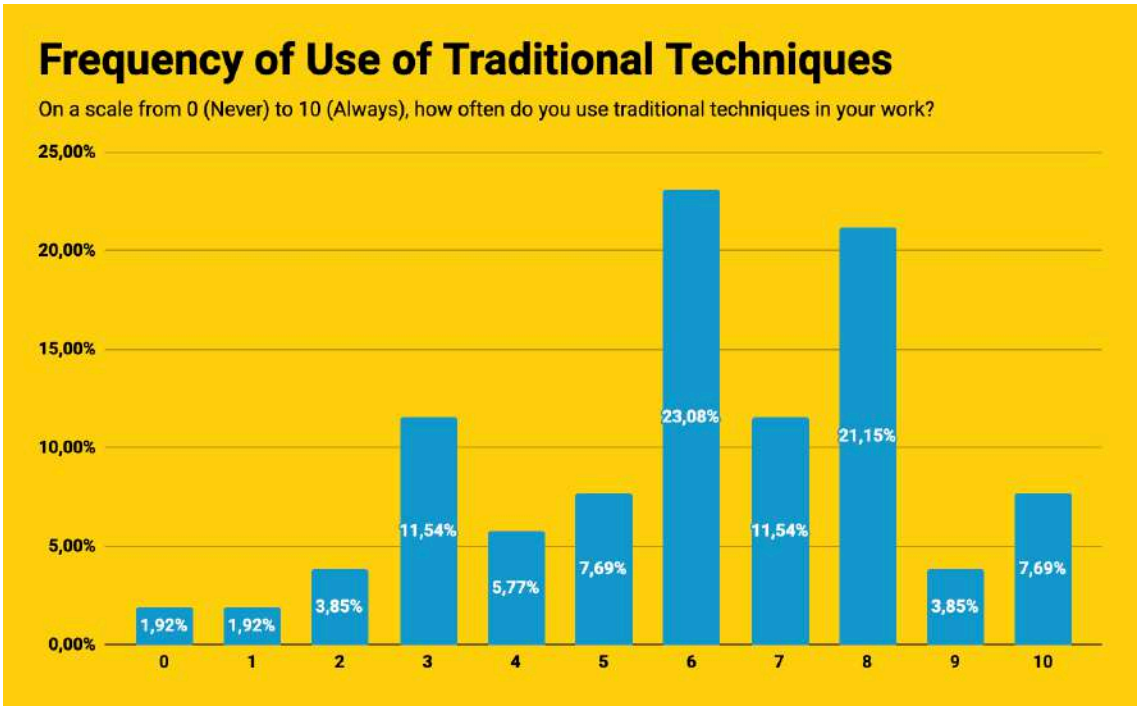

Figure 4.21 *Bar chart showcasing the distribution of the use of Traditional Techniques.*

Regarding the **relationship with Socio-Environmental Concerns, Emerging Technologies and Activism,** the results of the questionnaire show a strong alignment with socio-environmental concerns, expressed through the prioritisation of sustainable materials.

When asked to assess the importance of considerations regarding sustainability on a scale from 1 to 10, most respondents identified sustainability as crucial to their practice, with the largest group, over 50% of the respondents, assigning it the highest rating of 10/10. Moreover, ratings of 8 and 9 combined also make up for an additional 35%, thus making the distribution even more right-skewed, with over 85% of the respondents falling in the highest values of the scale.

Looking into a high-level engagement with emerging technologies, data shows a strong prominence of 3d Printing, which emerged as the most used technology, followed by CNC machines. Other technologies, such as parametric modelling software, generative software, and AI, were utilised less frequently. Notably, a considerable proportion of respondents (25%) reported not using any of the listed emerging technologies, suggesting diverse approaches to technological integration in their practices. Design activism displayed diverse degrees of importance among respondents, with a

pronounced yet uneven distribution across the scale. When asked to assess their activism effort on a scale from 1 to 10, with 10 being the highest degree of engagement, the most frequently selected rating was 8 (25%), followed closely by ratings of 10 (20%) and 9 (15%). Although lower ratings (0–3) were noted, they occurred less frequently, signifying a general recognition of the importance of design activism, despite differing opinions regarding its centrality to individual practices. Figures 4.22-4.24 present the visualisation of the data utilised for this analysis.

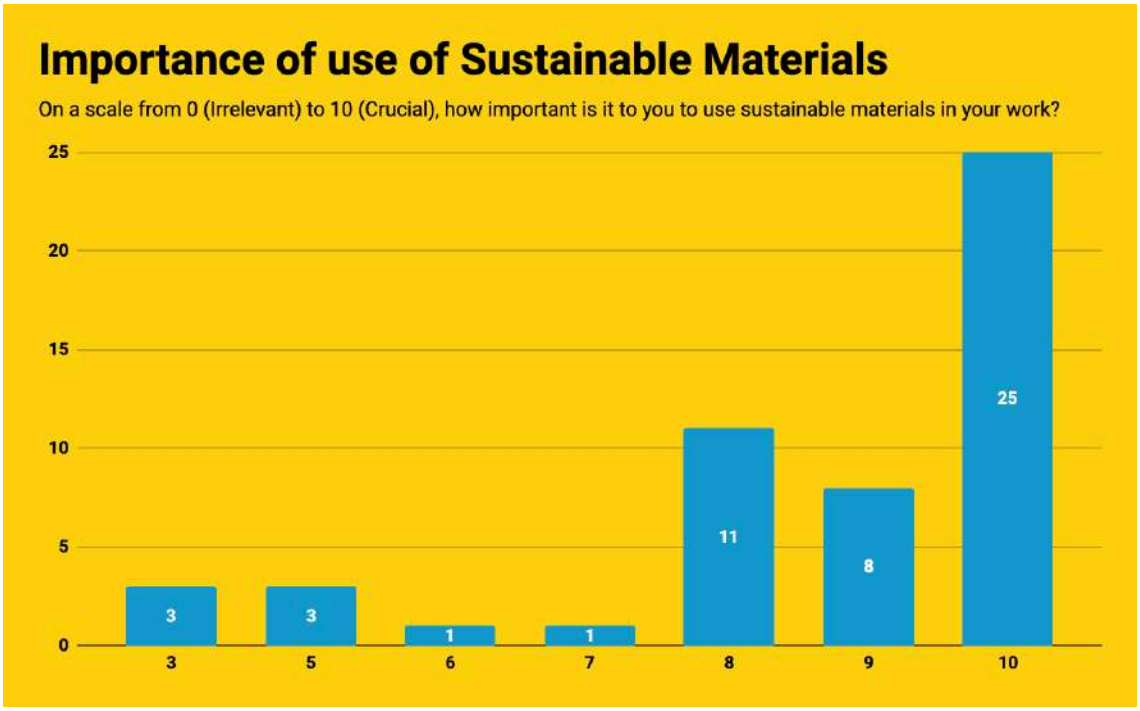

Figure 4.22 *Bar chart showcasing distribution of importance of use of Sustainable Materials.*

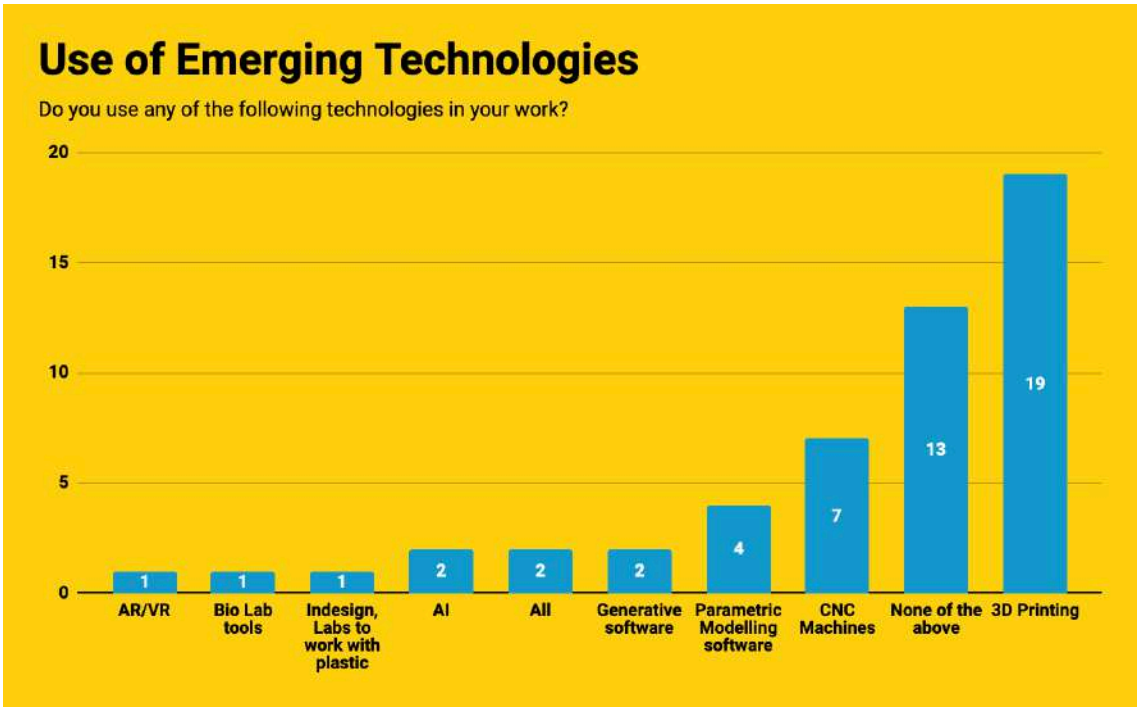

Figure 4.23 *Bar chart showcasing the distribution of the use of Emerging Technologies.*

Figure 4.24 *Bar chart showcasing the distribution of the importance of Design Activism.*

Focus on the Field of Application

This dataset focuses on describing how design practitioners in the sample population position their practices with respect to their **application fields** in relation to demographics, emerging technologies and traditional crafts. As already mentioned, certain fields of application have emerged more prominently than others. For example, Product Design and Material Design are widely represented in the sample. However, drilling down to the geographical comparison level, we can notice how these prevail also in those Countries, like Italy or the Netherlands, with a more spread-out variety of application fields.

Analysing design fields through the lens of gender distribution reveals clear but nuanced patterns. Female practitioners predominantly lead within Interior Design, Material Design, Speculative Design, and Textile Design. Male practitioners notably dominate Product Design and participate to a lesser extent in Conceptual Design. Duo collaborations, which rarely occur, mainly operate in the Product and Conceptual Design fields.

Age-group analysis indicates that practitioners aged 25-34 constitute the majority across all design fields, especially within Material, Product, and Conceptual Design, suggesting a substantial engagement by early-career professionals.

On the other hand, both Conceptual and Textile Design seem to be significantly appealing for practitioners aged 35-44. Meanwhile, the youngest age group (18-24) primarily gravitates toward Conceptual Design, with limited involvement elsewhere.

Practitioners' use of emerging technologies further illustrates distinctions among fields. 3d Printing emerges distinctly as the most extensively adopted technology, notably in Material and Product Design. CNC machines and parametric modelling software also see substantial adoption, particularly within Product Design. In contrast, advanced technologies like AI, AR/VR, and Bio Lab tools have limited uptake, suggesting either more specialised applications or potential barriers to broader adoption. Lastly, Textile Design frequently report minimal or no integration of emerging technologies.

Looking at how crafts influence the application fields of the selected sample, we notice varied yet meaningful relationships. Product Design, Conceptual Design, and Material Design show significant

craft influence among respondents, highlighting the role traditional techniques play within contemporary design practices, although it must be noted how both Material and Product Design fields also include numerous practitioners explicitly stating minimal or totally absent craft influence. Finally, as mentioned, in the self-identification on the Design-Craft spectrum, most respondents adopt a hybrid stance. This hybrid characterisation is particularly evident in the Material and Product Design fields. Figures 4.25-4.30 present the visualisation of the data utilised for this analysis.

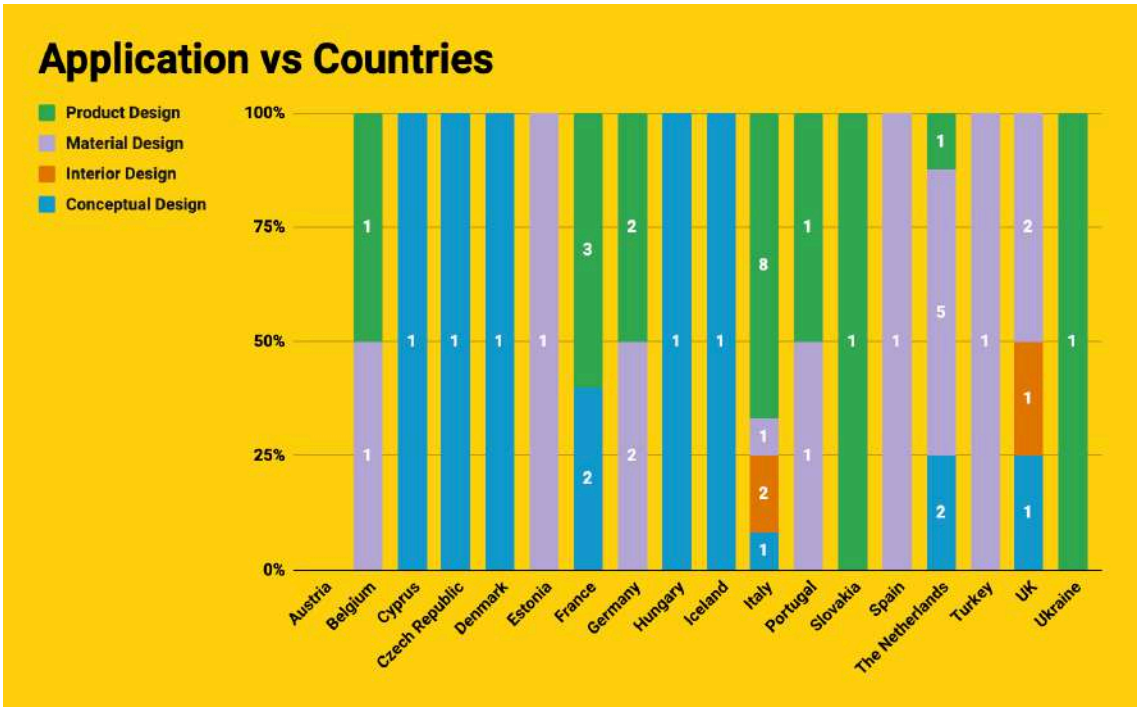

Figure 4.25 *Stacked Bar chart showcasing the distribution of Application Fields vs Countries.*

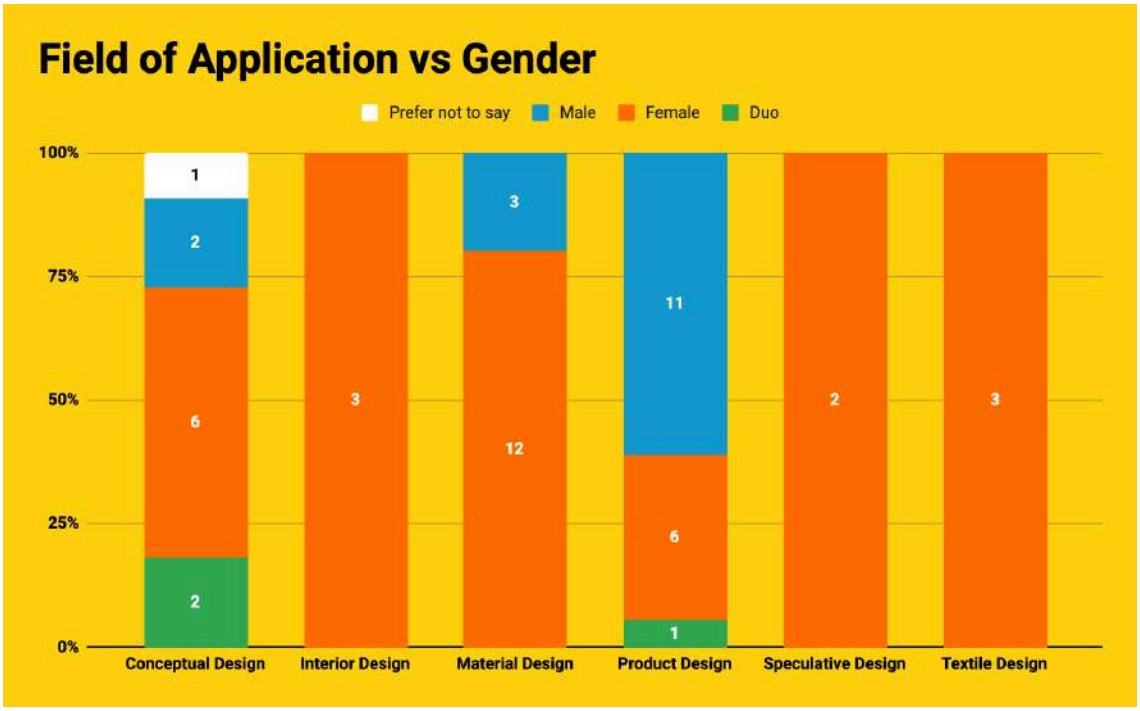

Figure 4.26 *Stacked Bar chart showcasing the distribution of Application Fields vs Genders.*

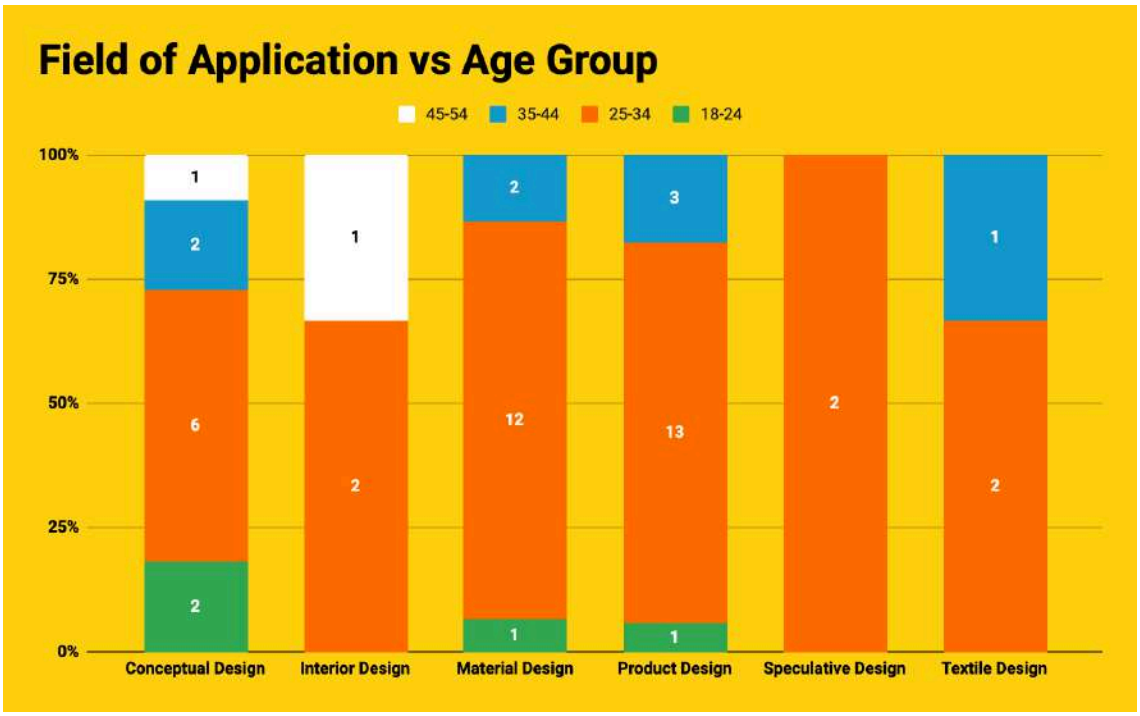

Figure 4.27 *Stacked Bar chart showcasing the distribution of Application Fields vs Age Groups.*

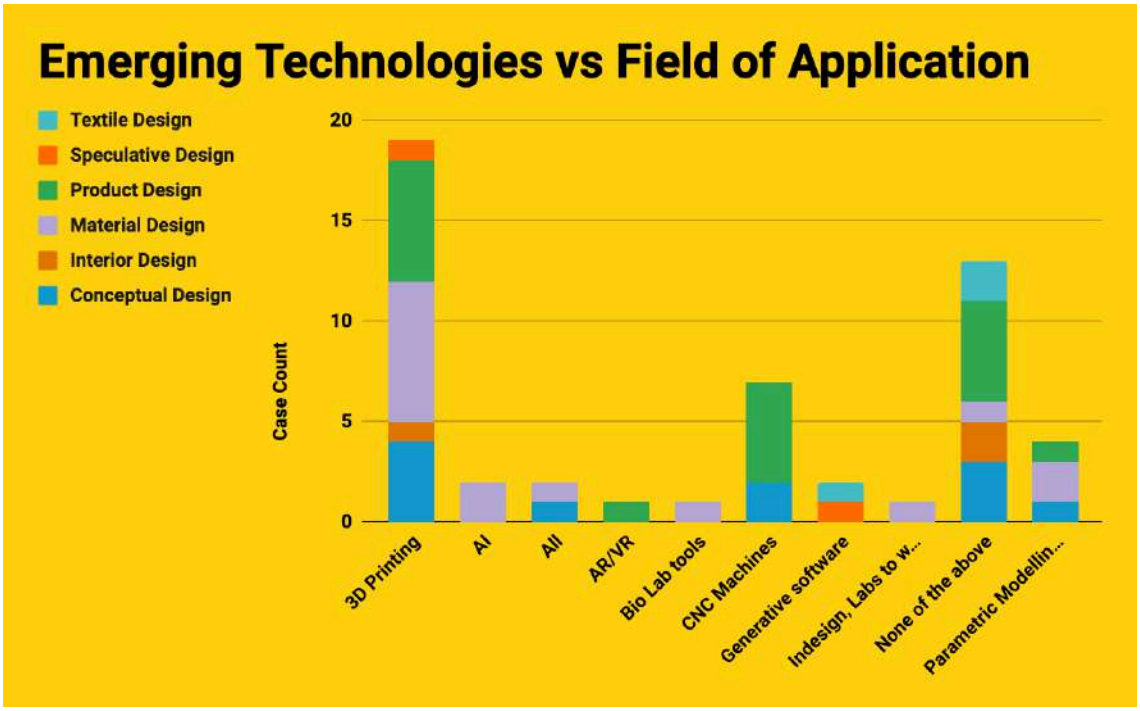

Figure 4.28 *Stacked Bar chart showcasing distribution of Application Fields vs Emerging Tech.*

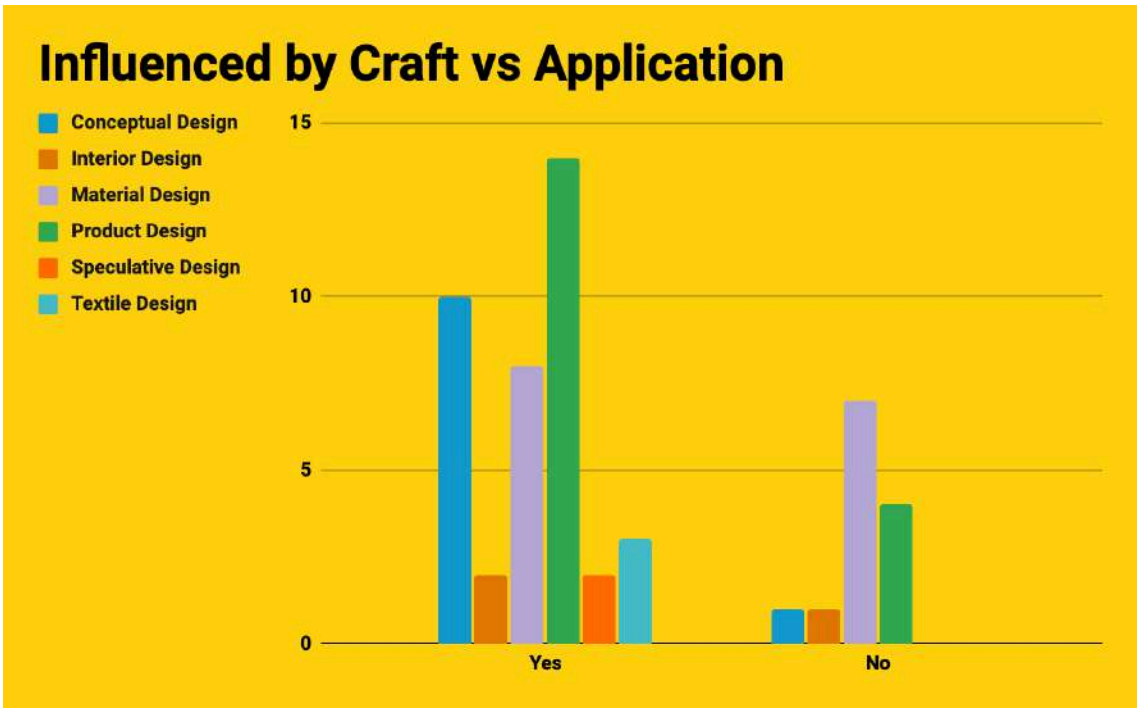

Figure 4.29 *Bar chart showcasing the distribution of Application Fields vs Craft Influence.*

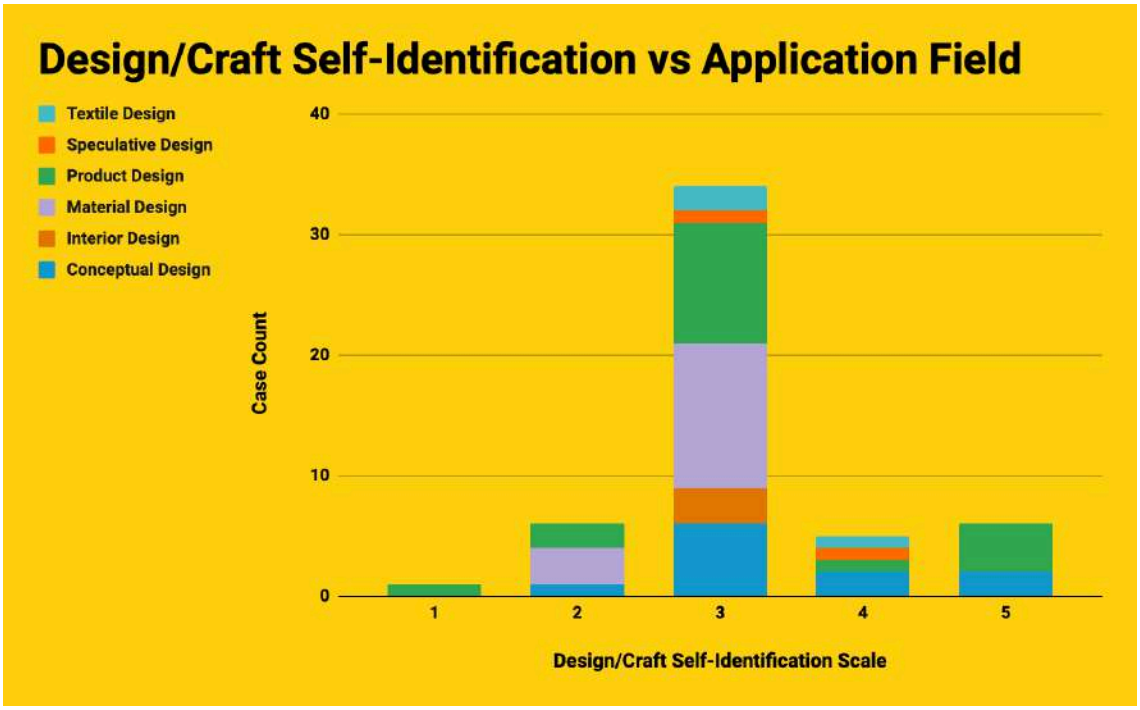

Figure 4.30 *Stacked Bar chart showcasing the distribution of Application Fields vs Design/Craft Self-Identification.*

Focus on Traditional Crafts

This part of the dataset focuses on the characterisation of the traditional crafts practised by the respondents in relation to different countries, demographics, and technological contexts.

From the analysis of craft types across countries, we notice both widespread and country-specific trends. If Pottery appears frequently in multiple countries such as Iceland, Portugal, Slovakia, and Spain, some crafts show a strong country-specificity, like, for example, lace-making's preeminence in Belgium, or glass-making's in the Czech Republic. Italy stands out for its diversity of traditional crafts, reflecting a broader national interest in craftsmanship.

Analysing how gender affects the distribution of craft types, we immediately notice a widespread presence of female practitioners in all craft types. We can also notice that woodwork and ceramics show significant involvement across gender categories, while other craft forms, such as glasswork and weaving, appear mostly female-driven.

Examining how the preference for certain craft types is influenced by age groups, we see that the 25-34 age group shows the most variety and degree of involvement, actively participating in woodwork,

ceramics, glass, and different textile forms. Younger (18-24) and older (55+) age group practitioners are fewer in number and show involvement in a more limited spectrum of crafts. Early- to mid-career professionals seem to be the most active and varied in their involvement in traditional crafts, according to this trend.

Emerging technology used in traditional crafts shows different levels of influence. Some artisanal techniques, especially basket weaving, knitting, lace-making, and papier-mâché, present little or no use of emerging technologies. On the other hand, whereas weaving often uses sophisticated digital technologies, including parametric modelling software and generative design tools, glasswork generally combines technology, including CNC machines and 3d printing.

Lastly, analysing seniority across several craft types, we see that most practitioners have between one and five years of experience, especially in woodwork and glass. Practitioners with somewhat longer seniority (6-10 years) are also seen in metalwork and pottery. Additionally, woodwork features people at both ends of the seniority spectrum, those with less than one year and those over 20 years of experience, implying a particularly wide range of knowledge within this trade. Figures 4.31-4.35 present the visualisation of the data utilised for this analysis.

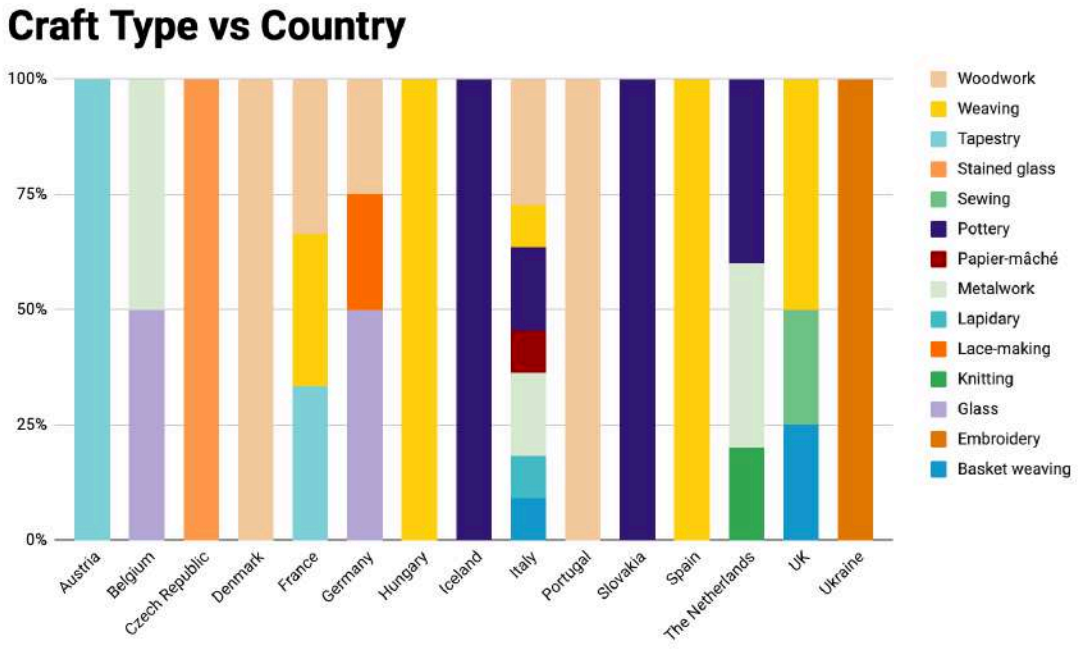

Figure 4.31 *Stacked Bar chart showcasing the distribution of Craft Types vs Countries.*

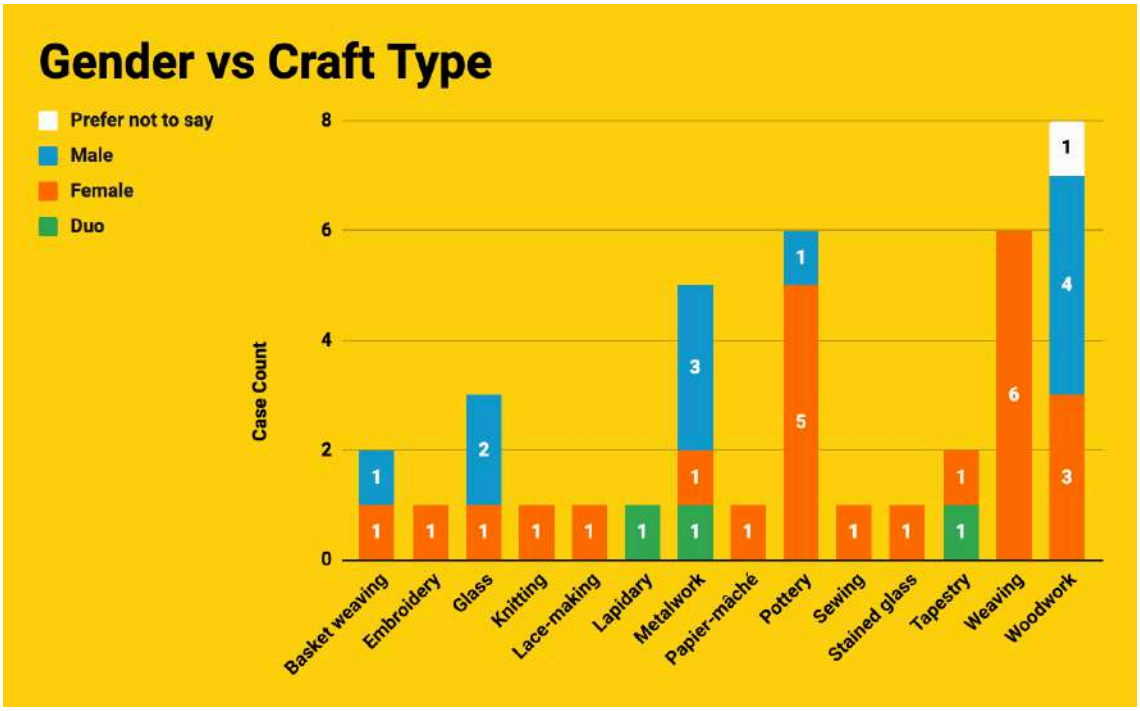

Figure 4.32 *Stacked Bar chart showcasing the distribution of Craft Types vs Gender.*

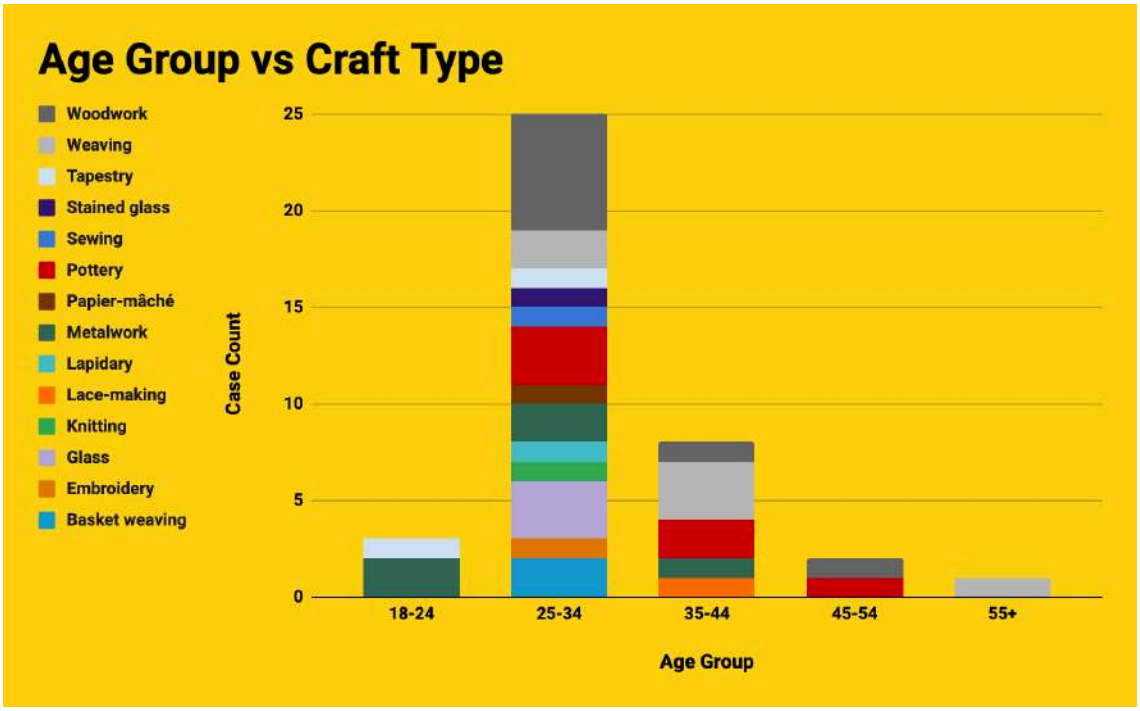

Figure 4.33 *Stacked Bar chart showcasing the distribution of Craft Types vs Age Groups.*

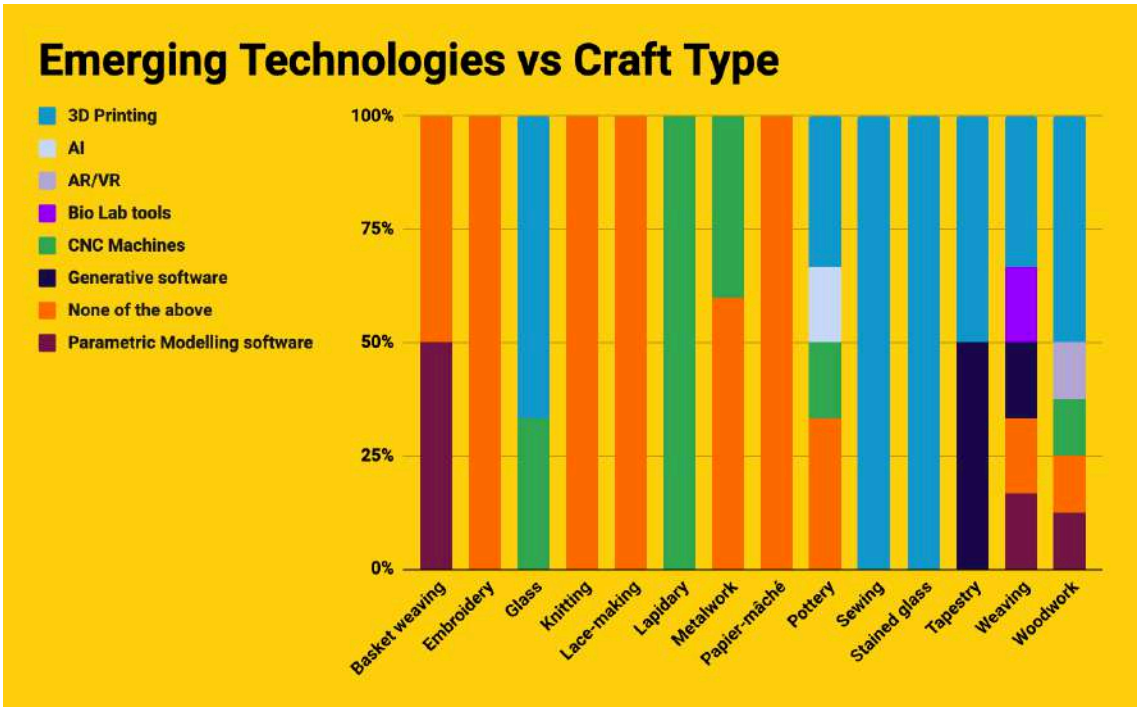

Figure 4.34 *Stacked Bar chart showcasing the distribution of Craft Types vs Emerging Tech.*

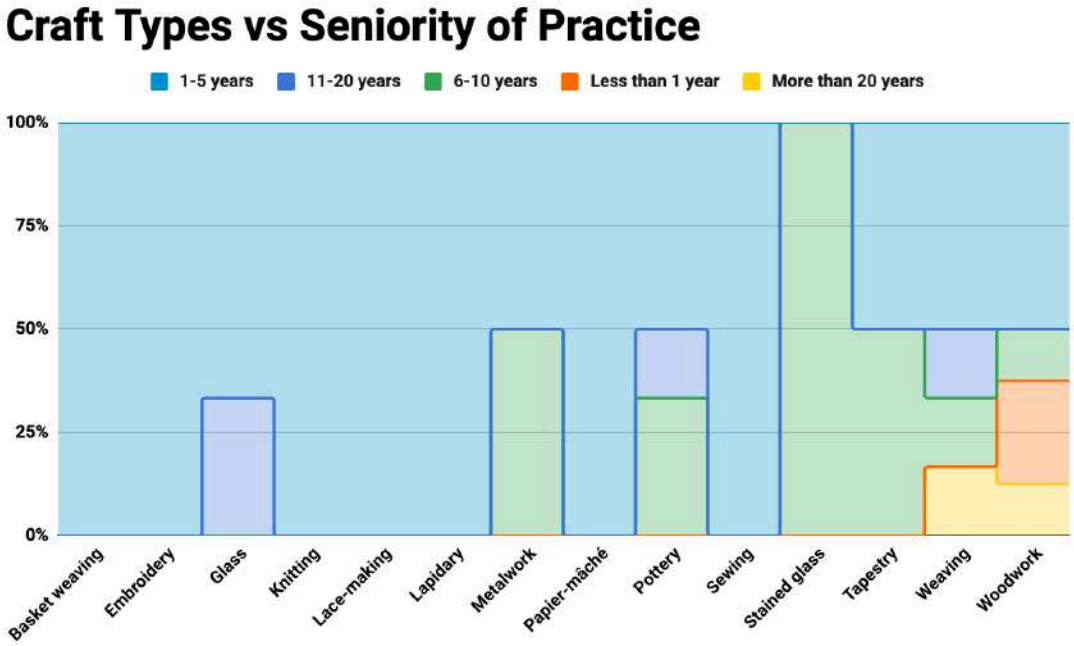

Figure 4.35 *Compound Area chart showcasing the distribution of Craft Types vs Seniority.*

Focus on Emerging Technologies

Analysing how the practices' use of emerging technologies is influenced by their demography and research field, we can highlight some clear trends and some more nuanced ones.

From a demographic standpoint, female practitioners show significant engagement with emerging technologies, especially 3d printing. Age emphasises even more obvious differences in technology adoption. Predominantly using these technologies, and especially 3d printing, the 25-34 age group shows a much more significant involvement compared to the other age groups. Though the engagement is lesser than that with 3d Printing, CNC Machines also draw considerable interest from the 25-34 and 35-44 age groups. Younger respondents (25-34) mostly utilise parametric modelling software. By contrast, artificial intelligence, augmented reality/virtual reality, bio lab tools, and generative software attract only younger age groups (25-34). Research fields also show different links with technology utilisation. Practitioners working on the "Development of New Sustainable Materials" make great use of 3d printing, implying a strong correspondence between this technology and material research oriented towards sustainability. By contrast, those creating new craft or artisanal processes use a more varied spectrum of technologies, especially CNC machines, although many do not use any specified technologies. Lastly, practitioners researching new applications for traditional crafts often use 3d printing and parametric modelling tools.

Finally, we can analyse how the perceived level of sustainability effort connects with various technologies. For example, practitioners utilising 3d printing mostly ranked their sustainability effort at the highest value of the scale (10). High sustainability scores also substantially correspond with parametric modelling software and CNC machines, suggesting users feel these tools are essential to obtain significant sustainability results in their design work. Figures 4.36-4.39 present the visualisation of the data utilised for this analysis.

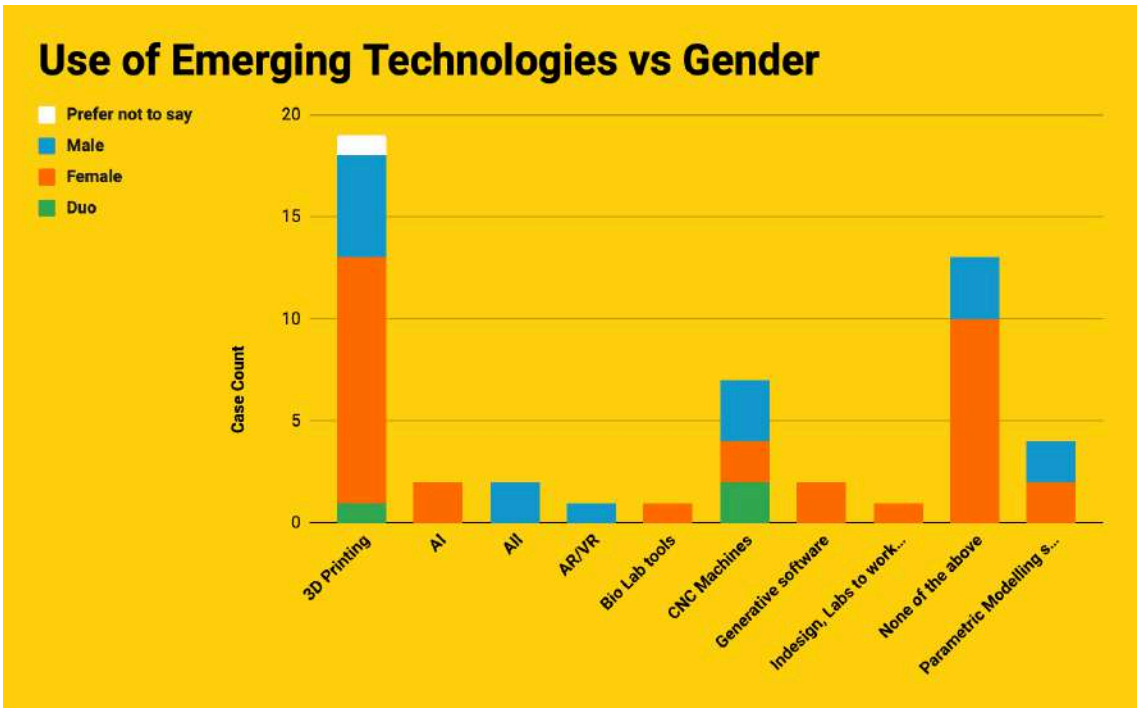

Figure 4.36 *Stacked Bar chart showcasing the distribution of Emerging Tech vs Gender.*

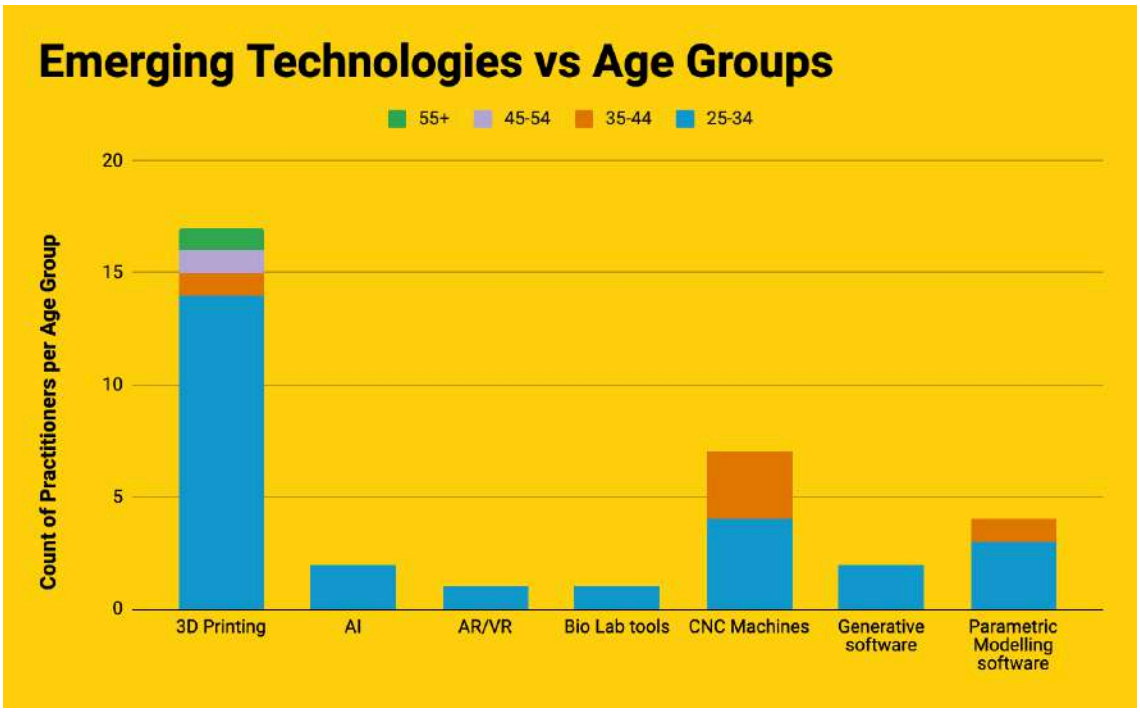

Figure 4.37 *Stacked Bar chart showcasing the distribution of Emerging Tech vs Age.*

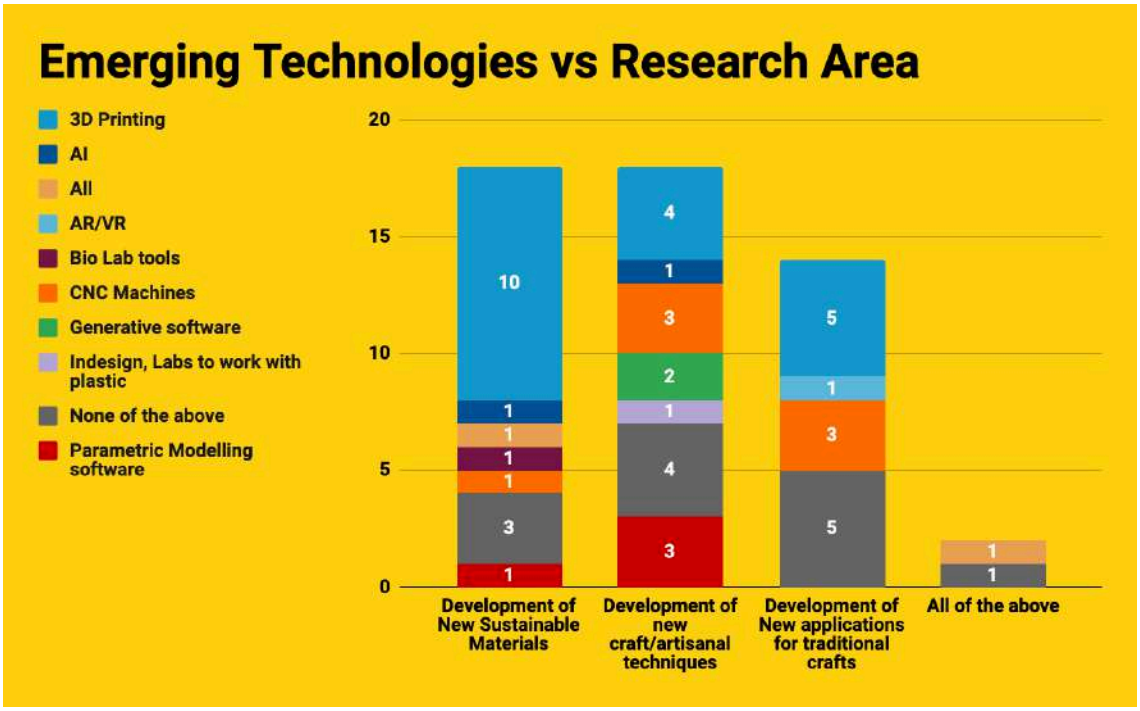

Figure 4.38 *Stacked Bar chart showcasing the distribution of Emerging Tech vs Research Area.*

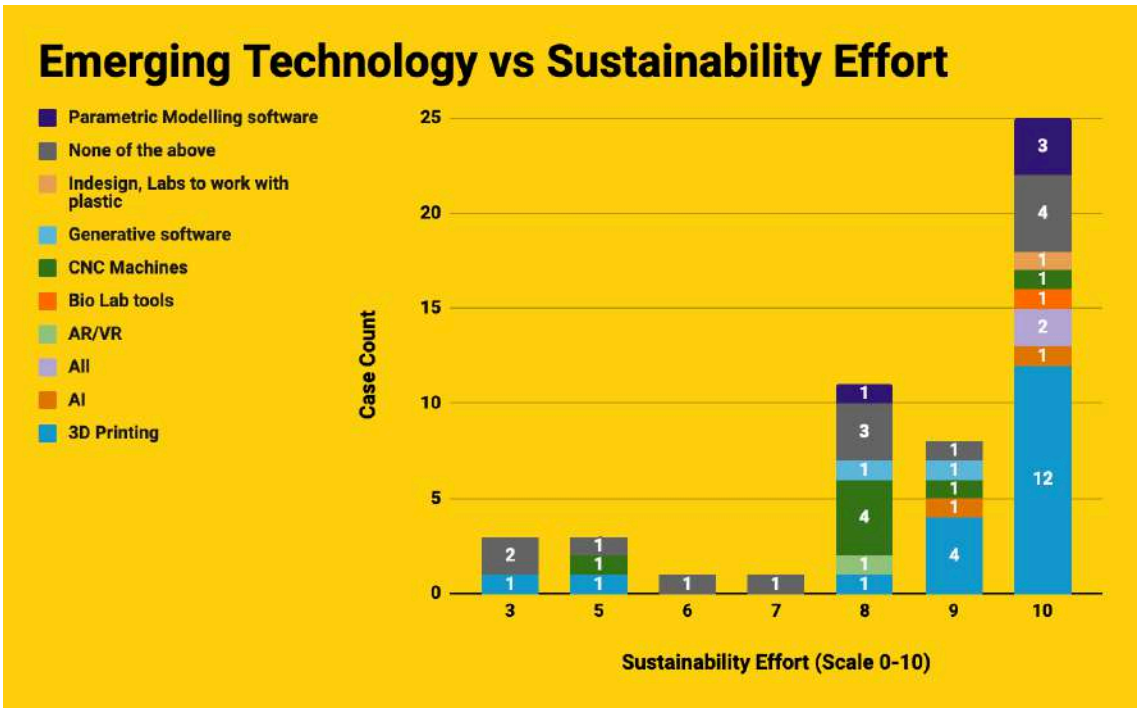

Figure 4.39 *Stacked Bar chart showcasing the distribution of Emerging Tech vs Sustainability.*

Focus on Relationship with Design Activism

Moving on to the analysis of how Design activism is influenced by other contextual elements, including location, gender, age, and research focus of the practitioners, we notice again interesting trends and discoveries. Geographically, practitioners spread across the countries included in the study show different but consistent involvement in design activism, especially at high-intensity levels (scores 8–10). At the highest intensity level (10/10), Austria, Hungary, Italy, Turkey, and the United Kingdom are heavily represented; score 8 features significant representation from practitioners in the United Kingdom and Spain. On the other hand, lower activism intensities (scores 0-3) have less representation, with scattered examples from Cyprus, Ukraine, Slovakia, the Czech Republic, Belgium, and Denmark. This distribution implies a wide acceptability of higher-intensity design activism in many national settings, possibly reflecting institutional or cultural circumstances supporting activism in these countries. From the point of view of gender distribution, women are the most significant group in practically all degrees of activism, but especially so at higher assessment scores (7 to 10). Though consistently lower in number than their female colleagues, male practitioners are also notably prevalent at moderate-to-high activism intensities, particularly at score 8. This pattern could imply that female practitioners are especially motivated to include activism in their design work.

Age-wise, we see that initial signs of rather strong activism intensity among younger practitioners (18-24) show a drop in mid-age groups (25-34 and 35-44). Interestingly, in older age groups–among those 55 and older–activism intensity rises once more to the highest documented levels.

Lastly, the practitioners' research focus clearly relates to the degree of design activism. Moderate activism scores (5-7) bring a more extensive research spectrum comprising both research on sustainable materials and on artisanal techniques. Research regarding the creation of new sustainable materials typically maps to a high activism assessment score (8-10), suggesting sustainability as a main motivator for activist-oriented design methods. Research on new applications of traditional craft, or new technology for new craft, also remains strongly represented across greater activism scores. Emerging only at greater activism intensities, intersectional cases—involving concurrent study across

several domains—indicate that practitioners chasing complex, multi-faceted research topics usually show higher activist interests. Figures 4.40-4.43 present the visualisation of this data.

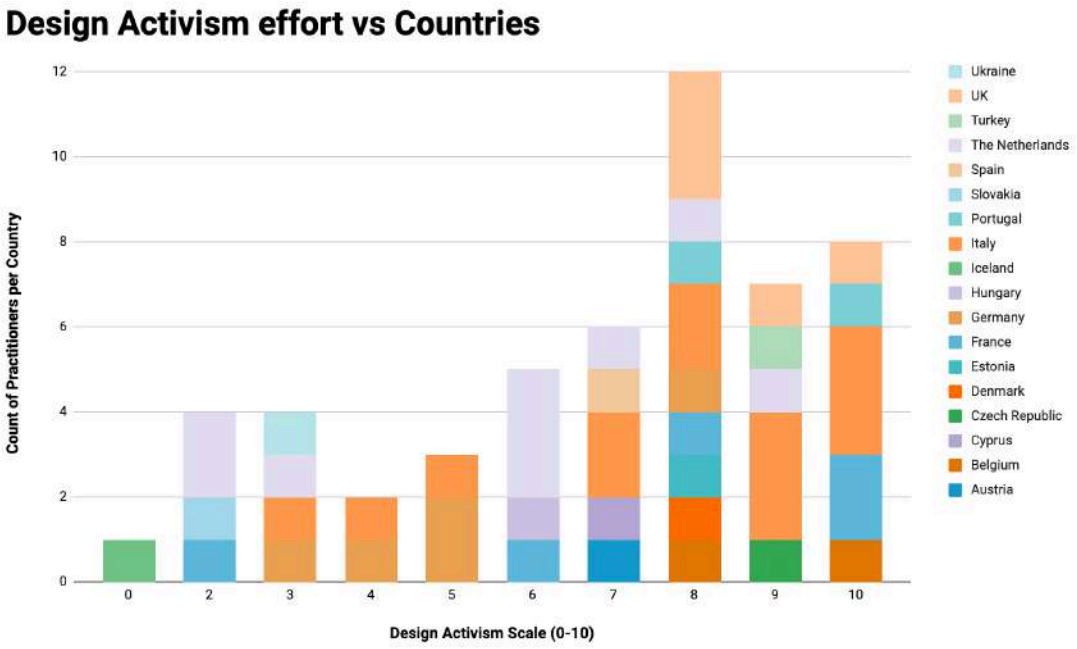

Figure 4.40 *Stacked Bar chart showcasing the distribution of Design Activism vs Countries.*

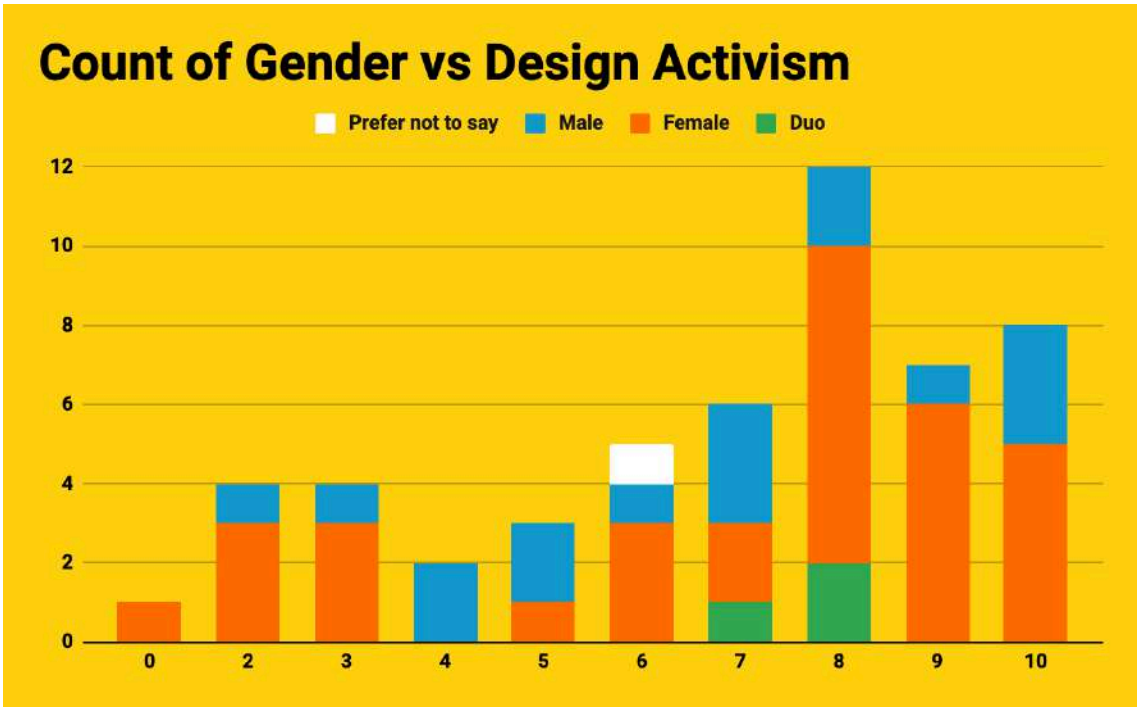

Figure 4.41 *Stacked Bar chart showcasing the distribution of Design Activism vs Gender.*

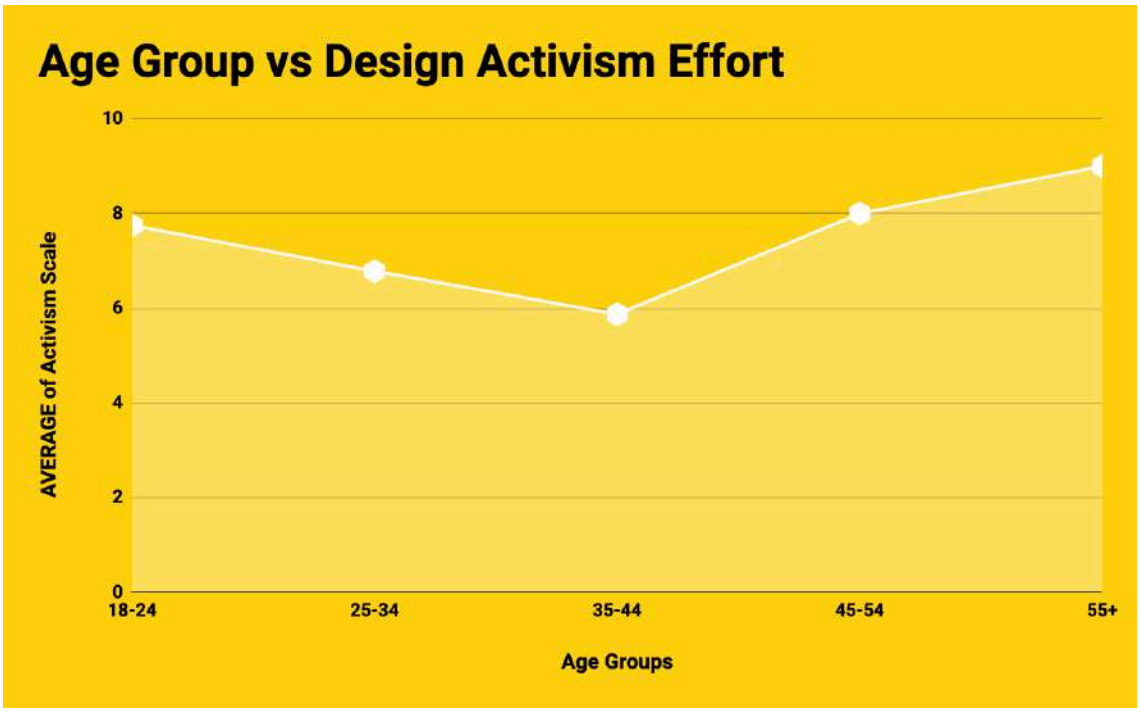

Figure 4.42 *Area sub-line chart showcasing the distribution of Design Activism vs Age.*

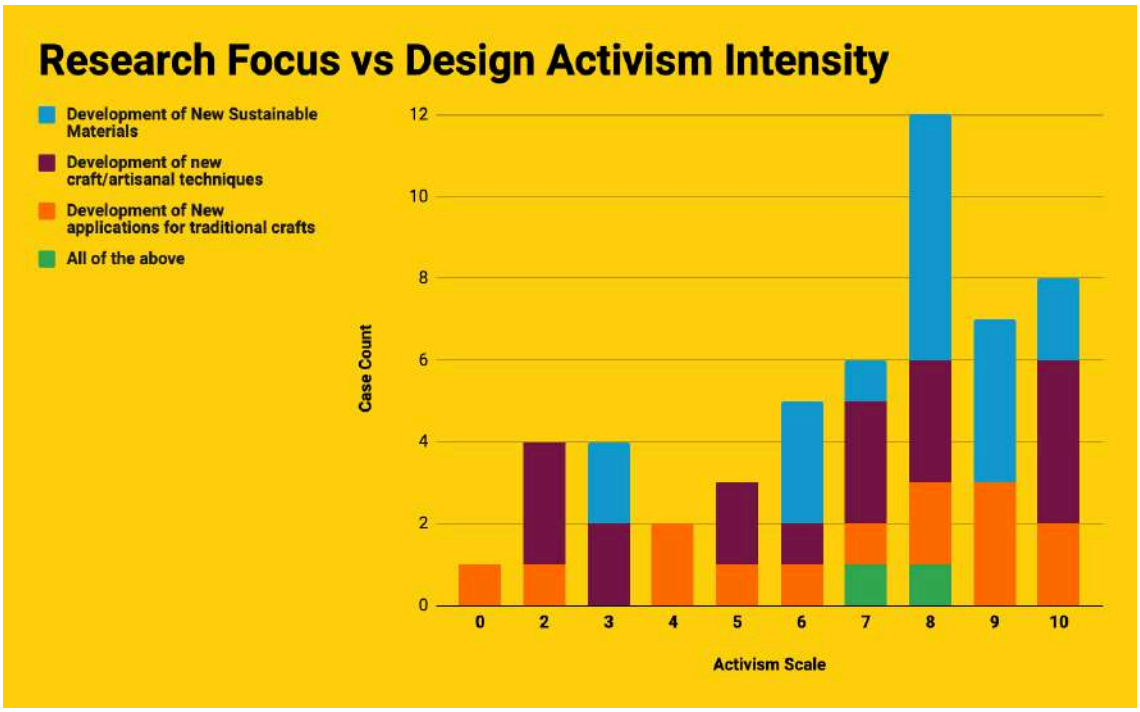

Figure 4.43 *Stacked Bar chart showcasing the distribution of Design Activism vs Research Focus.*

Lastly, we close this section with a **correlation analysis** exploring relationships between key variables of this analysis. The first examined relationship is between heritage influence and how practitioners self-identify on a design-craft identification scale. Data shows significant grouping at moderate-to-high degrees of craft identification, especially at scores between 3 and 5. These clusters highly correlate with high heritage influence ratings between 8 and 10, implying that practitioners who connect more closely with craft are more likely to feel more of the influence of local legacy inside their work.
The relationship between the identification with design or craft and the frequency of traditional technique use similarly reveals discernible patterns. Predominantly ranked between 6 and 10 in frequency, practitioners who identify mostly with craft or who are at intermediate levels (ratings from 3 to 5) show more regular use of traditional practices. This suggests a definite connection between regular use of traditional techniques and strong hybrid/craft identification. On the other hand, data shows a less evident correlation between the significance of the use of sustainable material and the longevity of practice. Despite a clustering of cases at lower (1-3 years) and higher (around 5 years) longevity levels, respondents consistently rated the importance of sustainable materials highly (7-10). Few intermediate instances with roughly four years of practice show somewhat lower sustainability relevance. The general trend shows, therefore, that sustainability relevance is consistently high independent of practitioners' years of experience. The study of heritage influence in relation to craft seniority reveals a consistent but non-linear pattern as well. Most of the answers have low seniority (0-5 years) while reporting high heritage influence (scores of 6-10). A lower minority of responders with 15 to 20 years of experience also express comparably strong heritage influence. The consistency across different seniority levels shows that heritage influence stays consistently relevant throughout practitioners' careers and does not much change according to the years of practice. At last, looking at the correlation between design activism efforts and sustainability reveals yet another intricate pattern. Respondents report consistently high sustainability efforts, predominantly between 8 and 10 on the scale. On the other hand, design activism effort shows more variation over the whole rating range from low to high. Notwithstanding this range, sustainability effort stays constantly high across all degrees of activism, implying that although both sustainability and activism are significant topics, there is no

obvious linear connection between the two in this specific sample. Figures 4.44-4.48 present the visualisation of the data utilised for this analysis.

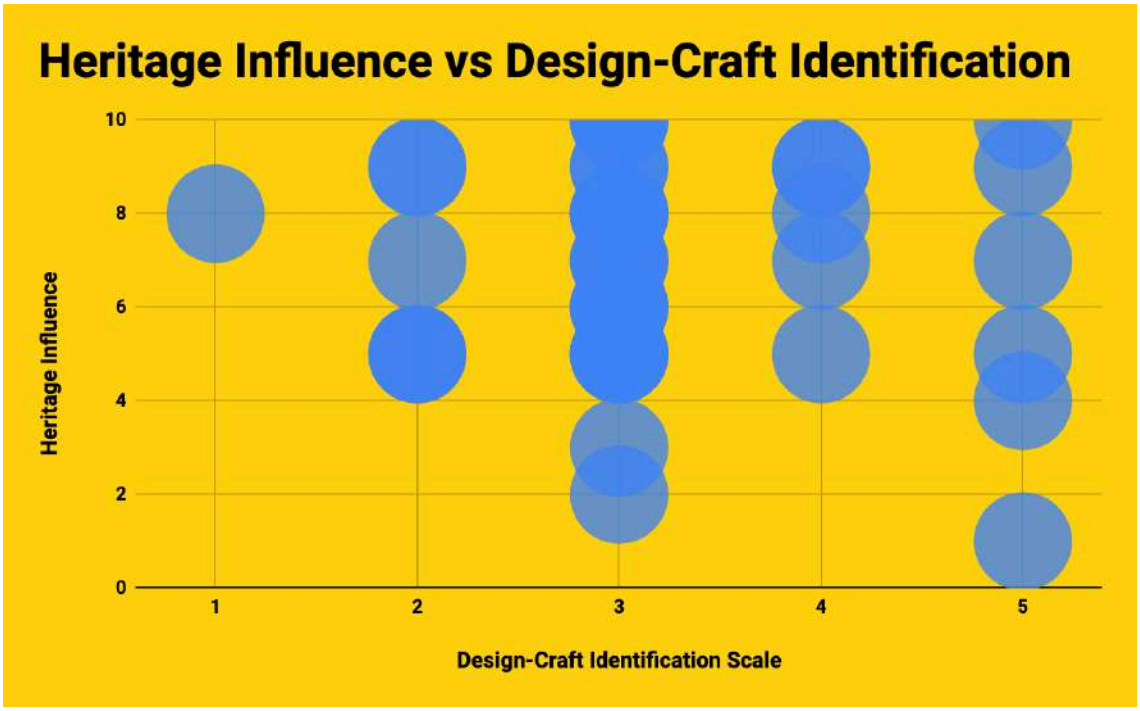

Figure 4.44 *Scatterplot showing correlation between Heritage Influence vs Self-Identification*

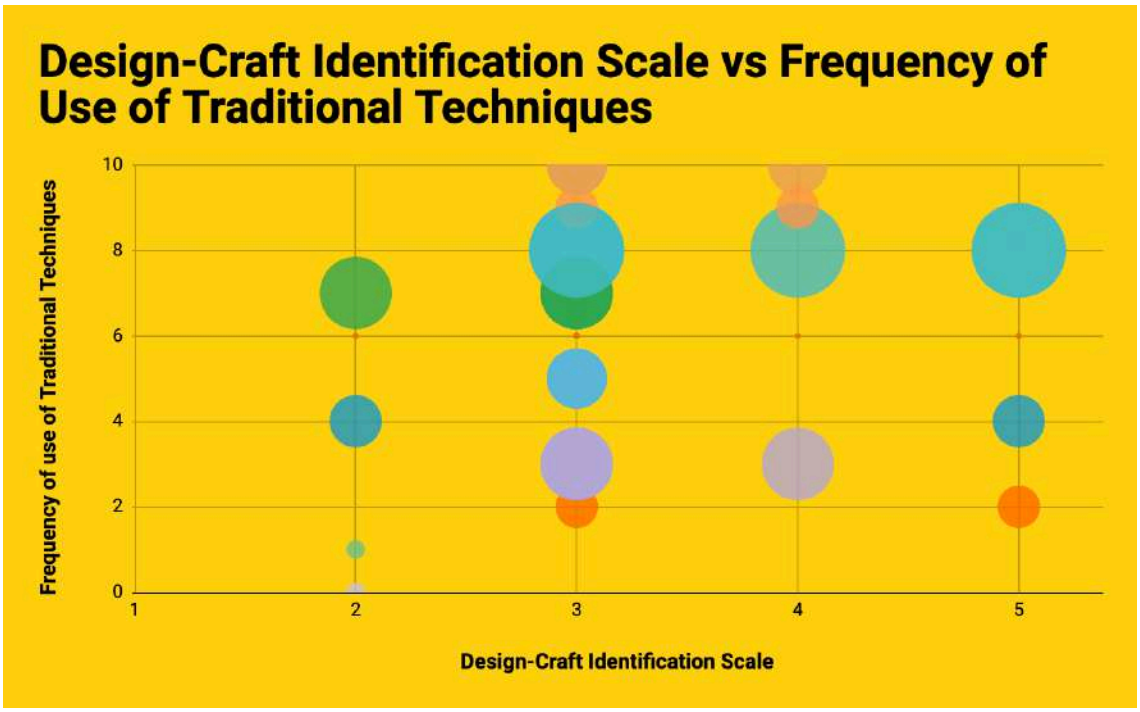

Figure 4.45 *Scatterplot correlation between the Frequency of Traditional techniques vs Design/Craft*

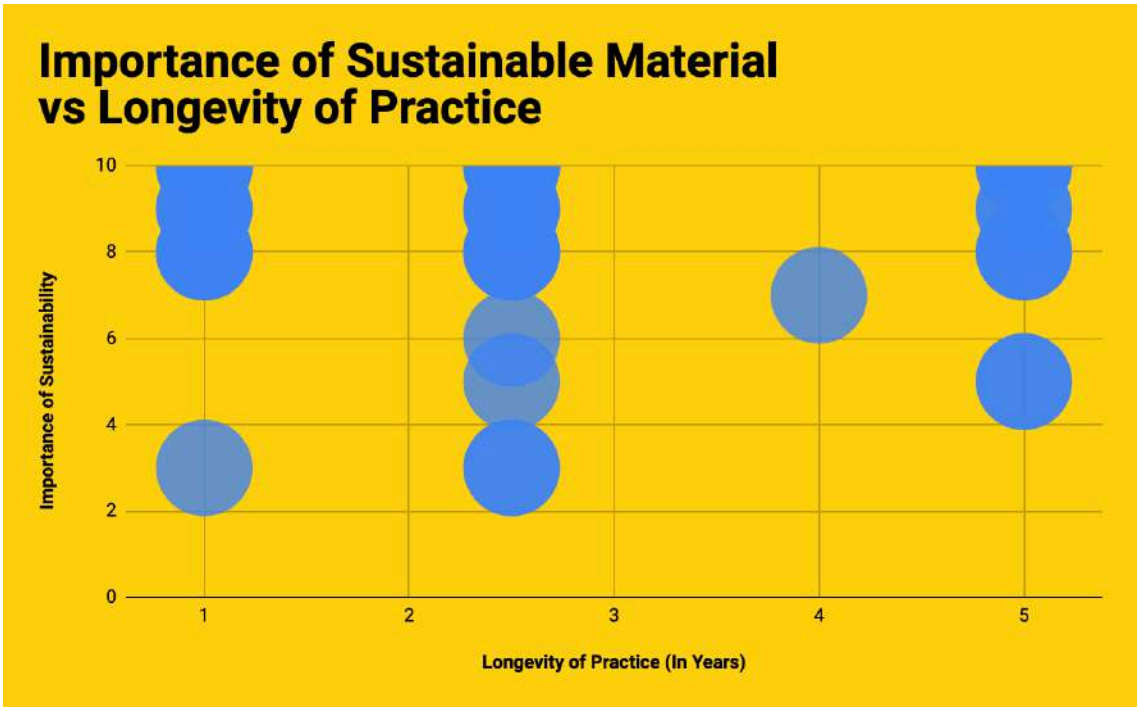

Figure 4.46 *Scatterplot showing correlation between Sustainability Effort vs Practice Longevity.*

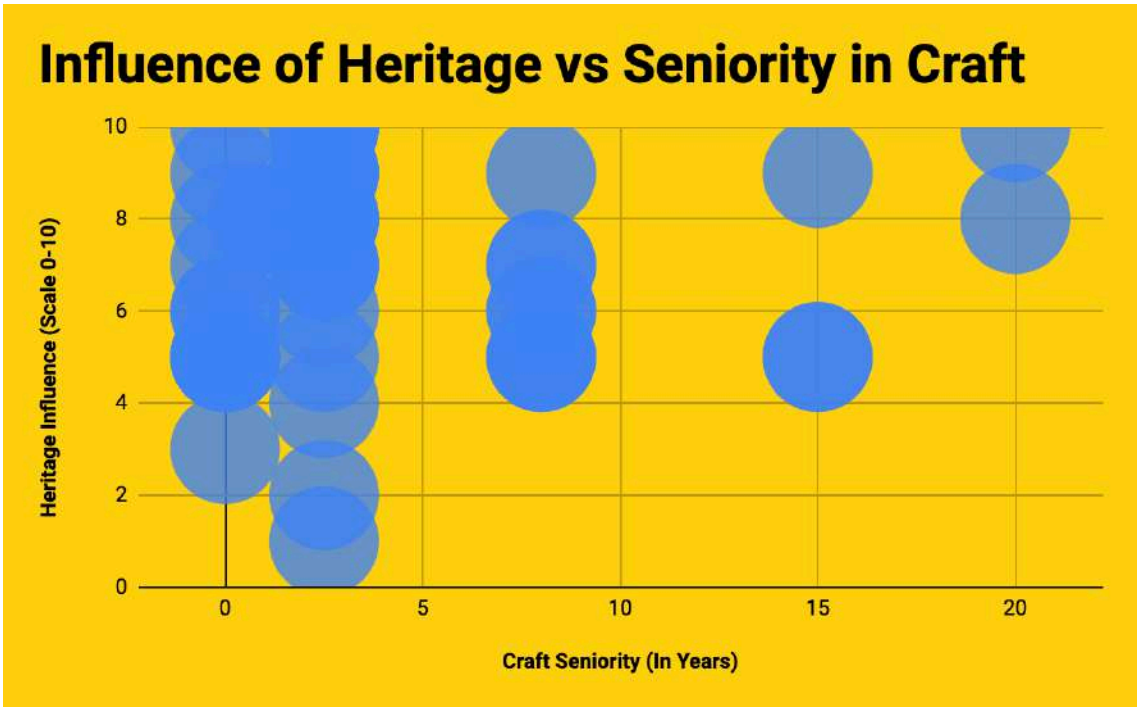

Figure 4.47 *Scatterplot showing correlation between Heritage Influence vs Craft Seniority*

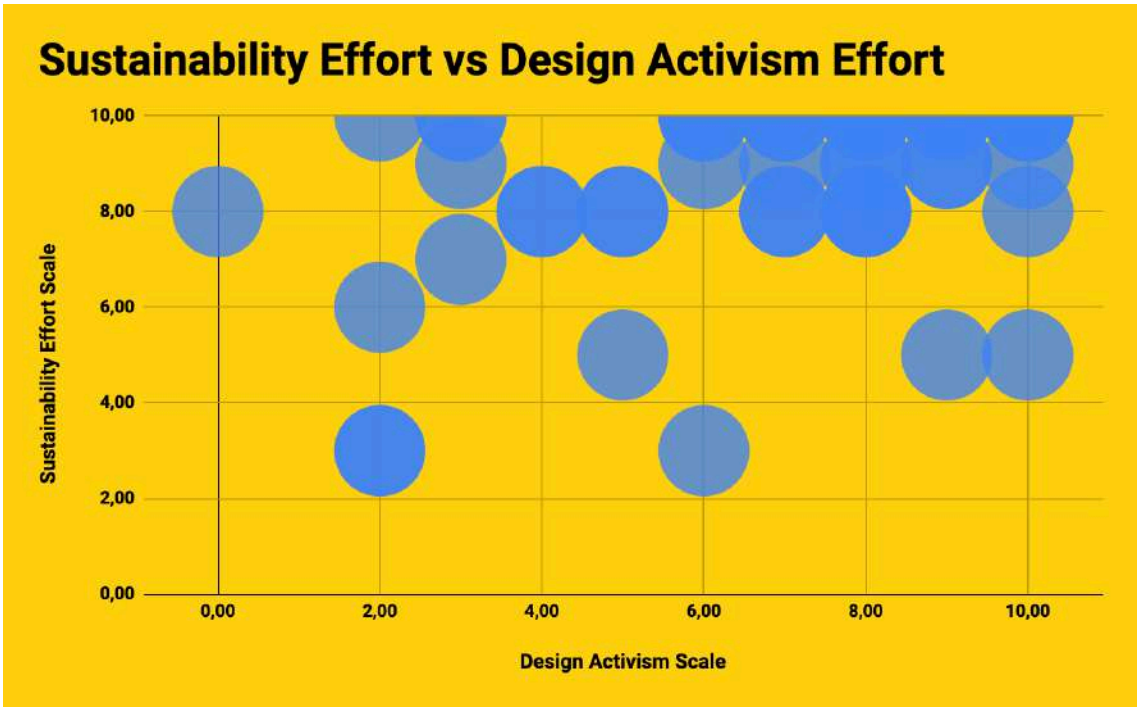

Figure 4.48 *Scatterplot showing correlation between Sustainability Effort vs Design Activism.*

2.2.2 Computational Linguistic Analysis of Open-ended Qs

In this paragraph, we introduce the analysis performed on the answers to the open-ended questions of the structured questionnaire, requiring the preliminary definition of an analytical strategy. The scope of this strategy was building an operational algorithm allowing us to comprehensive capture as much information as possible from a corpus of over three hundred and fifty long answers needing to be analysed in order to extrapolate general interpretations of the stance taken by hybrid practitioners on the subjects of their research focus, design mission and process as well as their relationship with material culture, emerging technologies and socio-environmental justice. As introduced in paragraph 3.3.3 of the Methodology Chapter, for each of these macro topics, we run Frequency and Sentiment Analysis, as well as Word Mining and Latent Dirichlet Allocation analysis using Python Natural Language Toolkit and the LLM DeepSeek to summarise the results of the analyses. Then, we generated flowcharts and word clouds visualisations using the extracted data as input for a Processing program developed for the scope in collaboration with the AI model GPT o3-mini-high, which specialises in code development. Here we present the results of this multi-faceted analysis clustered in macro-topics directly derived from the pillars of the research.

Theme 1: Design Mission

Frequency Analysis

The frequency analysis of the responses regarding the design mission uncovered many prevalent topics and keywords.

The most frequent word appearing in almost every response is "*sustainable*"/ “*sustainability*” —usually in expressions like "*sustainable design*", "*sustainable use of resources*", and "*sustainable transition*"—closely followed by the word "*material*" and its derivatives—such as "*material experimentation*", "*material culture*", "*material research*". "*Craft*" and "*heritage*", as well as "*Innovation*", "*research*", and "*conceptual*" are also highly frequent, just like “*experimental*”, "*eco-centric*", "*bio-inclusive*", and "*recycling*", which are also significantly frequent concepts.

Less frequent but still significant words are “*regenerative*”, “*circular”*, ”*storytelling*” and “*social impact*”.

Overall, respondents' design mission seems centred on sustainability, material experimentation, and the combination of traditional craft with contemporary innovation. Practitioners are not focused on producing aesthetically or functionally valid products, but primarily on encouraging a responsible and culturally grounded approach to design. Table 4.1 presents the result of the frequency analysis, highlighting the most frequent words and the word count. Figure 4.50 organises it in a word cloud.

Table 4.1 *Frequency Analysis performed on Answers regarding respondents' Design Mission.*

Word/Expression	Frequency
sustainability	15
material	12
craft	8
material culture	7
heritage	6
innovation	5
research	4
experimental	3
social impact	3
regenerative design	3
circular	2
eco-centric	2
conceptual storytelling	2
artisanal	2
recycling/reuse	1

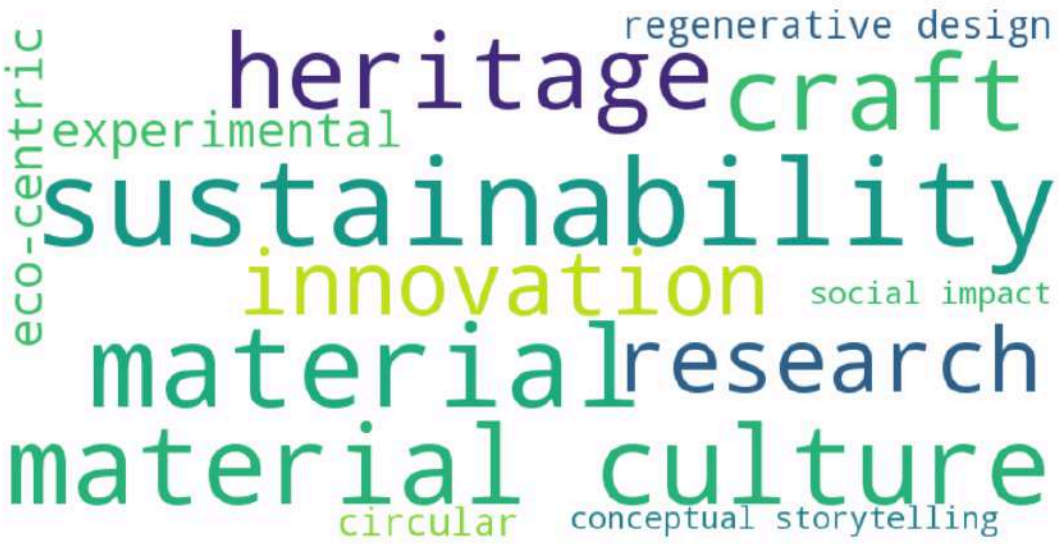

Figure 4.49 *Word cloud summarising frequency analysis on answers regarding Design Mission.*

Sentiment Analysis

The sentiment analysis shows a mostly positive tone of voice with a language reflecting a sense of hope and commitment, typical of a forward-looking mindset.

Words like "reimagining", "preserving", and "enabling" are often associated with an enthusiastic engagement with concepts like material experimentation, crafts and heritage. Although some answers recognise obstacles considered intrinsic in the complexity of the pursue of post-industrial paradigms, or the limitations of combining different methods, most of these moments of critical thinking are presented in an optimistic perspective.

Latent Dirichlet Allocation (LDA) Analysis

The LDA analysis of the Design Mission responses reveals four interconnected recurrent topics.

The first topic, "Sustainability & Material Experimentation," is signified by keywords like "*sustainability*", "*materials*", and "*experimentation*", reflecting a commitment to environmentally conscious design and the innovative reuse or transformation of materials. Topic 2, "Storytelling & Social Impact", is defined by terms like "*storytelling*", "*narrative*", and "*social*", indicating that many practitioners see their work as a means to spark conversations and create a meaningful societal impact by embedding cultural and historical narratives in their designs. Topic 3, "Innovation &

Reinterpretation of Tradition", is highlighted by keywords including "*innovation*", "*reinterpretation*", "*traditional*", and "*craft*", demonstrating the desire to blend emerging technologies with traditional practices to create a hybrid design language. Finally, Topic 4, "Aesthetic Expression & Functional Design", is centred on the balance between aesthetics and utility, as practitioners strive to develop projects that remain valid while drawing on material culture and conceptual rigour. Collectively, these topics illustrate that the Design Mission is deeply rooted in a commitment to sustainability, narrative-driven impact, innovative adaptation of traditional techniques, and the creation of aesthetically and functionally rich design solutions. Table 4.2 presents the four topics identified by the LDA analysis, while Figure 4.51 showcases the logic network connecting the four topics.

Table 4.2 *LDA Analysis: key topics, keywords and summary.*

Topic ID	Keywords	Thematic Summary
Topic 1: Sustainability & Material Experimentation	sustainability, sustainable, materials, experimentation, eco-centric, valorisation, recycling	Emphasizes a strong focus on sustainable practices and the experimental exploration of materials, highlighting the drive to transform and repurpose resources in environmentally responsible ways.
Topic 2: Storytelling & Social Impact	storytelling, narrative, social, impact, meaningful, conversation, cultural, heritage, purpose	Highlights the importance of using design as a medium for conveying narratives that address societal issues, foster emotional connections, and promote cultural values.
Topic 3: Innovation & Reinterpretation of Tradition	innovation, new approaches, reinterpretation, traditional, craft, digital, fusion, experimentation	Captures the dynamic interplay between modern innovation and traditional craft techniques, showing how practitioners seek to push boundaries while honoring heritage.
Topic 4: Aesthetic Expression & Functional Design	design, form, aesthetic, material culture, recognizability, functionality, beautiful, conceptual	Focuses on the drive to create designs that are not only visually compelling but also functionally meaningful, blending technical precision with creative expression.

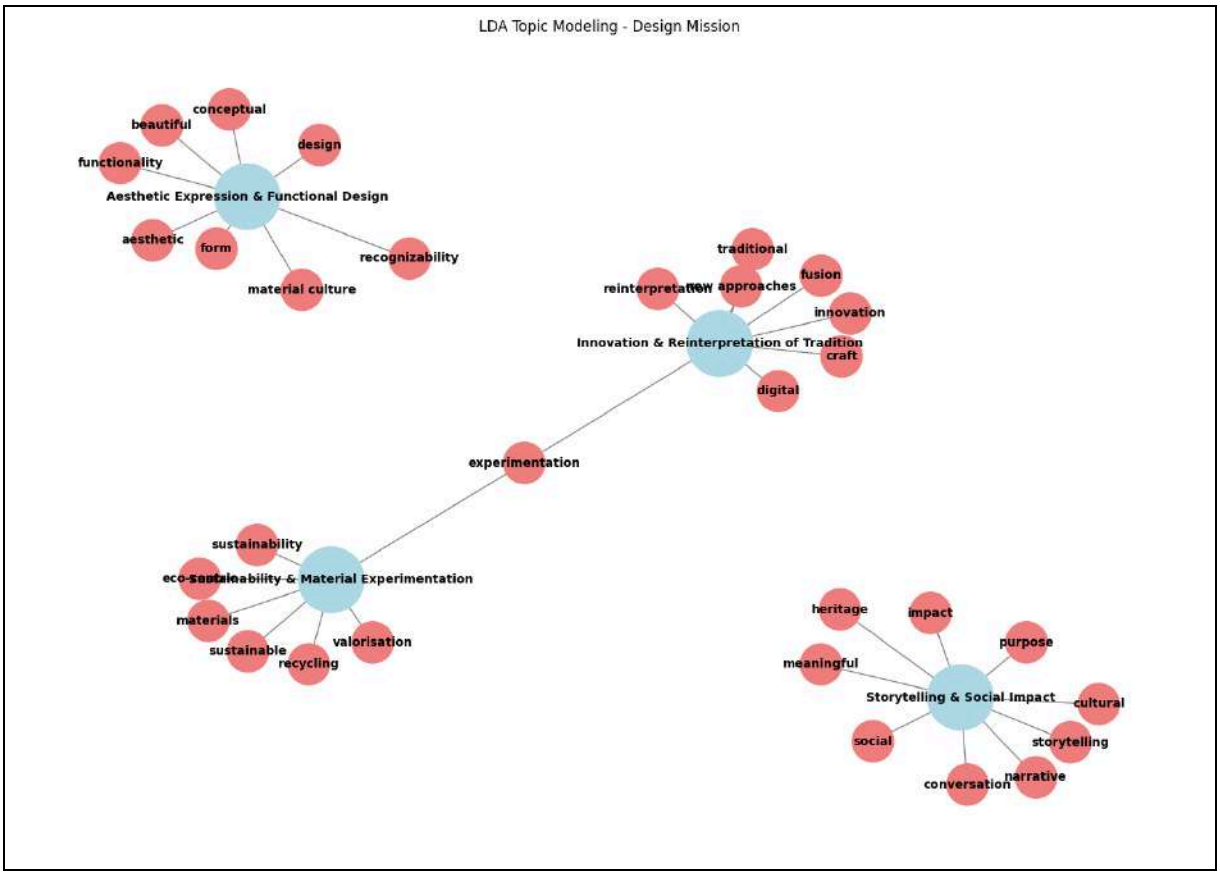

Figure 4.50 *LDA Analysis: logic network of topics from Design Mission responses.*

Theme 2: Research Focus

Frequency Analysis

The frequency analysis performed on answers regarding the research focus of the practitioners is consistent and often overlaps with the frequency analysis conducted on the answers regarding the research mission. Specifically, "*sustainability*" and "*sustainable*" are still the most frequent concepts (mentioned 15 times each). Also, the word "*materials*" maintains its centrality, being noted 13 times, just like "*innovation*" and "*experimental*", which appear 9 and 7 times respectively. Additionally, recurrent mentions of "*waste*", "*research*", "*traditional*", and "*heritage*" (with frequencies ranging from 6 to 8) still suggest that respondents are aware of the need to bridge traditional craft values with contemporary sustainable and technological practices. Lastly, albeit less frequently, words like "*recycling*", "*circular*", and "*bio-based*" are still present. This initial analysis indicates that sustainability, material experimentation, crafts and innovative design approaches are central to the

research focus. Table 4.3 presents the result of the frequency analysis, highlighting the most frequent words and the word count. Figure 4.52 illustrates the results organised in a word cloud.

Table 4.3 *Frequency Analysis performed on Answers regarding respondents' Research Focus.*

Word/Expression	Frequency
design	20
sustainability	15
sustainable	15
materials	13
innovation	9
waste	8
research	7
traditional	6
heritage	6
experimental	7
transformation	5
reuse	5
recycling	4
circular	4
bio-based	3
digital	3
regeneration	2
inclusive	2
eco-centric	2
unconventional	2

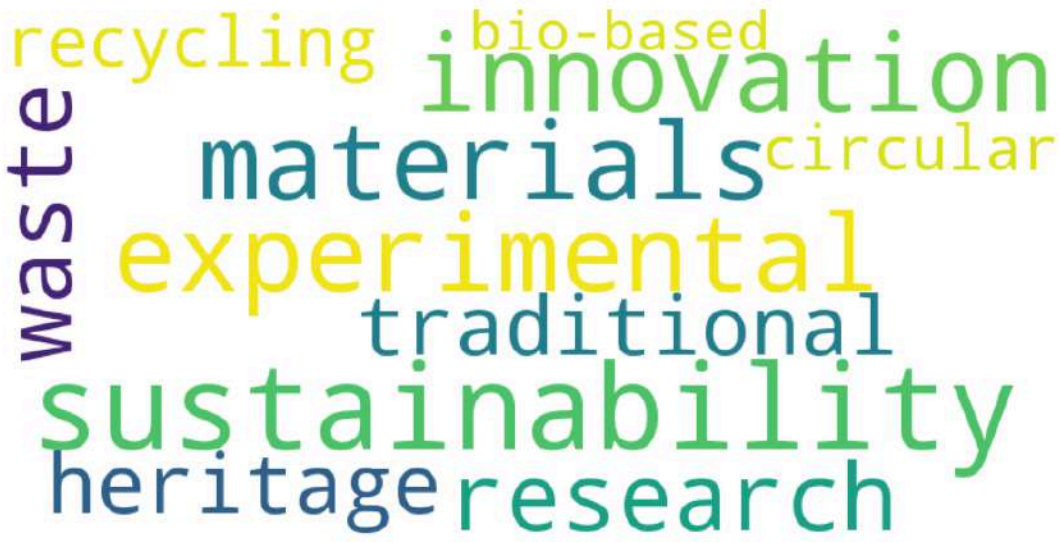

Figure 4.51 *Word cloud summarising frequency analysis on answers on Research Focus.*

Sentiment Analysis

Also, the sentiment analysis of the Research Focus responses is consistent with that of the Design mission. This analysis shows a mostly positive tone of voice with a language reflecting a sense of a forward-looking and hopeful mindset. The narrative is imbued with a sense of creative determination, as participants emphasise the transformative potential of reusing and upcycling waste, and exploring new material combinations and processes.

Although some answers recognise obstacles and limitations, the prevailing sentiment is one of optimism and commitment to creating meaningful, sustainable, and culturally significant design solutions.

Latent Dirichlet Allocation (LDA) Analysis

The LDA analysis clusters the responses on the Research focus into four topics.

The first topic, titled "Sustainable Innovation & Material Transformation", is defined by keywords such as "sustainability", "materials", "innovation," and "recycling".

The second topic, titled "Research-Driven Experimentation & Inquiry", is signified by terms like "research," "experimentation," and "new possibilities", and it is centred on the iterative and investigative aspects of design.

Topic 3, titled "Fusion of Tradition and Innovation", captures the nuanced balance between honouring traditional crafts and reinterpreting them using emerging technologies; keywords such as "traditional," "heritage," "craft," and "reinterpretation" underline this synthesis.
Finally, Topic 4, titled "Social Impact and Emotional Expression", underscores the aspiration to create designs that carry meaningful narratives and drive positive social change, as reflected by terms like "change", "impact", "storytelling", and "responsible."
Table 4.4 presents the four topics identified by the LDA analysis, while Figure 4.54 showcases the logic network connecting the four topics.

Table 4.4 *LDA Analysis: key topics, keywords and summary.*

Topic ID	Keywords	Thematic Summary
Topic 1: Sustainable Innovation & Material Transformation	sustainability, sustainable, materials, innovation, recycling, upcycling, raw, waste	Focuses on how practitioners aim to transform waste and raw materials into innovative, sustainable design solutions.
Topic 2: Research-Driven Experimentation & Inquiry	research, experimentation, questioning, process, design, new possibilities, unconventional	Captures the emphasis on rigorous research and experimental approaches, reflecting a drive to explore uncharted creative territories.
Topic 3: Fusion of Tradition and Innovation	traditional, heritage, craft, reinterpretation, fusion, digital, weaving, techniques	Highlights the interplay between preserving traditional craft methods and integrating modern digital techniques in design.
Topic 4: Social Impact and Emotional Expression	change, impact, responsible, storytelling, narrative, meaningful, social, emotional	Emphasizes the desire to create designs that not only innovate materially but also evoke emotional responses and spark social change.

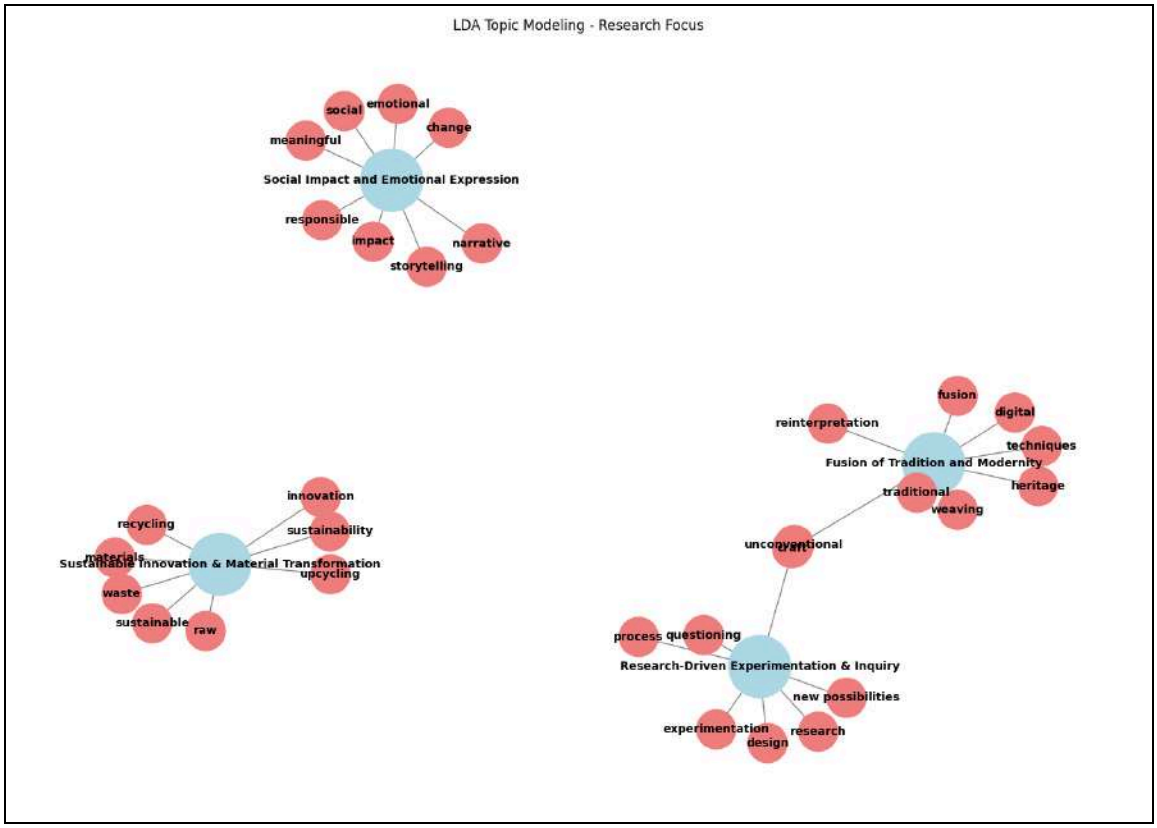

Figure 4.52 *LDA Analysis: logic network of topics from Research Focus responses.*

Theme 3: Relationship with Heritage Craftmanship and Material Culture

Frequency Analysis

The frequency analysis of the open-ended responses regarding the relationship with heritage craftmanship and material culture highlights a few key themes.

First of all, the word "*local*" and its derivative is most frequent concept, appearing over 50 times, and signifying the importance of local context and regional specificity in the respondents' practice.

Equally significant is the recurrence of the word “*craft*”, together its derivatives like “*traditional craft*”, which emerges 18 times. Similar significance has also the word “*tradition*” which together with "craft" is associated with a commitment to rediscover traditional practices. “*Heritage*” is mentioned 15 times, and “material culture” appears 17 times and they frequently appear next to words live “*preservation*” (8 times) and "*revitalisation*" (10 times) highlight an approach blending innovation and tradition.

Other recurring expressions, such as "*collaboration/co-design*" (7 times), reveal that many practitioners are actively seeking ways to adapt traditional knowledge through collaborative efforts. Table 4.5 presents the result of the frequency analysis highlighting the most frequent words and the word count. Figure 4.54 illustrates the results organised in a word cloud.

Table 4.5 *Frequency Analysis performed on Answers regarding Relationship with Heritage.*

Word/Expression	**Frequency**
Local craft/traditional craft	52
local	40
materials	32
heritage	27
cultural	22
community	18
design	16
preservation	14
collaboration/co-design	14
research	14
knowledge	13
revitalization	12
tradition	12
techniques	10
material culture	10
innovation	9
identity	8
sustainability	6

Figure 4.53 *Word cloud summarising frequency of words on Relationship with Heritage.*

Sentiment Analysis

The sentiment analysis regarding the relationship with heritage and material culture indicates a predominantly reflective tone with respondents strongly expressing their commitment toward heritage craftmanship in a positively asserting tone.

While some responses are posed in a neutral tone, the overall language is characterised by a sense of respect for cultural heritage and an optimistic outlook on the potential for co-design and collaborative practices to sustain and reimagine heritage which stress a shared belief in the value of blending local craft knowledge with emerging technologies.

Latent Dirichlet Allocation (LDA) Analysis

The LDA analysis reveals again four distinct topics within the practitioners' narratives on their relationship with heritage and material culture. The first topic, "Preservation & Local Engagement", is characterised by an emphasis on the close relationship with locally relevant solutions, heritage, and collaboration.

The second topic, "Traditional Craft & Innovation", presents an interest in the revitalisation of traditional techniques through research and technological integration.

Topic 3, “Cultural Identity & Inspiration”, highlights how cultural heritage and traditional expressions serve as vital sources of inspiration and identity.

Lastly, Topic 4, “Material Exploration & Experimentation”, presents the nature of the interaction characteristic of a subgroup of practitioners who put experimentation with raw materials to achieve a sense of design sustainability at the centre of their practice.

Together, these topics offer a nuanced view of how practitioners navigate the balance between honoring the past and pushing the boundaries of contemporary design, firmly anchoring their practices in both tradition and forward-thinking experimentation.

Table 4.6 presents the four topics identified by the LDA analysis, while Figure 4.55 showcases the logic network connecting the four topics.

Table 4.6 *LDA Analysis: key topics, keywords and summary.*

Topic ID	Keywords (Most Significant)	Thematic Summary
Topic 1: Preservation & Local Engagement	local, heritage, preservation, community, tradition, crafts, collaboration, knowledge	Focuses on the respondents’ commitment to engaging with local contexts and preserving traditional crafts.
Topic 2: Traditional Craft & Innovation	traditional, craft, techniques, research, innovation, reinterpret, process, digital	Captures the dual emphasis on traditional methods and the drive to innovate and reinterpret them.
Topic 3: Cultural Identity & Inspiration	cultural, inspiration, identity, weaving, narrative, roots, expression, artisanal	Highlights the role of cultural heritage as a source of inspiration and identity, with a particular nod to weaving and artisanal practices.
Topic 4: Material Exploration & Experimentation	materials, experimentation, modern, process, sustainable, raw, exploration, adaptation	Emphasises the exploration of materials and processes, focusing on experimentation and the integration of sustainability.

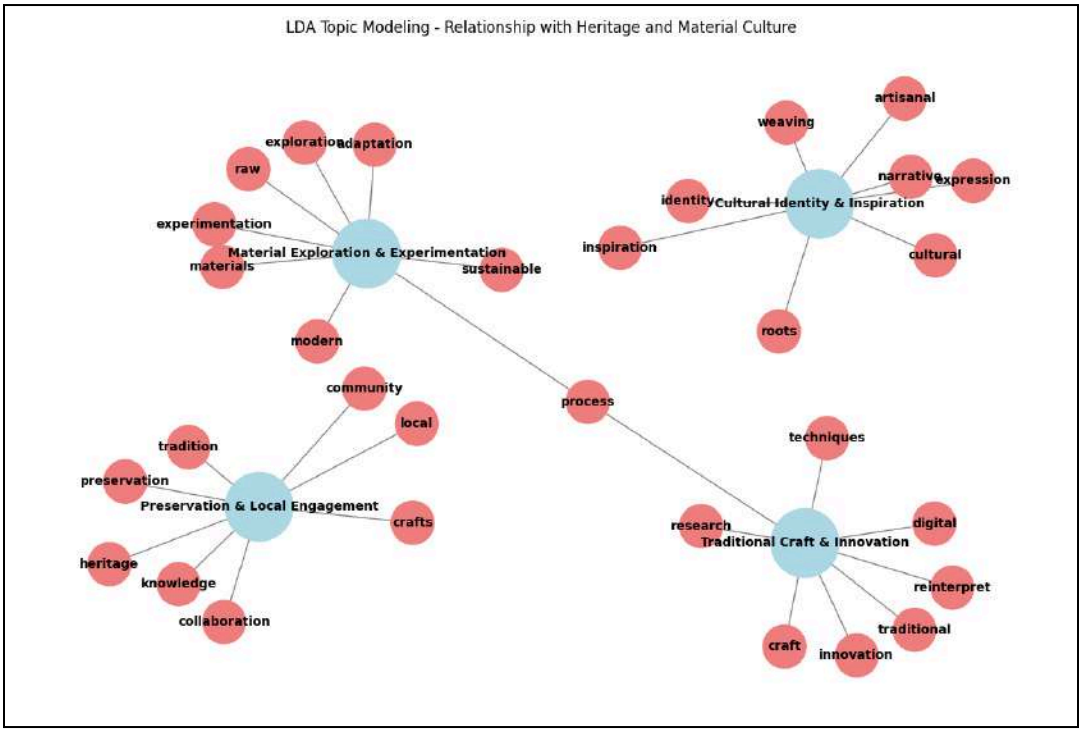

Figure 4.54 *LDA Analysis: logic network of topics from Relationship with Heritage responses.*

Theme 4: Role of Emerging Technologies

Frequency Analysis

The frequency analysis of the responses regarding the Role of Emerging Technologies reveals a pronounced emphasis on the integration of emerging technologies within traditional practices. Removed the obvious word "technology", the most frequent term is “3D printing” which is mentioned 20 times, highlighting it as a key method for the hybridisation of these practices.
"3D printing" is closely followed by "CNC", “digital” (18 times) and “innovation” with its variant “innovative” (18 times). Interestingly, these are frequently followed by “tools” (12 times) and “process” (15 times) and they sometimes appear in sentences also including the words “traditional” and "craft". Such frequent combinations could suggest a scenario in which practitioners might see technology as a power-up for traditional practices.

Lastly less frequent but still present terms such as “fabrication,” “parametric”, and “biomaterials” suggest more nuances in the integration of emerging technologies that go beyond 3D printing. Table 4.7 presents the result of the frequency analysis highlighting the most frequent words and the wordcount. Figure 4.56 illustrates the results organised in a word cloud.

Table 4.7 *Frequency Analysis performed on Answers regarding Role of Emerging Technologies.*

Word/Expression	Frequency
technology	25
3D printing	20
digital	18
innovation / innovative	18
design	22
tools	12
process	15
traditional	10
fabrication	7
parametric	5
software	6
biomaterials	5

Figure 4.55 *Word cloud summarising frequency of words on the Role of Emerging Technologies*

Sentiment Analysis

The sentiment analysis regarding the role of emerging technologies in hybrid practices indicates a predominantly pragmatic tone. Respondents strongly express their excitement toward the opportunities provided by 3D printing and parametric design, often described as catalysts for innovation. While some responses acknowledge the limitations and challenges relevant to this aspect—such as the steep learning curve of complex software or the challenges of balancing digital processes with traditional craftsmanship— the overall language is characterised by a sense of optimism for the potential of technology in enhancing efficiency, precision, and the scope of hybrid creative disciplines.

Latent Dirichlet Allocation (LDA) Analysis

The LDA analysis reveals again four distinct topics within the practitioners' narratives on the role of emerging technology in their hybrid creative practices.

The first topic, "Digital Fabrication & 3D Printing", is characterised by an emphasis on the influence of digital fabrication technologies, which allow fast prototyping and integration.

The second topic, “Hybrid Craft & Technology”, presents the tendency to blend new technologies and traditional crafts.

Topic 3, “Challenges & Limitations”, highlights the difficulties in technological adoption .

Lastly, Topic 4, “Sustainability & Material Innovation”, presents emphasises how innovative endeavours stem from a pressure coming from sustainability concerns.

Together, these topics offer an articulated perspective of how emerging technologies are used both as strong tools for creativity and innovation and as domains that need careful management to balance with conventional approaches and sustainable objectives.

Table 4.8 presents the four topics identified by the LDA analysis, while Figure 4.57 showcases the logic network connecting the four topics.

Table 4.8 *LDA Analysis: key topics, keywords and summary.*

Topic ID	Keywords (Most Significant)	Thematic Summary
Topic 1: Digital Fabrication & 3D Printing	3D printing, digital, visualization, 3D modeling, parametric	Digital fabrication tools and processes, emphasizing 3D printing, visualisation, and digital modeling as key enablers for rapid prototyping and design exploration.
Topic 2: Hybrid Craft & Technology	traditional, craft, manual, tools, hybrid, balance, innovation	Highlights the integration of traditional craft methods with modern digital technologies, stressing a hybrid approach that balances manual techniques with technological innovation.
Topic 3: Challenges & Limitations	challenges, cost, limitations, complexity, automation, disadvantage	Addresses the practical challenges associated with adopting emerging technologies, including high costs, complexity, and the drawbacks of excessive automation.
Topic 4: Sustainability & Material Innovation	sustainable, biomaterials, research, advanced, raw, innovation	Centers on the application of technology for sustainable design practices, including the development of bio-based materials and innovative production methods.

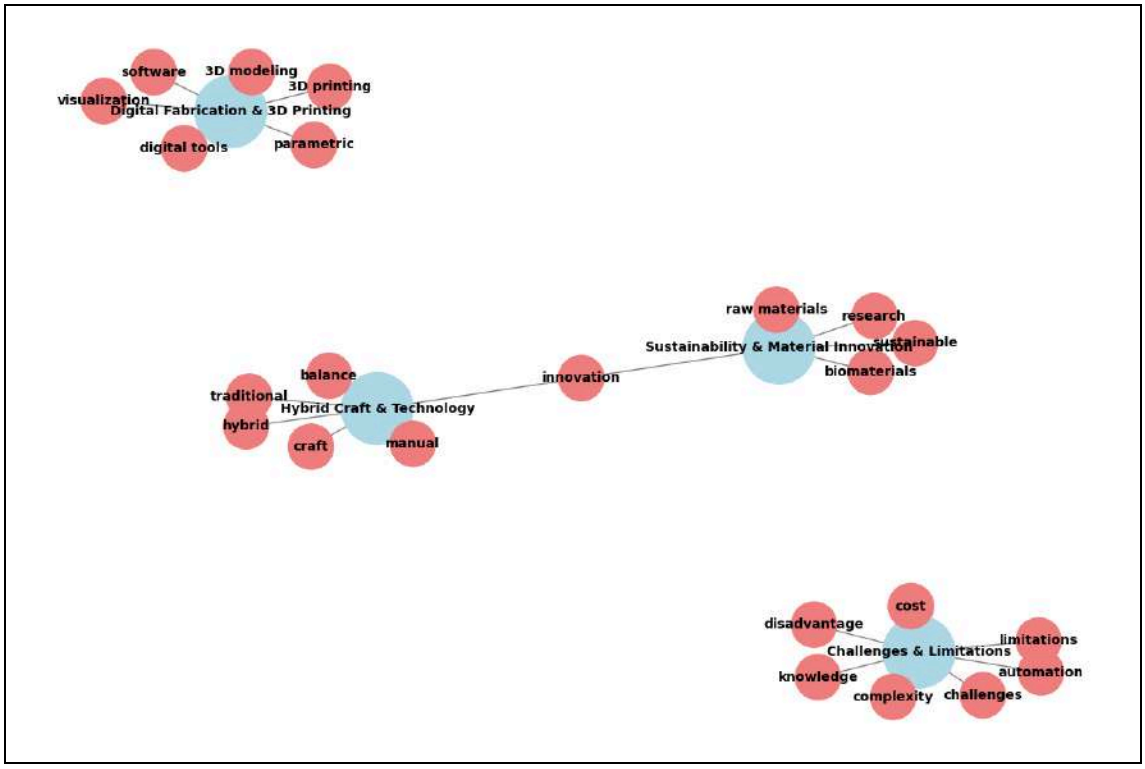

Figure 4.56 *LDA Analysis: logic network of topics from Emerging Technology responses.*

Theme 5: Design Activism Focus

Frequency Analysis

The frequency analysis of the Design Activism responses immediately shows a prominence for the word "*sustainability*" (and its derivative "*sustainable*") which highlights a strong focus on environmental activism. Additionally, other frequently mentioned words include "*materials*" (12 times), and "*political/politics*" (10 times), confirms that the political activism game is often disputed through ecological considerations. Other terms like "*change*" (8 times), "*craft*" and "*local*" (each 7 times), "*innovation/innovative*", "*research*" (each 6 times), and "*environmental*" (5 times), which are often found in proximity, build a narrative which seems founded on the interplay of creative, cultural, and sustainable values. Lower-frequency terms like "*recycling/upcycling*" and "*responsibility*" (each 4 times), as well as "*heritage*" and "*inclusive*" (each 3 times), provide supplementary insights into the broader context of design activism. Table 4.9 presents the result of the frequency analysis highlighting the most frequent words and the wordcount. Figure 4.58 illustrates the results organised in a word cloud.

Table 4.9 *Frequency Analysis performed on Answers regarding Role of Design Activism.*

Word/Expression	Frequency
activism	15
sustainable/sustainability	18
materials	12
political/politics	10
change	8
craft	7
local	7
innovation/innovative	6
research	6
environmental	5
recycling/upcycling	4
responsibility	4
heritage	3
inclusive	3

Figure 4.57 *Word cloud summarising frequency of words on the Role of Design Activism.*

Sentiment Analysis

The responses' sentiment analysis shows an introspective and somewhat positive tone. Words like "activism", and "innovation" are usually used in an approving context, with many responders showing great commitment to the concept of design activism. So, in general, the resulting narrative is hopeful with respondents expressing faith in design's ability to bring about change.

On the other hand, a smaller subset of respondents take a more neutral tone, with some respondents claiming that politics has little significance in their work.

Latent Dirichlet Allocation (LDA) Analysis

The LDA analysis shows four distinct topics within the practitioners' narratives on their relationship with Design Activism. The first topic, "Activism & Political Engagement", gathers the perspectives of many practitioners who explicitly view design as a platform for political play and social transformation. In the second topic, "Sustainable Practice & Innovation", we see that practitioners consider environmentally responsible practices as fundamental for the achievement of real socio-environmental change.

Topic 3, “Collaborative Creativity & Expression”, highlights the practice of collective creativity and active dialogue to inform creative choices.

In the last topic, “Critical Reflection & Strategic Approach”, we see collected the perspectives of practitioners adopting a more cautious approach to the integration of new technologies with traditional values. Table 4.10 presents the four topics identified by the LDA analysis, while Figure 4.59 showcases the logic network connecting the four topics.

Table 4.10 *LDA Analysis: key topics, keywords and summary.*

Topic ID	Keywords (Most Significant)	Thematic Summary
Topic 1: Activism & Political Engagement	activism, political, responsibility, policy, change, design, sustainable, environmental	This topic focuses on the explicit political dimension of design activism, emphasizing the role of design in driving social and environmental change, and highlighting the responsibility to address systemic issues.
Topic 2: Sustainable Practice & Innovation	sustainable, sustainability, regenerative, innovation, fast fashion, environmental, change	Here the emphasis is on sustainability and the transformative potential of design practices, where innovation is used to counter the negative impacts of mass production and foster regenerative approaches.
Topic 3: Collaborative Creativity & Expression	collaboration, community, expression, awareness, dialogue, co-design, inspiration, design	This topic encapsulates the collaborative and expressive aspects of design activism, where shared creativity, open debate, and community engagement are central to generating meaningful change.
Topic 4: Critical Reflection & Strategic Approach	research, critique, traditional, limitation, responsibility, balance, ethical, pragmatic	This topic reflects a more critical and reflective stance on design activism, where practitioners discuss the limits of technology, the importance of ethical considerations, and the need to balance traditional values with modern practices.

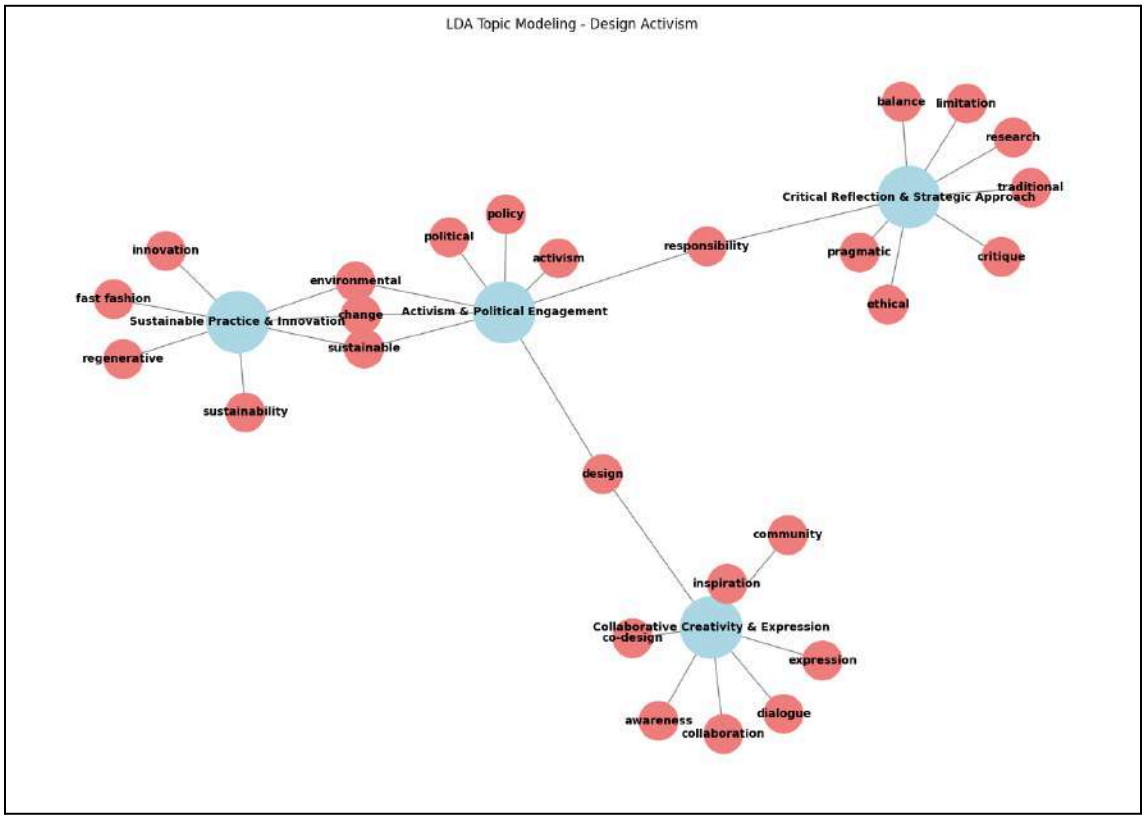

Figure 4.58 *LDA Analysis: logic network of topics from Design Activism responses.*

Theme 6: Design Process

Frequency Analysis

The frequency analysis reveals that the word "*research*" (35 occurrences) is the most dominant, setting the stage for a context in which systematic inquiries sit at the centre of the process. "*Concept*" and "*ideas*" (28 occurrences), "*prototyping/prototype*" (26), "*iteration*" (18) and "*experimentation*" (22) suggest the most important characterisations of the diverse processes adopted by the sampled practitioners. The recurring mention of "*material/materials*" (25) and "*production*" (20) offer an insights on the importance of the direct experimentation with the materials in the process of these hybrid practitioners who adopt an artisanal relationship with their materials. Table 4.11 presents the result of the frequency analysis highlighting the most frequent words.

Table 4.11 *Frequency Analysis performed on Answers regarding Role of Design Activism.*

Word/Expression	Frequency
research	35
concept/ideas	28
prototyping/prototype	26
experimentation	22
material/materials	25
production	20
iteration/iterative	18
crafts/craftmanship	18
sketch/sketching	15
feedback	12
inspiration	14
traditional	10
innovation/innovative	12

Sentiment Analysis

The responses' sentiment analysis shows a predominantly positive and reflective tone that conveys a sense of thoughtful engagement. Specifically, respondents show a strong passion for research, experimentation, and continuous improvement.

From the analysis, we can also see many narratives expressing a preference for iterative processes, highlighting the importance of feedback and collaboration. A few others respondents mention challenges derived from their non-linear processes sometimes associated with frustration, which are nonetheless framed constructively as opportunities for growth and improvement in their practices.

Latent Dirichlet Allocation (LDA) Analysis

The LDA analysis of the Design Process responses reveals the following topics.

The first topic, “Research & Ideation”, gathers the perspectives of practitioners who support the crucial role of gathering insights to formulate creative choices. In the second topic, “Experimentation & Prototyping”, we explore the practical aspects of the creative process.

The third Topic, “Production & Material Integration”, details the productive dimension of the process, as well as the exploration of a mindful approach to material selection.

The last topic, “Tradition & Innovation”, collects insights regarding the possibility to blend emerging technologies with heritage craftmanship.

Table 4.12 presents the four topics identified by the LDA analysis, while Figure 4.60 showcases the logic network connecting the four topics.

Table 4.12 *LDA Analysis: key topics, keywords and summary.*

Topic ID	Keywords (Most Significant)	Thematic Summary
Topic 1: Research & Ideation	research, concept, ideas, inspiration, analysis, inquiry	Captures the strong emphasis on research, ideation, and gathering insights that spark the creative process.
Topic 2: Experimentation & Prototyping	experimentation, prototyping, sketching, testing, iteration, feedback	It focuses on the hands-on phase, where ideas are tested and refined through prototypes, sketches, and iterative work.
Topic 3: Production & Material Integration	production, material, manufacturing, final, execution, refinement, process	Emphasises the transition from concept to a tangible product, highlighting the importance of material handling and execution.
Topic 4: Tradition & Innovation	design, traditional, innovation, digital, sustainability, integration, modern	Highlights the synthesis of traditional methods with modern technologies and innovative approaches to create new forms.

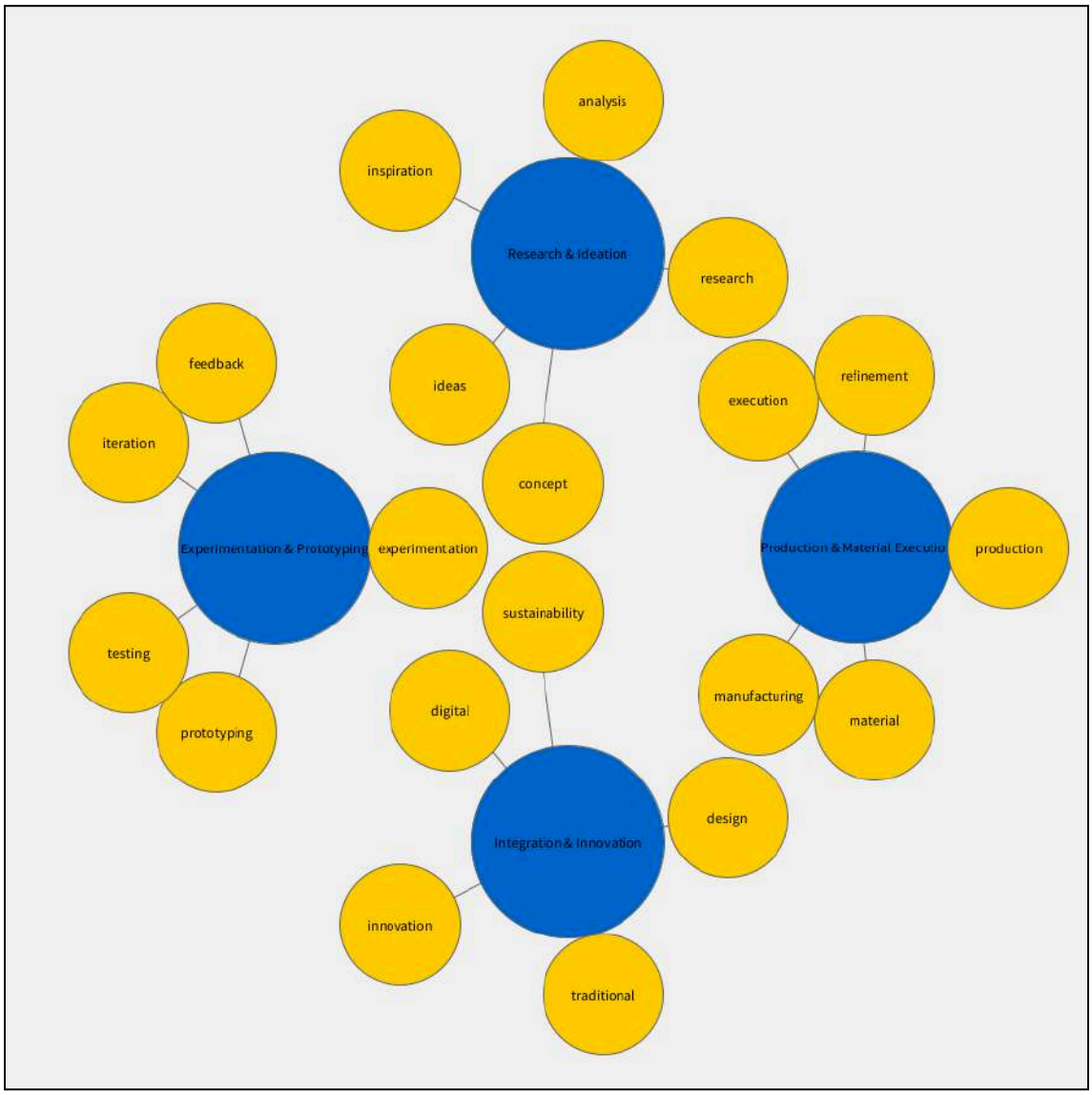

Figure 4.59 *LDA Analysis: logic network of topics from Design Process responses.*

2.2.3 Final summary of Data Analysis

From a demographic standpoint, a majority of respondents (71.2%) result to be between 25-34 years old. While younger individuals (18-24 years) account for 7.7%, the second most important group, aged 35-44, is 15.4%. Older age groups (45-54 and over 55) make up just a small percentage (5.7% combined). Gender breakdown shows a female preponderance of 61.5% and a male representation of 30.8%. Smaller subcategories are made up of duos and people who choose not to reveal their gender. Most of the respondents had advanced educational levels—mostly Master's degrees (55.8%), then Bachelor's degrees (36.5%), and a lesser doctorate presence (5.8%). Most of the respondents (44.2%) founded their practices 2-3 years ago; those with newer practices (28.8%) follow closely, suggesting a dynamic field made up of young and middleweight practitioners.

Practitioners' design mission and research goals are focused on sustainability, material experimentation, and the blending of emerging technologies with traditional craftsmanship. Moreover, practitioners show obvious dedication to culturally relevant and environmentally responsible design solutions. The majority of their replies show hope, excitement, and an awareness of both possibility and complexity involved in combining conventional and creative ideas. The analysis of the open-ended responses reveals four main themes in the design ethos of the respondents: Sustainability & Material Experimentation, Storytelling & Social Impact, Innovation & Tradition Reinterpretation, and Aesthetic Expression & Functional Design.

Seventy-five percent of respondents say their design approach is strongly shaped by traditional crafts, especially woodwork, ceramics, weaving, metallurgy, and glasswork. Most of the respondents have moderate craft experience—1 to 5 years—and apply their abilities mostly in product, material, and conceptual design. Research focus often centres on new bio-materials, innovative uses of conventional crafts, and craft-related developing technology. Most of those who self-identify on a craft-design spectrum place themselves as hybrid-oriented practitioners. Moreover, respondents show great respect for the impact of local heritage and often use artisanal methods in their work.

Practitioners show different involvement with new technologies, especially 3D printing and CNC machines, and they use them in product and material design. Other technologies such as parametric

modelling, generative software, and artificial intelligence show lower use levels. A significant percentage (25%) find no use in technology integration for their practice rooted in traditional craft. Generally speaking, practitioners consider emerging technologies as instruments to improve accuracy, and empower creativity while aiming for environmental sustainability. However, they also acknowledge the difficulties deriving from technology's complex learning curve, expenses, and overall the possibility to achieve a real balance between technology and heritage craftmanship.

Practitioners usually show high involvement with design activism, especially on sustainability and socio-environmental issues. With activism scores generally falling in the high-intensity end of the spectrum (8-10 out of 10), the analysis finds activism to be important yet differently prioritised among practitioners. While male practitioners demonstrate notable moderate-to-high involvement, it's especially the female practitioners who lead in higher degrees of activism which is strongly related to studies on sustainable materials, creative handcraft techniques, and crossovers between different study fields. This results to be a core value to hybrid design practices.

When it comes to analysis of the design processes, the totality of respondents presents a few core steps including systematic research, ideation, iterative prototyping, and experimentation. More practice-specific tasks include conceptual research, material experimentation, hands-on discovery and speculative conceptualisation. Based on the recurrence of practice-specific approaches, we grouped practitioners into four subsets:

1. Practitioners emphasising investigation and speculative concept generation;
2. Practitioners adopting a purely experimental approach based on learning by doing.
3. Practitioners focusing on productive optimisation and material integration who emphasise material investigation, and advanced manufacturing methods.
4. Practitioners combining emerging technologies with traditional methods and ecological practices to produce creative results.

In Chapter 5, we provide a more granular description of the processes shared in the questionnaire and we elaborate a process to summarise them into synoptic tables aimed at the definition of a general holistic process for New Design Craft.

2.3 Analysis of the Data Collected via Interviews

Introduction

All four interviewees—Ugo La Pietra, Giulio Iacchetti, Martinelli-Venezia Studio, and Annalisa Cocco—were identified during a literature review for their remarkable contribution to the dialogue on craft-based design and alternative design paradigms. Ugo La Pietra, with over sixty years of work across Italy's artisanal guilds, represents the past and origin of post-industrial design research; Giulio Iacchetti, known for projects like InternoItaliano, stands at the forefront of the present, testing how traditional crafts can intersect with contemporary practice; Martinelli-Venezia Studio, founded in 2015 by Carolina Martinelli and Vittorio Venezia, illustrates future directions by weaving local heritage with advanced manufacturing methods; and Professor Annalisa Cocco, a designer and academic with over two decades of weaving experience, offers a rich perspective that merges hands-on practice with critical reflection. Their interviews, each lasting around an hour and conducted in person or remotely, reveal how these four voices approach the themes of material culture, genius loci, and craft-based processes in ways that both disrupt and honour tradition.

Design Mission / Ethos

A concern with expanding design beyond conventional commercial paradigms emerges as a common thread, although each interviewee frames this expansion in different ways. Ugo La Pietra insists that the discipline of design itself has neglected its capacity for research and experimentation. His longstanding belief is that design should foster territorial and social expression rather than limiting itself to mass-market objects. On the other hand, Giulio Iacchetti describes a near-obsessive tension between seeking ideal archetypes and accepting the inherent relativity of each new design. He stresses the social dimension of design, but he sees doubt—rather than certainty—as a powerful driver of creativity. Meanwhile, Martinelli-Venezia Studio practices the dialogue between seemingly opposite worlds: which they consider their major strength, uniting two distinct cultural contexts—Milan and Palermo—into an open exploration.

Lastly, Annalisa Cocco situated her work within an explicitly ethical framework, explaining that her design is an ethical project rooted in the question “does it make sense?". Across all four perspectives, there is a shared conviction that design must strive to generate meaning and long-term cultural value rather than chase quick outputs.

Relationship with Traditional Crafts and Material Culture

Every interviewee, despite the differences in their approach, positions artisanal knowledge and local traditions at the centre of their practice. Ugo La Pietra recalls travelling across Italy to uncover what he calls la “Cultura del Fare” (Culture of Making) collaborating with artisans who preserved techniques in alabaster, ceramics, and stone but were generally overlooked by mainstream design history. Cultura del Fare is a rich resource demanding recognition. Giulio Iacchetti likewise anchors his designs in local materials and manual skills, best exemplified by his InternoItaliano platform, where designers collaborate directly with craftspersons to develop objects that combine tradition and market viability. He suggests that craft, rather than niche or archaic, should be placed at the forefront of design discourse. Martinelli-Venezia Studio emerges from a more contemporary take but shares a deep respect for traditional skill, especially in Sicily’s artisanal legacy. Vittorio Venezia insists that “a fundamental role is to keep an open interest in craftsmanship because it contains information about the production process that cannot be found in any book,” pairing centuries-old blacksmithing with their studio’s cosmopolitan outlook. Annalisa Cocco’s relationship with craft is particularly attuned to its poetic dimensions. Having practised weaving for over two decades and bridging Japan and Sardinia, she highlights the intangible cultural rhythms that underlie any artisanal practice and spurring her own research into local identity and heritage.

Role of Emerging Technologies

Though firmly committed to tradition, each practitioner perceives technology as a potential ally in rejuvenating craft rather than substituting it. Ugo La Pietra, whose work precedes widespread digital fabrication, remains cautious about technology being used superficially, yet he does note how

experimental production can benefit from new tools, provided research is valued over purely commercial motives. Giulio Iacchetti, known for occasionally experimenting with 3D printing, once tested the feasibility of 3D-printed pens for Alessi. He believes the essence of design to be profoundly personal and deeply rooted in a human capacity for critical reflection. Martinelli-Venezia Studio takes a more direct approach to technology, especially digital fabrication, which they view as a means to "renew" ancient production processes. Their belief that "technology is often the tool through which ancient production processes are renewed" finds expression in projects that merge CNC techniques with manual welding. Annalisa Cocco likewise sees technology, including 3D printing, as part of an evolving landscape in which manual dexterity remains paramount. Her desire is for designers to use new tools "free from rigid schemes," so that emerging technology can spark fresh possibilities rather than overwhelm the cultural essence of craft.

Design Activism

Each designer addresses the social and political implications of their work. Ugo La Pietra takes perhaps the most openly ideological standpoint, arguing that without ideology it is impossible to preserve craft at scale or to truly transform design into a socially engaged discipline. In his view, the lack of established systems to support artisanal experiments has put Italy's contemporary design scene in what he describes as a "limbo." Giulio Iacchetti, though less explicitly activist, speaks of design's duty to ensure quality and beauty for all, and he criticises mainstream debates on sustainability that deflect attention from large-scale corporate waste. He sees his own politically engaged role in challenging assumptions and generating doubts. Martinelli-Venezia Studio focuses on forging ties between local communities and contemporary markets and stresses "community engagement" where possible, though they do not frame this as overt activism. Instead, they see the partnership with local crafts as naturally creating social and economic benefits. Annalisa Cocco adopts an overtly ethical stance and, inspired by thinkers such as Papanek, she emphasises that design must find ways to address social and environmental issues to ensure that their work can enrich rather than deplete local traditions.

Projects

Although each interviewee has produced countless works, some specific projects result to be particularly emblematic of their distinct approaches. Starting with Ugo La Pietra his real legacy may lie not in any single object but in the immense corpus of experimental pieces that pushed design to value regional craft. Giulio Iacchetti's signature platform, InternoItaliano, places local crafts at centre stage by encouraging direct relationships between artisans, designers, and consumers. He also tested the frontiers of rapid manufacturing with 3D printing experiments at Alessi, revealing how new methods might open up small-series production. Martinelli-Venezia Studio exemplify their approach in their Ferro Collection, which is inspired by the braziers of Palermo's Via Calderai. Each piece is CNC cut and hand-welded by one of the youngest blacksmiths on the street integrating digital precision and manual skill. Annalisa Cocco, finally, combines her craft-based research with academic oversight to create rug collections that blur lines between art, design, and craft. Much of her curatorial work in exhibitions such as Sardegna Disegno Artigiano or the Domo project, which even earned a Compasso d'Oro, pushes Sardinian traditions onto international stages, showing how local material culture can spark globally relevant designs. Taken together, these four perspectives present a rich panorama of Italian craft-based design. La Pietra champions a historical approach that has revealed the full potential of local knowledge; Iacchetti pursues a present-tense dialogue between doubt and form, bridging traditional craft and contemporary production; Martinelli-Venezia Studio builds a future-oriented practice founded on community engagement and new technologies seamlessly combined with ancient skills; and Cocco provides an ethical and academic viewpoint on how to sustain and evolve artisanal methods. Their collective insights underscore the conviction that genuine innovation in design derives from the respectful integration of past, present, and future, rooted in the vivid interplay between local traditions and emerging techniques.

3. Chapter Conclusion

In this chapter we have explored a detailed overview of the data collected through the shortlisting of over two hundred eligible case studies, the administration of two questionnaires, and the subsequent interviews. First, we contextualised our sample in terms of geographical distribution, design approaches, and fields of application, identifying meaningful high-level correlations.
Secondly, the questionnaires analysis focused on close-ended and open-ended answers, using statistical and computational linguistic methods to examine key themes such as demographics, practitioners' design process and relationships with material culture and traditional crafts, sustainability, emerging technologies, and design activism, as well as the potential correlation of each topic on the others. Finally, the interview analysis offered deeper insight into these themes. In the following chapter, these findings are synthesised into a Manifesto for New Design Craft, and they serve as a conceptual foundation for an Action-Research intervention used to test it.

5.

Synthesis and Evaluation of Results.

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1. Chapter Introduction

In this fifth chapter, we synthesise and evaluate the outcomes derived from the analytical phase detailed in Chapter 4. The primary objective of this chapter is to illustrate how the insights and thematic clusters obtained from data analysis informed the outputs produced during the subsequent phases of this research. The synthesis presented in this chapter directly addresses how data was used to connect the initial Design Research Problem, that is:

"How can New Design Craft blend local craft and emerging technologies to support environmental and cultural sustainability by adopting a design justice approach to enable more just and sustainable futures?"

to the definition of a series of artefacts to communicate the values and processes of New Design Craft. The chapter is divided into three sections, each addressing a specific aspect of the synthesis and evaluation process. For starters, we detail the development and rationale behind the Manifesto for New Design Craft, explaining why such a manifesto was considered necessary as a strategic, practical, and conceptual tool. In the Manifesto we introduce the key values, principles, and North Star of New Design Craft which were all informed by the analysis and categorisation of contemporary hybrid design paradigms presented in the previous chapter. This manifesto serves as a foundational document intended to guide hybrid practitioners in navigating the intersection of craft traditions and emerging technologies or, more in general, in navigating alternative post-industrial paradigms. Additionally, we introduce a design process tailored to accommodate and integrate the different profiles—referred to as the Four Souls—of New Design Craft practitioners. This section also documents the creation of a dedicated visual identity, developed to communicate and embody the ethos of New Design Craft through a visual language and applications. Secondly, the chapter describes the implementation of an Action Research approach, with the pilot project called *Generative Craft*. We introduce the rationale behind this pilot experiment —that's to say, testing the manifesto in a real-life scenario—and we present the conceptual framework, the local artisan involved in the project, and the process itself, including the generative algorithm developed using Processing. Moreover, this section

outlines how the Action Research pilot provided empirical validation for the Manifesto's conceptual foundations, and generated outcomes like a small technical series of physical HyperObjects (Petroni, 2022) and an experiential video documentary.

Finally, we introduce the results of a comprehensive strategy for the dissemination of the research findings, providing a descriptions of the dissemination tools produced, including the online digital platform and its offline counterpart, the Atlas of New Design Craft, the published academic works and contributions to conferences and seminars.

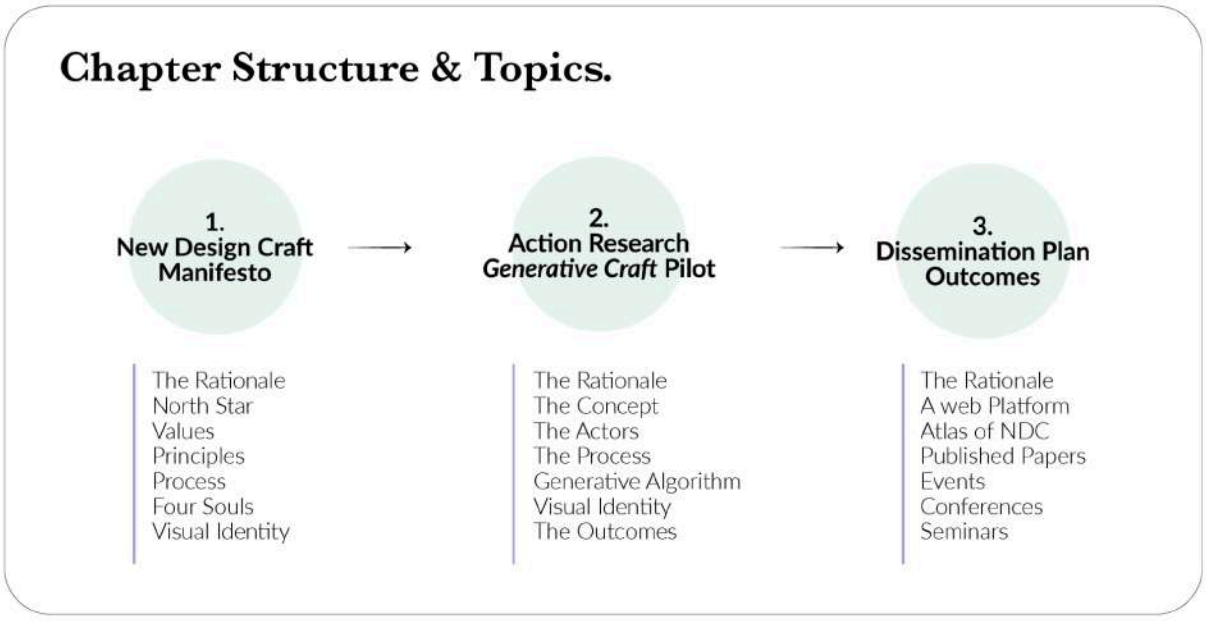


Figure 5.1 *Chapter Structure and Topics.*

2. Making of a Manifesto for New Design Craft

This paragraph introduces the rationale and key components of the Manifesto for New Design Craft, derived from a synthesis of the analysis of data presented in Chapter 4.

Establishing a manifesto for a new social movement like New Design Craft is motivated by the need to define unambiguous ideals, principles, and visual identity to precisely identify a new approach within the contemporary design landscape.

As Design evolves in reaction to socio-environmental issues and the evolution of technology, formalising a paradigm with its relevant value-driven characteristics becomes every day more vital. Historical precedents in the development of design manifestos, like Walter Gropius's 1919 Bauhaus Manifesto, demonstrate how manifestos are essential instruments for defining objectives, and visions, and driving design processes inside a specified cultural environment (Kang, 2023). A manifesto's core is its ability to capture the spirit of a movement, so acting as both a statement of objectives and a gathering place for like-minded practitioners and people. From this perspective, Jewitt et al. emphasise how –especially for players operating in the field of "social crisis"–there's a strong need for manifestos to be anchored in collective qualitative research and defined by an inductive method of obtaining insights into their experiences.

As Jewitt et al. (2021) effectively state, "the manifesto form has traditionally been taken up and used in politics, the arts (e.g., The Manifesto of Tactilism by the Futurist artist Marinetti, 1921) and design (e.g., Design Justice Network Principles, 2018). The manifesto is an alternative genre and comes in many forms, usually in response to a crisis, and is an urgent call for change articulated through an eye-catching list of challenging and provocative statements. Manifestos are typically short and sharp, often purposefully poetic and ambiguous, with a tone ranging from playful, excited or hopeful to angry. (...) While manifestos may emerge from or be informed by research, they are not a scientific outcome. Manifestos aim to provoke. The purpose of manifestos is to prompt new ideas by temporarily liberating scholars from the confines of careful speech and rational argument – to offer a chance to question and imagine possible futures".

The values and inspiration driving this study on New Design Craft clearly speak to this concept. As Manifestos can open discursive spaces, fostering debate that questions current paradigms and motivates creative inquiry (Ashby et al., 2018), critical design has increasingly chosen this genre as its preferred tool to communicate radical ideas.

Today's socio-environmental critical scene exacerbates the necessity of initiatives like New Design Craft. Defining sets of ethical principles to guide our practice becomes progressively more important as our awareness of our global issues –including design ethics, sustainability, and social justice–

grows. From the pure human-centric design values that have been the go-to ethos of design for over a decade, we see an ever-increasing evolution in design's morality that pulls away from these, and an increasing interest towards what Friedman et al., had already defined as value-sensitive design (VSD), that "is a theoretically grounded approach to the design of technology that accounts for human values in a principled and comprehensive manner throughout the design process" (2013).

Within the framework of New Design Craft, this implies that the ideas expressed in the manifesto should guide methods that give practitioners and communities' agency top priority, as well as prioritising cultural inclusion, and socio-environmental issues. Establishing a strong presence for New Design Craft depends equally on design methods and visual identity. A unified visual identity can capture the principles of the movement and improve its power, allowing it to be seen by larger audiences.

Moreover, the iterative techniques involved in the creation of this manifesto highlight the need for a community effort to define a community's values. As noted by Matos et al., workshops targeted at producing manifestos stress cooperative settings where participants co-create and consider their ideals, therefore promoting a stronger sense of ownership and community inside the movement (Matos et al., 2019).

Apart from the enhancement of the manifesto's content, an iterative approach grounded on testing the values and ideas of the manifesto with members of the design/craft community conforms with the basic ideas of New Design Craft, which seeks to decolonise design practices and raise community voices, thus guaranteeing that the manifesto evolves through continuous participation and input from stakeholders rather than only reflects a fixed set of ideas.

Furthermore, the making of a manifesto can serve as a prism through which the design community debates technical difficulties and presents events. By means of the principles of New Design Craft, one can express the urgency to solve transforming difficulties including climate change, inequality, and technological implications, therefore establishing the movement as both relevant and sensitive to urgent global issues (Umbrello, 2021).

The articulation of a manifesto becomes both a declaration of identity and a necessary instrument to promote resilience and flexibility in a world where design needs to continuously adjust to ever-changing conditions. The choice to develop a manifesto for New Design Craft results from a need to express and crystallise common values, ideas, and experiences fundamental to rethinking contemporary design methods, especially for a movement like New Design Craft whose key themes often overlap with ethical design concepts, which help to guarantee that the movement stays dedicated to improving human welfare (Frigo et al., 2023) as a community-oriented project embracing the complexity and challenges of today's values.

2.1 Values, Principles and North Star for New Design Craft

2.1.1 Summary: the values and principles moving contemporary design

New Design Craft is a movement in flux, shaped by the intersections of tradition, innovation, and critical analysis of contemporary issues. Through the analysis of practitioners' perspectives on Heritage and Material Culture, Design Activism, Research Focus, and Design Mission, we uncovered a diverse but interconnected set of values, methodologies, and aspirations that define this emerging movement. Key thematic patterns and conceptual frameworks practitioners employ to navigate their roles were revealed through the use of frequency analysis, sentiment analysis, word mining and Latent Dirichlet Allocation (LDA) topic modelling.

From these results, we can recognise a spectrum of approaches spanning from material exploration, to philosophical conceptualisation or political participation, as well as several instances of creativity that mix these approaches into hybrid methods. A dedication to sustainability, inclusivity, and systems thinking surfaced as fundamental values of New Design Craft throughout all the answers, while different practitioners presented different perspectives on the topics of their relationship with Heritage and Material Culture, Design Activism, Emerging Technologies and Design Mission.

Practitioners approach material culture and heritage in a spectrum between reinventions and preservation. Some consider their work as a kind of cultural continuity, trying to preserve local resources and threatened techniques. Others question accepted notions of legacy by hybridising

traditional crafts with emerging technologies or inventing new materials. According to the LDA analysis, even the most experimental designers admit the historical and social weight of materials and procedures; geography, material source, and cultural identity were recurring subjects.
While some designers adopt a conservationist perspective, making sure that indigenous or regionally specific craft traditions remain viable, others challenge the constraints of tradition itself, looking at how craft knowledge might develop rather than be locked in time. A common belief surfaced across all responses is that craft is an agent of cultural storytelling, underlining the idea that materials and techniques are not neutral but rather loaded with meaning, history, and agency.

From active political involvement to more subdued forms of criticism and opposition, design activism shows up in many different ways as a key aspect of the practice of hybrid creatives. Focusing on circularity, renewable materials, and localised manufacturing, some practitioners clearly situate their activity within environmental activism. Others work in social design, leveraging craft as a means of cultural resilience and community empowerment. The LDA study underlined important themes of responsibility, intervention, and systematic change, supporting the premise that many designers view their work as more than just object-making, but rather world-making.
Some respondents admitted that the choice of specific material, manufacturing techniques, and partnerships naturally have political weight even if they were reluctant to identify their work as pure activism. Particularly with relation to the slow pace of systemic change and the conflicts inside the design sector itself, the sentiment research revealed a combination of hope and frustration.

The Practitioners' area of research showed a wide spectrum of questions spanning from direct material experimentation to critical theory and speculative design. Three main research methods surfaced: hands-on artisanal experimentation and biomaterial innovation; conceptual and critical research on the philosophical, ecological, and sociopolitical issues of design; process-based, technology-driven research. Lastly, many designers reinventing what research means in a craft-based field are also helping to produce knowledge rather than merely producing items.

One last point of our analysis regarded the practitioner's perception of their design mission, which revealed once again a level of complexity and nuanced meaning. However, the urge to transcend object-centric design towards holistic, systemic approaches ran throughout all of the answers. Design's goal, according to practitioners, is to provide tools, approaches, and frameworks beyond their individual work. Among the most often mentioned goals were the redefinition of the value of waste and materials—that is, turning industrial byproducts into useful resources—, the focus on cultural sustainability—that is, design supporting local, historical preservation, and knowledge sharing—as well as the creation of strong production models (including regenerative design, circular economies, and distributed manufacturing).

The key conclusion from sentiment analysis was a strong sense of agency and hope among practitioners, especially in response to industry constraints and socio-environmental responsibility. Investigating alternative aesthetics and narratives (e.g., speculative storytelling, biomaterial aesthetics, and hybrid craft-tech methods) revealed that, although issues such as funding, scalability, and ethical sourcing still exist, the general attitude was one of possibility which sees design as a tool to rethink, reorganise, and change the systems around us.

2.1.2 A set of values and principles for New Design Craft Practitioners

From the analysis of the answers to the thematic questions—heritage and material culture, design activism, research focus, and design mission—we extrapolated the key concerns, values, methodology, and aspirations defining New Design Craft practitioners. We distilled a set of Values reflecting the ethical and philosophical roots of the movement by analysing recurrent patterns in language, sentiment, and thematic clustering.

From these values, we developed Design Principles—actionable guidelines that describe how professionals can approach their projects and negotiate material, processes, and systemic challenges. Lastly, we defined a North Star, that's to say an inspiring vision that captures the main objective of New Design Craft and formalises its mission: to produce a design culture that is regenerative, inclusive, and critically involved with both tradition and innovation. Figures 5.2-4 illustrate the North Star, Values, and Principles for New Design Craft.

NEW DESIGN CRAFT NORTH STAR.

NEW DESIGN CRAFT SEEKS TO PRODUCE BETTER RATHER THAN MORE. IT ENVISIONS A FUTURE WHERE:

Artisanal Making *is not limited to luxury markets or niche industries.*

Craft *is valued as an adaptable system of knowledge rather than nostalgia.*

Technology *enhances rather than reduces human creative ability.*

Objects *are not just things but part of regenerative cycles.*

Design *is about developing relationships, knowledge, and futures.*

New Design Craft is neither an aesthetic movement, a technological approach, nor a nostalgic trip back to the past. It is a way of designing in response to the world as it is, while actively shaping how it could be.

Figure 5.2 *North Star for New Design Craft.*

NEW DESIGN CRAFT VALUES.

1. MATERIAL INTELLIGENCE

Materials are not neutral. They are archives of environment, commerce, and culture. New Design Craft practitioners listen, respond, and work with substance rather than imposing form onto it. Whether natural, synthetic, or digital, we embrace the intelligence of materials and let their possibilities and restrictions define the process.

2. DESIGN RELATIONSHIP, NOT OBJECT

A product is a web of interactions between people, locations, and activities—never only a thing. New Design Craft questions the object-centric approach of industrial design and emphasises instead on developing links between producers and consumers, past and future, tradition and creation.

3. THE RIGHT TOOL IN THE RIGHT CONTEXT

Low-tech and high-tech, chisels and CNC routers, have no hierarchy. The only question that counts is: what need this project in this location with these resources calls for? Mastering a flexible, adaptive approach to tools, New Design Craft practitioners use digital manufacturing where needed, handcrafted techniques where important, and hybrid ways where strong

4. SUSTAINABILITY AS SYSTEM.

Sustainability is about systems, cycles, and economies, not only about choices of materials. New Design Craft advocates profound, regenerative thinking over greenwashing and temporary environmental fixes. It probes: what does it mean for a design to really fit its ecosystem? In what ways does it honour the work of those engaged in its production, promote local businesses, and renew resources?

5. CRAFT AS A SITE OF FUTURE MAKING.

Craft is about the present—not about the past. Revised Design Using historic knowledge as a continuous activity of creativity rather than as a static record, craft is profoundly future-oriented. It sees craft itself as a weapon for resilience in an uncertain age, artisan networks as templates for decentralised economies, and ancestral practices as blueprints for sustainable manufacture.

6. OPENNESS AS A RESPONSIBILITY

We do not create just by ourselves. Every design choice has effects; every technique is inherited from someone. Not as trends, but rather as ethical requirements, New Design Craft pledges openness, shared information, and open-source ideas. Design is participation in a greater system, and with that comes the duty to leave it better than we discovered.

Figure 5.3 *Values for New Design Craft.*

NEW DESIGN CRAFT PRINCIPLES.

1. LISTENING BEFORE MAKING

Every project begins with a listening act towards materials, communities, historical and environmental background of a place. We co-learning with people who possess knowledge outside of formal design disciplines, not about knowledge extraction.

2. START FROM QUESTIONS, NOT ANSWERS.

Solutions are not imposed by New Design Craft. It starts with wondering what is needed. What already exists? What can be learned from other fields? Design is a conversation, not a prescription.

3. WORK IN CYCLES, NOT LINEAR PROCESSES

We welcome iteration, feedback loops, and the unpredictability of experimenting rather than adhering strictly to processes.

4. REDEFINE THE VALUE OF OBJECTS

Objects should not be mass-produced beyond need, trend-driven, or throwaway, unless absolutely necessary. Rather, they should be meaningful, change with the times, and have an afterlife that does not end in landfill

5. TECHNOLOGY SHOULD EXPAND, NOT REPLACE, HUMAN AGENCY

Digital fabrication, artificial intelligence, and computational design are extensions of craftsmanship not replacements for it. New Design Craft uses technology to improve work rather than to automate meaning away.

6. RECOGNISE DESIGN AS A POLITICAL ACT

Every design choice has ethical ramifications regarding who benefits from a design, who gets to make it or access it? New Design Craft understands its influence in shaping ecological futures, labour conditions, and economies.

7. HONOUR THE WORK BEHIND OBJECTS.

Every object—made by hand, by machine, or in partnership with artificial intelligence—carries human effort. We support fair pay, respect of creators, and ethical supply chains.

8. MAKE KNOWLEDGE ACCESSIBLE, NOT EXCLUSIVE

Skills should be distributed rather than hoarded. New Design Craft is dedicated to open-source education, multidisciplinary cooperation, and the total accessibility of knowledge.

9. DESIGN FOR REPAIR, NOT REPLACEMENT

Objects should be made to be fixed, modified, or reinterpreted. A broken thing should present a chance for repair rather than for disposal.

Figure 5.4 *Design Principles for New Design Craft.*

2.2 A Process for New Design Craft

Another fundamental aspect analysed in our Structured Questionnaire is the Design approach of hybrid creative practitioners. The rationale for this investigation was the need to explore the plurality of voices in the contemporary design landscape and understand how each practitioner interpreted the journey connecting briefs and design problems to designed solutions. In Chapter 4 we used computational linguistic techniques to analyse the recurrent themes and patterns in the answers provided by the respondents of the questionnaire to the question:

Q5. How would you describe the phases of your design process?

Through this analysis, we observed a strong recurrence of concepts related to the ideas of “research” (35 occurrences), “prototyping/prototype” (26) and “experimentation” (22), “material/materials” (25) and “production” (20), “iteration” (18), and “inspiration” (14), as well as concepts like “traditional/tradition” (10) and “crafts/craft” (18). The overall sentiment showed a clear passion for research, experimentation, and continuous improvement with many narratives expressing satisfaction with iterative processes and highlighting the importance of multi-disciplinary collaboration.
Lastly, we captured four main recurrent topics in the answers characterised by an emphasis on research, ideation, and gathering insights kicking off the creative process, and the centrality of a hands-on approach, where ideas are tested and refined through direct experimentation and iterative work. Other key topics of conversation seemed to be the importance of the integration of sustainable/biomaterial, and the blending of traditional techniques with emerging technologies to create new approaches to design.

In the following paragraphs, we evaluate more in detail the implications of a pluralistic approach to New Design Craft by clustering the analysed practitioners into four subgroups, defining the four “souls” of New Design Craft, which –albeit sharing the same values and principles– define different approaches to design through their work.

2.2.1 Summary: the different souls of contemporary hybrid practitioners

While the totality of the respondents incorporates direct experimentation and self-production as a core component of their practice, exploring their answers on a more granular level, we can cluster them according to four primary creative approaches. Specifically, as each group demonstrates a different emphasis on how they engage with materials, technology, research, and material culture, we can categorise them into Material-Driven Designers, Conceptual & Research-Oriented Designers, Experimentation & Process-Oriented Designers, and Sustainability & Ethics-Driven Designers.

Material-Driven Designers focus on physical materials and making. In describing their practice, terms frequently used are: *craft, hands-on making, material sourcing, physicality, and tangible process***.** They often mention waste repurposing and traditional techniques. Their work doesn't start with a predetermined concept but with material investigation. Their method is tactile; they steer their design choices via direct material engagement, often using craft-based approaches, foraging, or waste reuse as creative inspiration. For them, material experimentation itself determines shape, function, and aesthetics, guiding design from the bottom up. In the words of a respondent: "*First, find the material, create out of that material, and let the design be created*".

Conceptual & Research-Oriented Designers approach their process through theoretical frameworks and narratives. In the self-description of their practice, frequently used terms are: *storytelling, philosophy, conceptual design, meaning-making, history, and narrative-driven design.* Their projects often emerge from philosophical inquiry or theoretical reflections rather than material exploration. Their method is firmly anchored in theoretical frameworks, historical study, and cultural analysis—all of which frequently guide speculative design and narrative approaches. Before moving into creation, they investigate broad issues regarding society, history, and the future. This method lets them interact systemically with difficult problems including sustainability and technological change. One designer says, for instance, "*researching the environmental impact of traditional block printing and exploring the potential of microalgae as a sustainable alternative is fundamental*".

Experimentation & Process-Oriented Designers prefer a hands-on, iterative approach, embracing trial and error as a necessary aspect of their workflow. Often non-linear, their approach is

characterised by cycles of prototyping, testing, and refinement. Many of these designers stress learning by doing and occasionally apply generative or computational methods. One designer says their approach consists in "*a lot of back and forth between drawing, finding materials, and experimentation*." Design for them is more about ongoing development than the search for a specific final goal.

Sustainability & Ethics-Driven Designers work according to frameworks based on environmental and social responsibility. Their areas of expertise are circular design, bio-based materials, and regenerative manufacturing techniques meant to reduce environmental impact and waste. Through their advocacy of ethical employment methods, waste reduction, and local procurement, they hope to have long-term effects on design, the world and Society itself. Many of these designers view their work as a kind of activism; one notes, "*Making a change in the materials we use and how we use them is a form of environmental and political activism*". Their approach is mission-driven and addresses pressing worldwide issues through design. Table 5.1 summarises the definition of the four souls of New Design Craft.

Table 5.1 *The Four Souls of New Design Craft.*

Soul	Starting Point	Key Methods	Focus
Material-Driven Designers	Physical materials	Craft, experimentation, waste repurposing	Hands-on making
Conceptual & Research-Oriented Designers	Research & Theory	Concept, storytelling, philosophy	Concept-driven design
Experimentation & Process-Oriented Designers	Prototyping	Iteration, process-based exploration	Process > outcome
Sustainability & Ethics-Driven Designers	Environmental impact	Bio-based, circular economy, ethical sourcing	Design Responsibility

Once formulated definitions for each of the souls of New Design Craft, it was equally important to abstract and formalise the creative process followed by each respondent.
Each answer regarding the design process was elaborated using DeepSeek and Python's NLTK library to generate a flowchart showcasing the key phases of the process, as shown in Fig. 5.5.

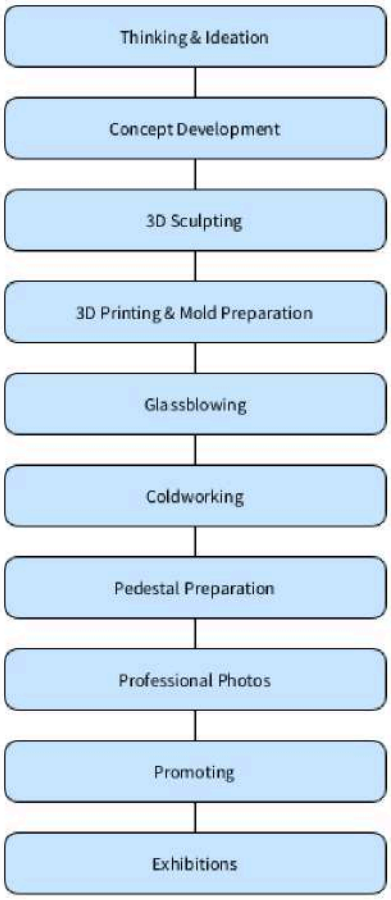


Figure 5.5 *Anna Jožová's Design Process. DeepSeek+NLTK restitution.*

Secondly, flowcharts were clustered based on methodological affinity and compared to assess the consistency of the phases. See Figure 5.6 for a comparison of processes. Hence, we proceeded to generalise each cluster of processes in a general process for each soul of New Design Craft as summarised in Figures 5.7-5.10.

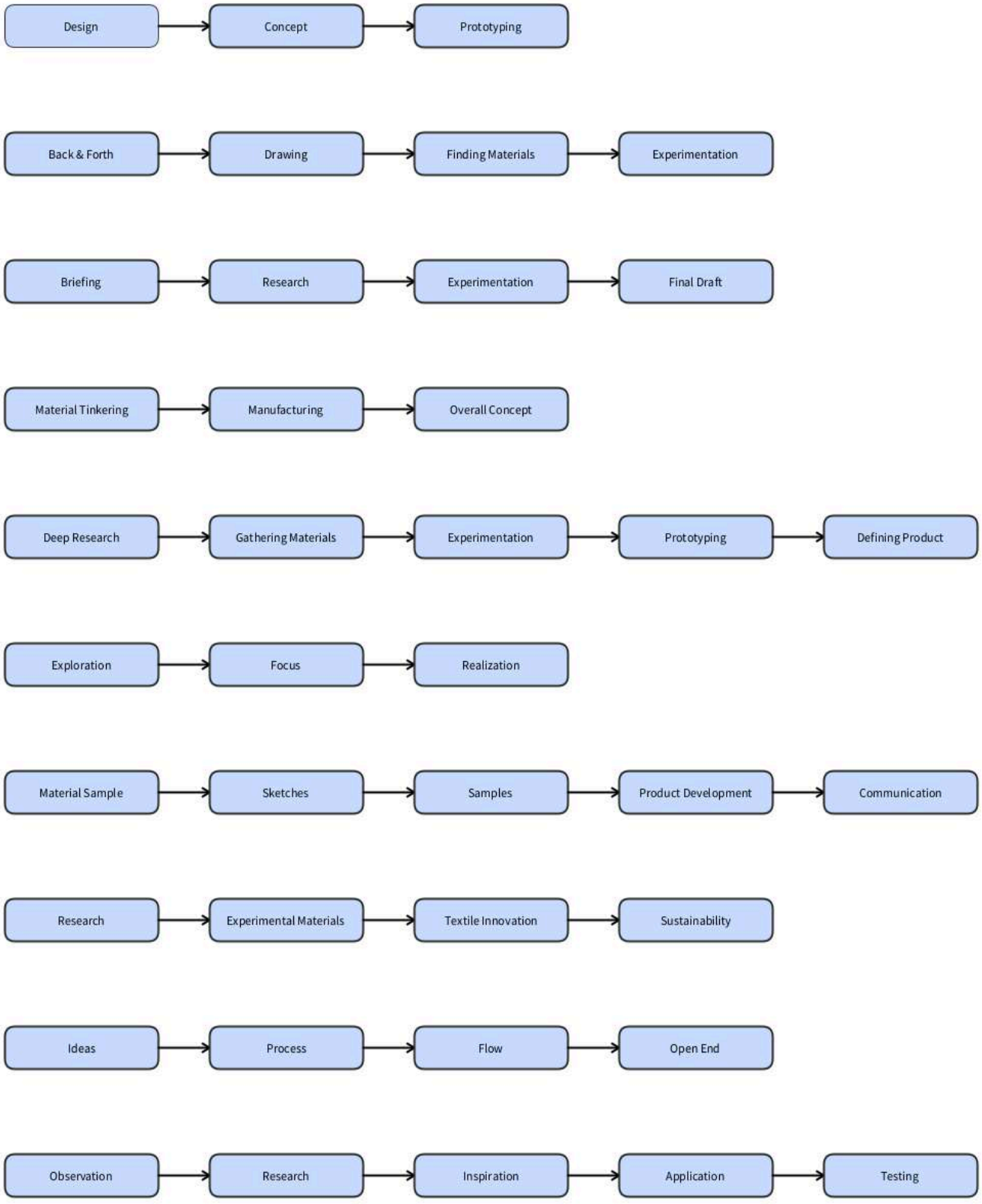


Figure 5.6 *Visual comparison between processes clustered based on methodological affinity.*

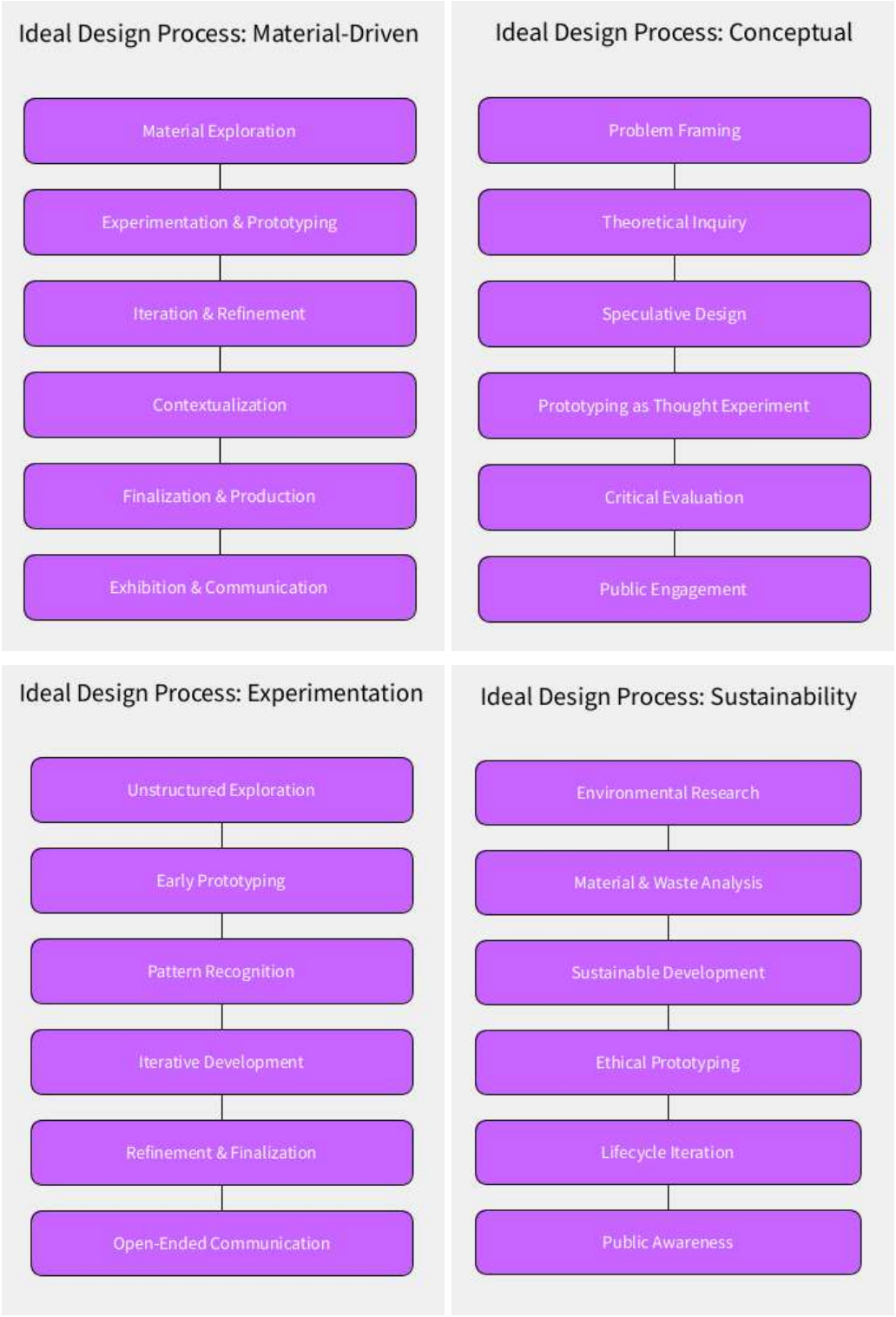


Figure 5.7-5.10 *Process flowcharts for each of the four souls of New Design Craft.*

The last step of the synthesis was the integration of the four processes into a holistic process for New Design Craft, able to capture and adapt to the nuances of the different souls of the hybrid practitioners.

2.2.2 A Holistic Design Process for the Different Souls of New Design Craft

Similarly to what had been done for the definition of values and principles, the synthesis of a holistic design process for New Design Craft practitioners emerged from an integrative approach to the different processes collected in the survey and later analysed, bridging the various methods of the four distinct design profiles. Material-Driven Designers, Conceptual & Research-Oriented Designers, Experimentation & Process-Oriented Designers, and Sustainability & Ethics-Driven Designers, all offer different perspectives on the creative process. Some start with thorough theoretical research, others with practical material exploration, and still others embrace iterative experimentation or commit themselves to circular and ethical design principles. The synthesis conducted in the definition of a holistic approach respects their complementary characteristics and defines a modular structure that fits several entry points and iterative feedback loops, therefore avoiding the reduction of these into a single linear framework. While the branches highlight specialised paths that designers may stress depending on their expertise, the core process acts as a shared backbone establishing common phases like inquiry, material exploration, concept development, and iterative making. This approach guarantees flexibility and adaptability, enabling practitioners to negotiate across approaches while respecting their shared dedication to crafts, creativity, and socio-environmental responsibility. Organising the process into a centralised framework with branching specialisations gives both a coherent framework and the adaptability necessary for contemporary, hybrid design to dynamically adjust to the demands of our complex reality. See Figure 5.11 for a visualisation of the process.

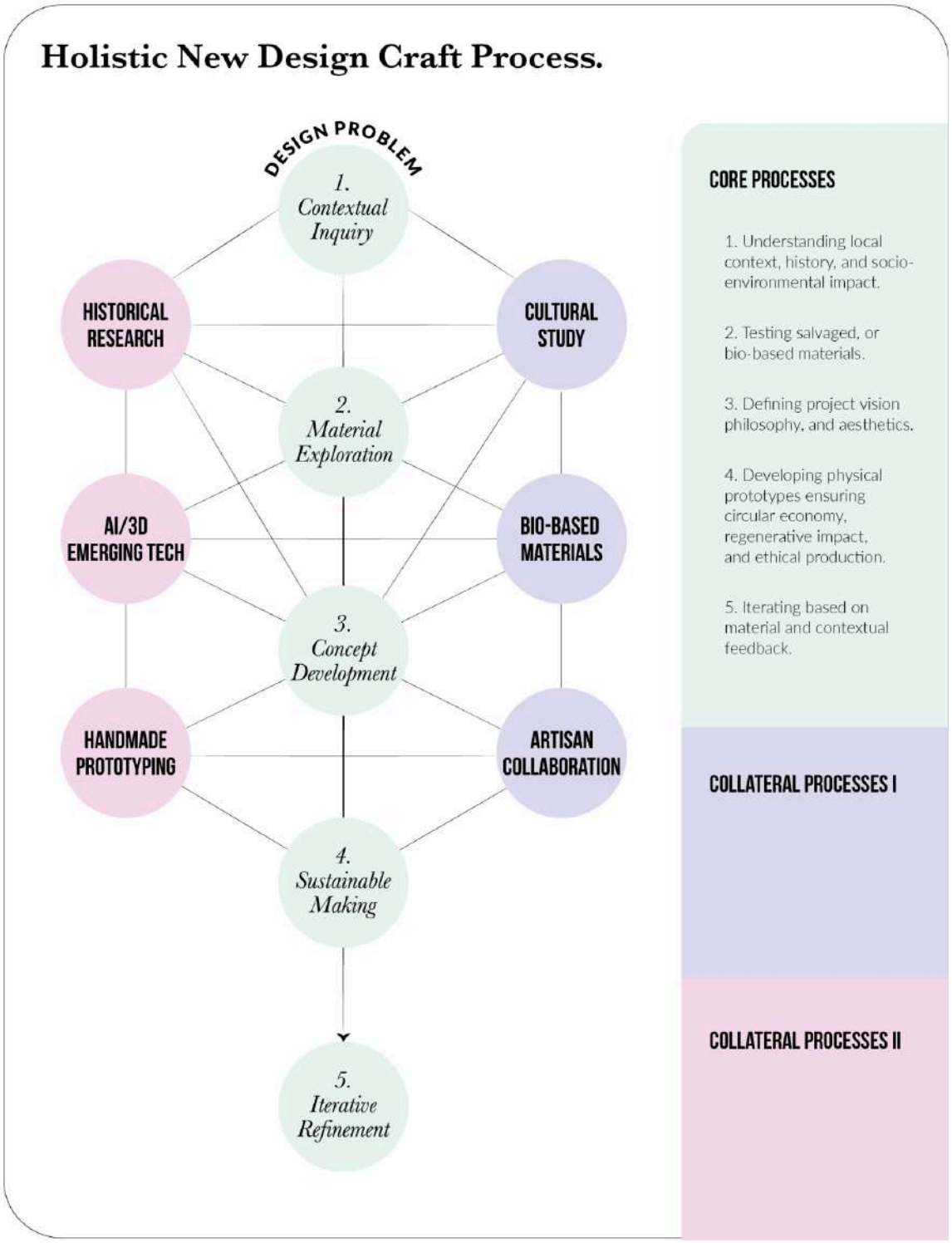


Figure 5.11 *Holistic Process integrating the four souls of New Design Craft.*

2.3 A Visual Identity for New Design Craft

This paragraph introduces the work conducted to define a visual identity for New Design Craft. The project builds on the results of the work of identification of values and principles contained within the New Design Craft Manifesto and expands on their representation from the perspective of the power of symbols in social movements.

This approach is supported by research in branding and design, which shows that a well-defined visual identity can significantly enhance recognition and credibility (Wheeler, 2017; Neumeier, 2006). Moreover, studies on social movements highlight that visual symbols play a pivotal role in rallying communities and communicating complex messages in a concise, impactful manner (Jenkins, 2018). Specifically, a coherent visual identity is essential for establishing a clear representation of any movement, serving as both a communication tool and a symbol of shared values.

In the context of New Design Craft, an effective visual identity needs to encapsulate the movement's commitment to blending traditional crafts with emerging technologies in a socio-environmentally just and sustainable way, to provide the hybrid design community with a recognisable sign to engage with both the academic community and society.

2.3.1 Identity Concept and Construction

The concept behind the visual identity draws inspiration from the visual juxtaposition observed in a local potter's workshop, where countless bowls and pots—each defined by their organic shape—were meticulously arranged on rigid, geometrically precise metal shelves. The perceived contrast between the curved, unstructured forms of the pots and the disciplined, and the linear order of the shelving system, seemed a perfect representation of the essence of New Design Craft, as it effectively symbolises a new discipline that is at once organic and experimental, yet also rigorous and technical, reflecting the hybridisation of traditional craft techniques with emerging technologies.

The logo was constructed using an approach that integrated geometric elements with organic shapes. A structured grid was established to define the spatial relationships and alignment of all components, to ensure consistency and balance across the visual composition. Rigid geometric shapes—such as

squares, rectangles, and straight lines—were used to form a clear framework, while curves were introduced to echo the organic characterisation observed in traditional craft forms. This juxtaposition creates a visual tension between rigid geometry and organic shapes capturing the dual essence of New Design Craft as both technically rigorous and organically experimental. The process started with hand sketches and later involved the calibration of scale, proportion, and positioning to achieve visual balance.

In the development phase, the visual elements were iteratively refined to maintain clarity, coherence, and adaptability across various applications. This resulted in the definition of a dynamic visual identity responsive to different settings and necessities. The logo was constructed using an approach that integrated geometric elements with organic shapes. A structured grid was established to define the spatial relationships and alignment of all components, to ensure consistency and balance across the visual composition. Rigid geometric shapes—such as squares, rectangles, and straight lines—were used to form a clear framework, while curves were introduced to echo the organic characterisation observed in traditional craft forms. This juxtaposition creates a visual tension between rigid geometry and organic shapes capturing the dual essence of New Design Craft as both technically rigorous and organically experimental. The process started with hand sketches and later involved the calibration of scale, proportion, and positioning to achieve visual balance.

In the development phase, the visual elements were iteratively refined to maintain clarity, coherence, and adaptability across various applications. This resulted in the definition of a dynamic visual identity responsive to different settings and necessities.

2.3.2 Results and Applications

Figures 5.12-5.19 illustrate the conceptual exploration for the visual identity, the geometric construction of the logo, the moodboard for the colour palette and the chosen font. Following that, we present readability scales and the final identity both in the extended and compact versions. We close this paragraph with a collection of mock-ups and applications.

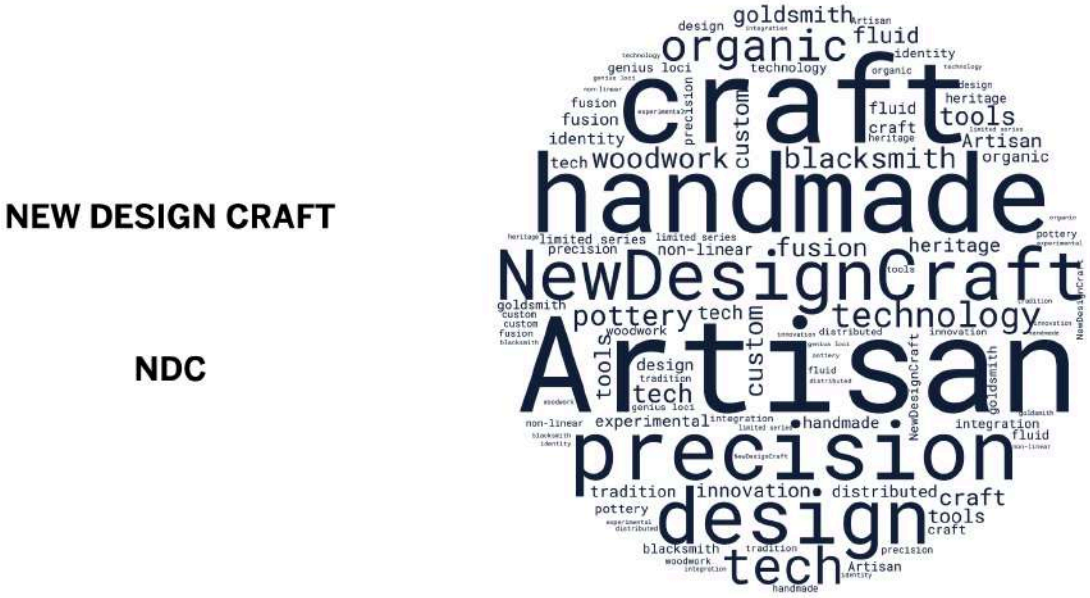


Figure 5.12 *Conceptual Exploration for a Visual Identity of New Design Craft.*

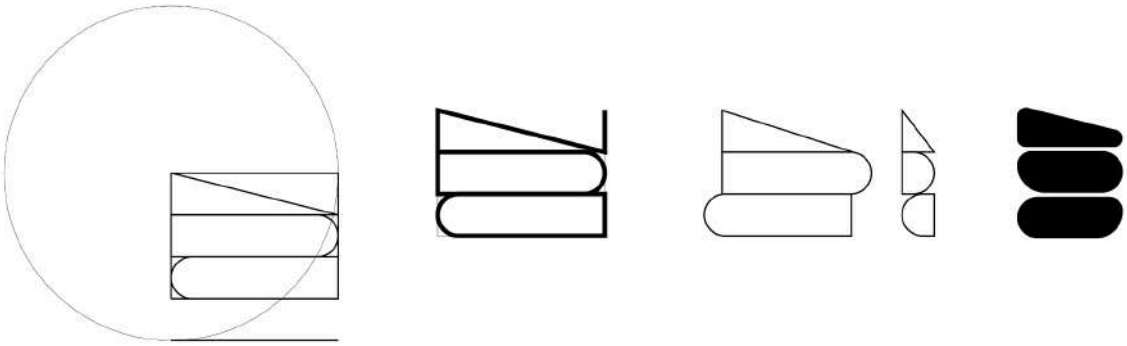


Figure 5.13 *Geometric construction of the logo.*

Figure 5.14 *Preliminary studies.*

Figure 5.15 *Moodboard for the definition of colour palette.*

Figure 5.16 *Pangram showcasing the font Alegreya Sans Black.*

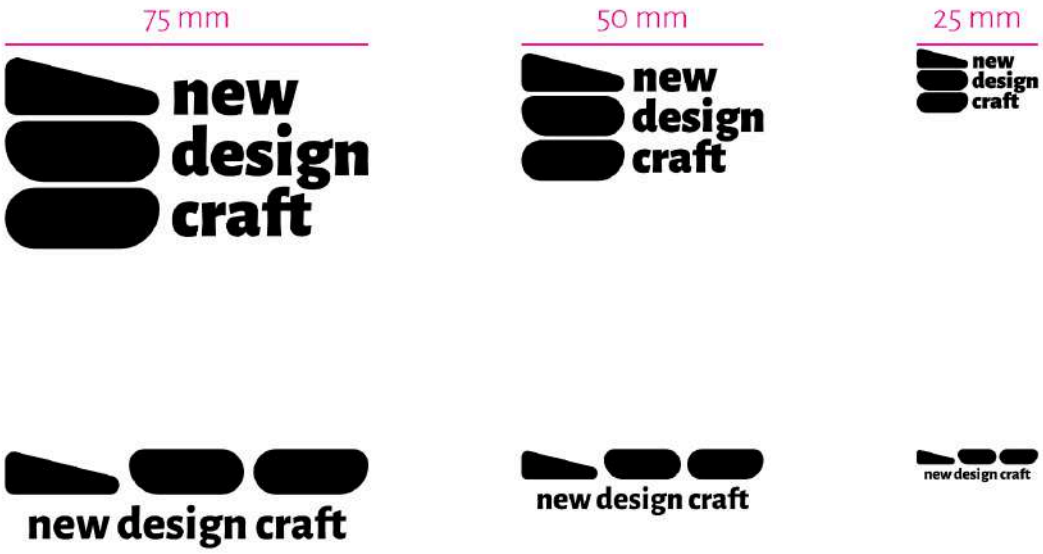


Figure 5.17 *Readability scales, extended and compact versions.*

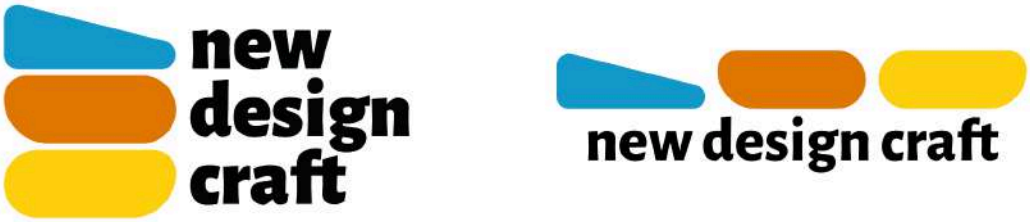


Figure 5.18 *Final definition of visual identity.*

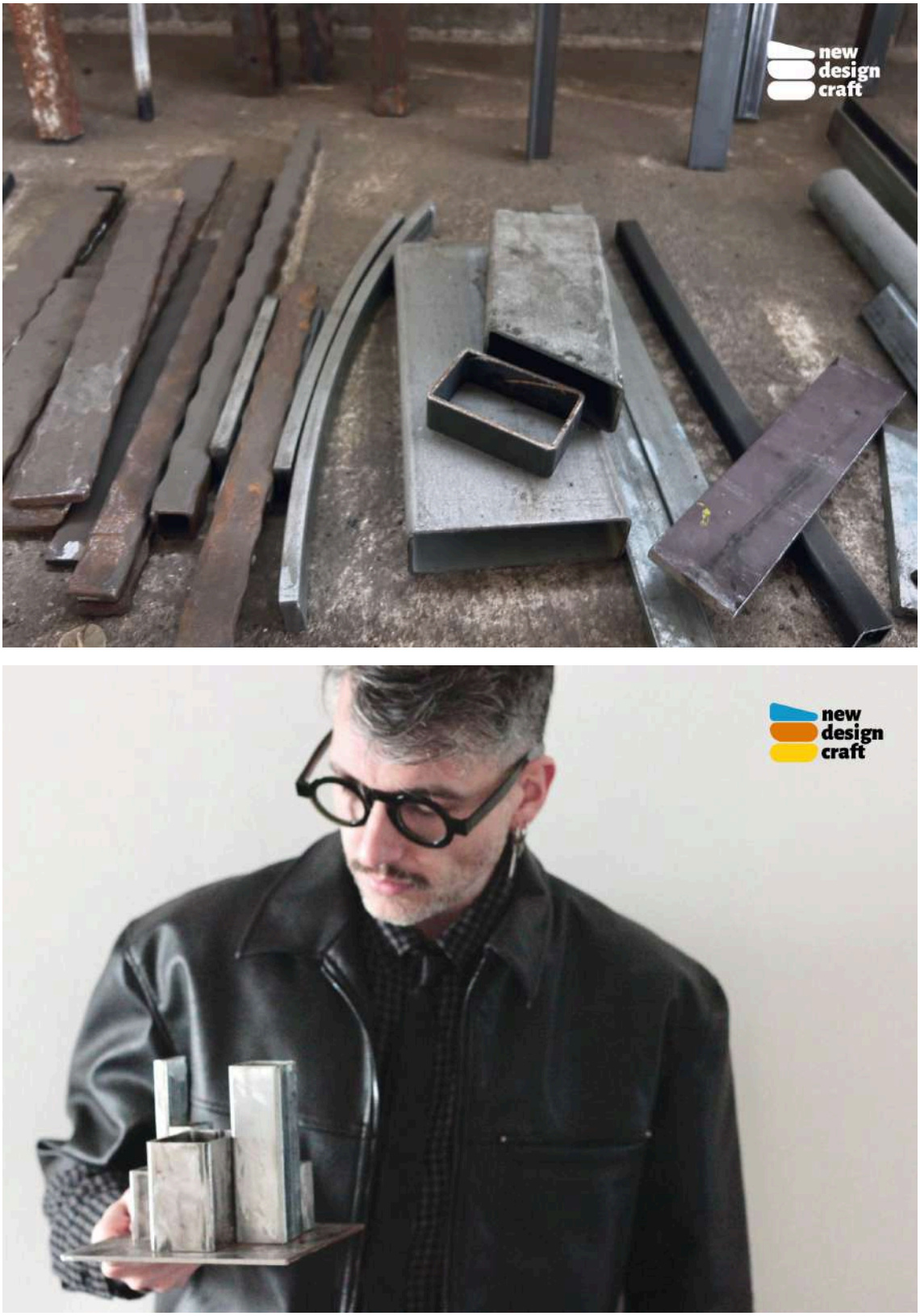


Figure 5.19 *Applications of logo against light vs dark backgrounds.*

2.4 Manifesto for New Design Craft (v1.0)

Drawing on the findings of the literature review and of the qualitative research, specifically from the analysis of the diverse design approaches to New Design Craft, the manifesto emerged as a comprehensive, divulgative artefact that unifies these insights into values, guiding principles, and a north star vision. This manifesto synthesises the approaches of the four Souls of New Design Craft—Material-Driven, Conceptual & Research-Oriented, Experimentation & Process-Oriented, and Sustainability & Ethics-Driven—into a coherent framework that articulates a shared commitment to regenerative design and cultural empowerment. It integrates a visual language that provides the movement a physical, recognisable identity by combining visual elements with a dynamic process model. The manifesto thus functions as both a guiding philosophy and an accessible operative instrument, uniting the theoretical, methodological, and communicative aspects of New Design Craft into a single document that can interact and motivate an audience of hybrid design practitioners as well as academic researchers.

The Manifesto is structured in six pages introducing the context of New Design Craft, its North Star, Values, and Principles, as well as the Four Souls of New Design Craft and a holistic Process. Closing the Manifesto, a link to a feedback survey instrumental to the testing phase aimed at the redefinition of version 2.0 of the Manifesto. Figures 20-25 present the six pages of the Manifesto.

Figure 5.20 *Manifesto for New Design Craft (v1.0): Cover page.*

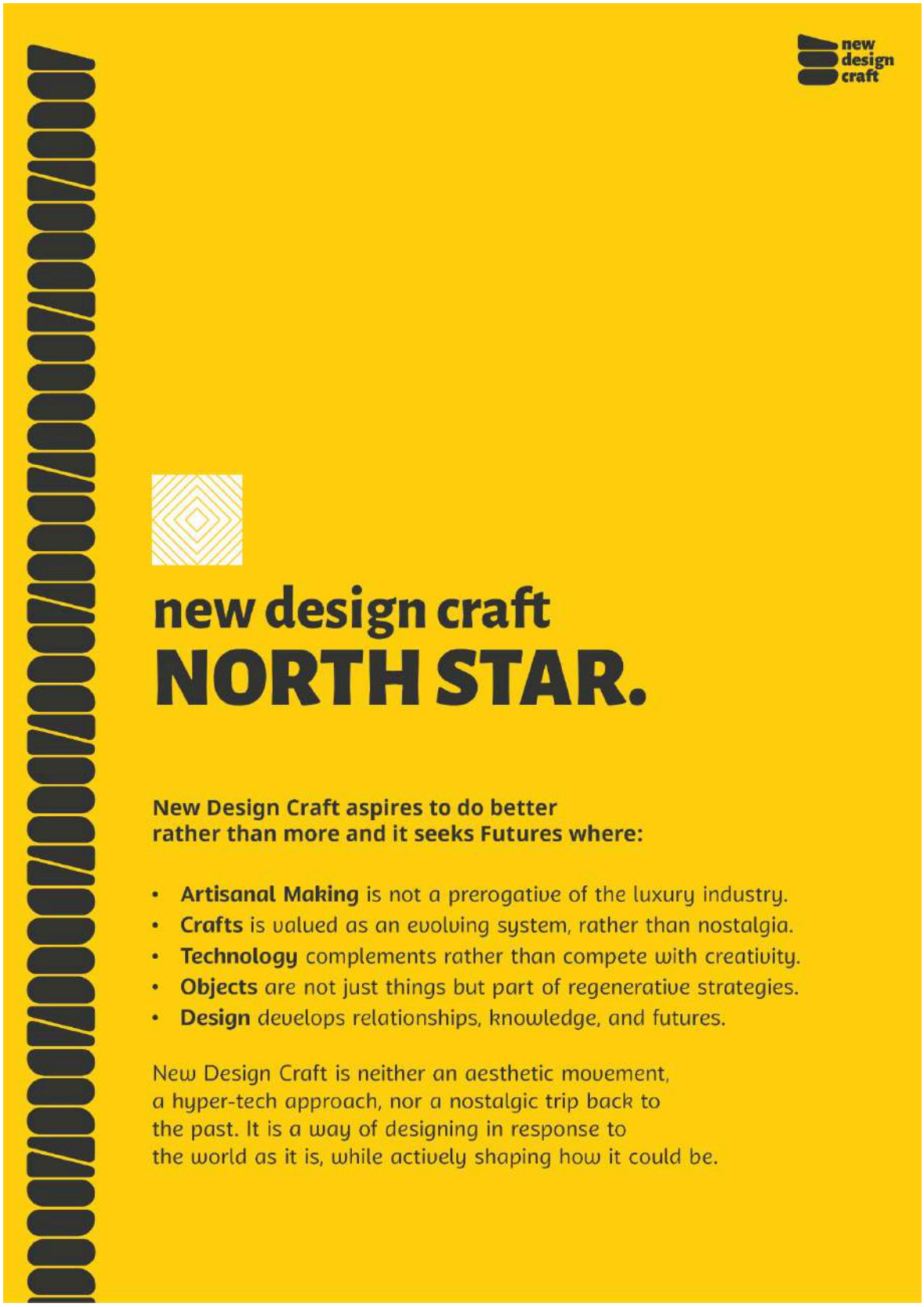


Figure 5.21 *Manifesto for New Design Craft (v1.0): North Star Page.*

Figure 5.22 *Manifesto for New Design Craft (v1.0): Value Page.*

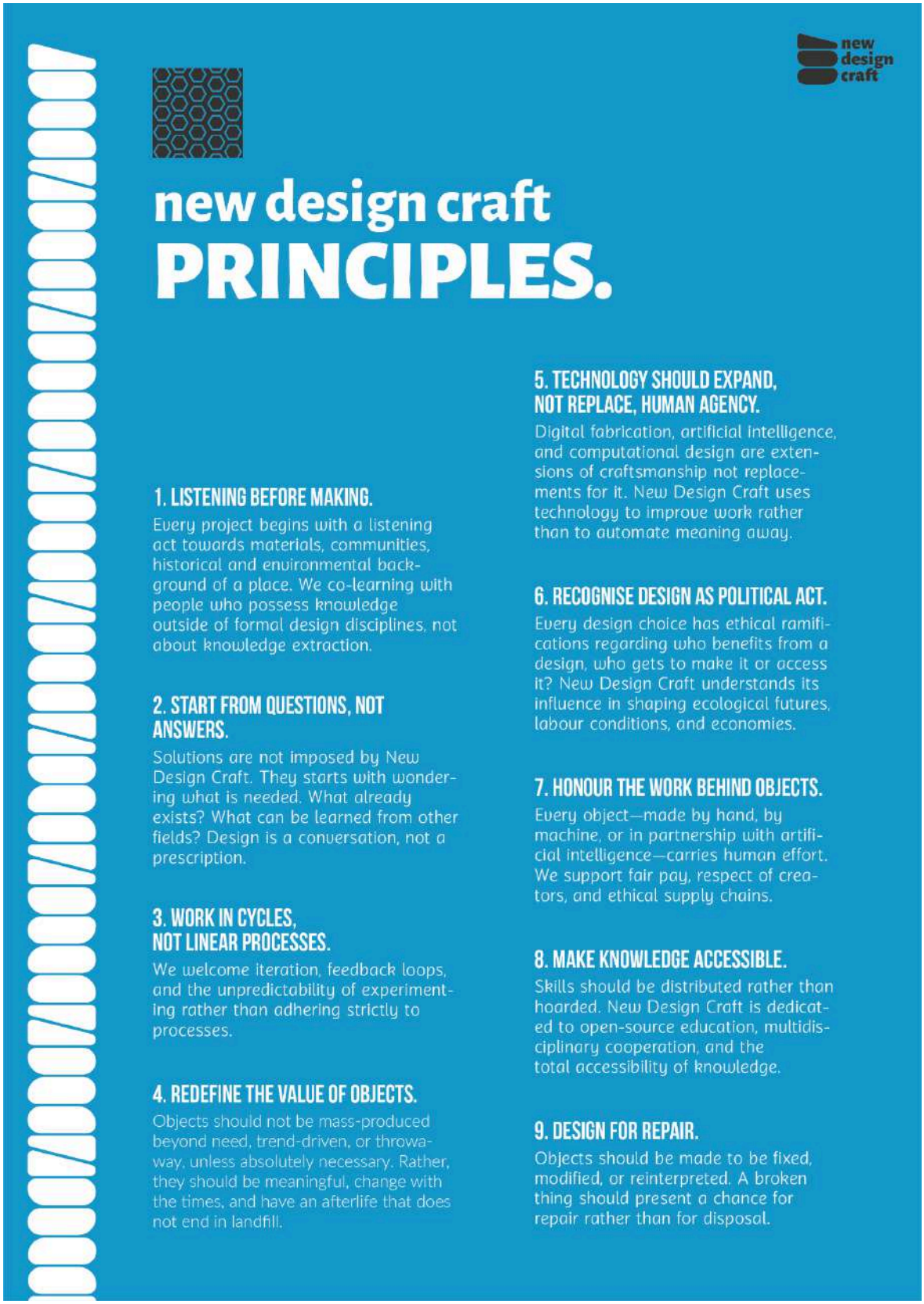


Figure 5.23 *Manifesto for New Design Craft (v1.0): Principles Page.*

Figure 5.24 *Manifesto for New Design Craft (v1.0): Four Souls Page.*

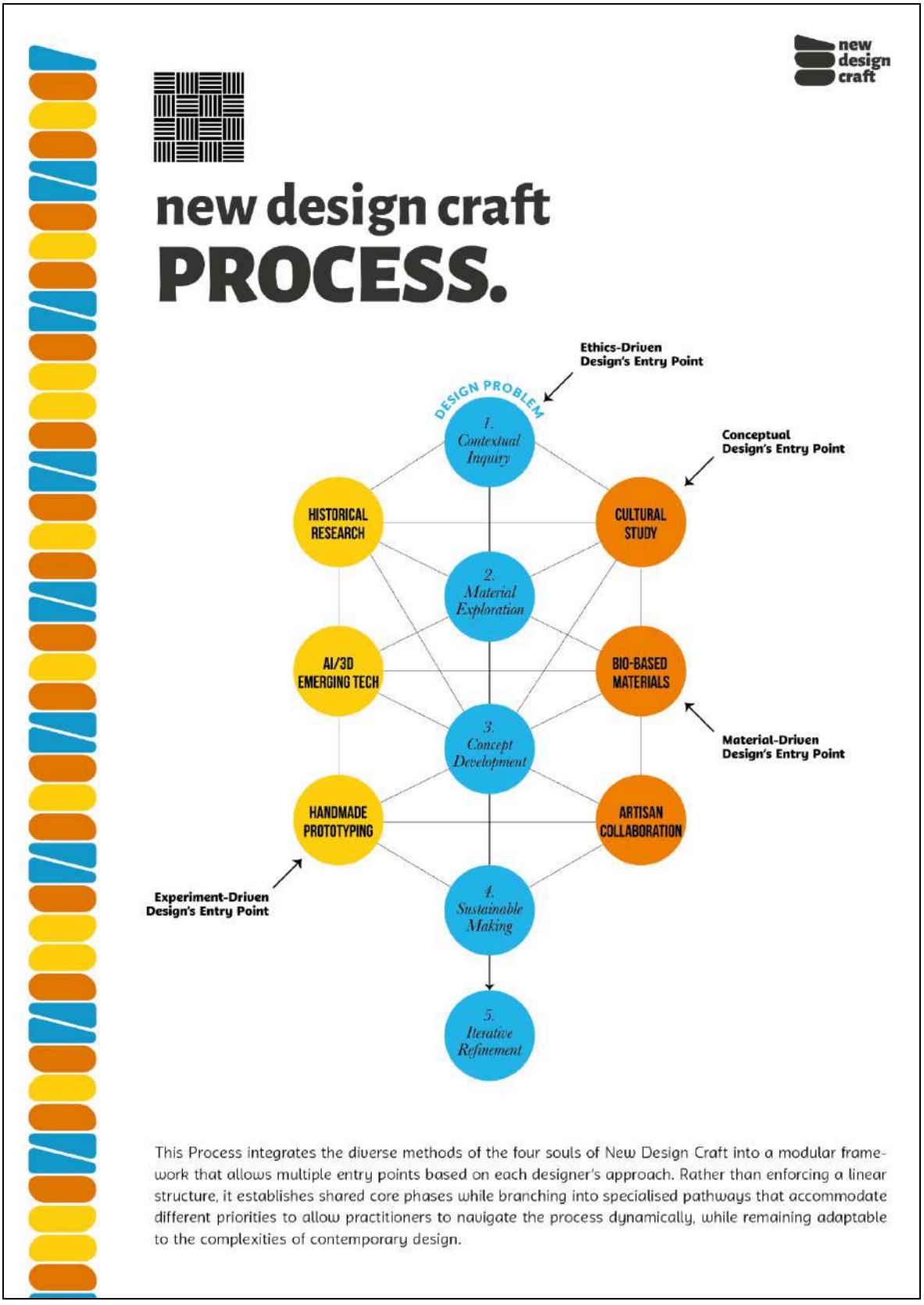


Figure 5.25 *Manifesto for New Design Craft (v1.0): Process Page.*

3. Action Research Approach

3.1 *Generative Craft*: Why a Pilot Project?

Designed as an action research experiment to assess the validity and replicability of the New Design Craft manifesto and its related process, the *Generative Craft* project that is here presented, served as a link between the theoretical component of the research and future practical applications. The main goal of the pilot project was to evaluate if the defined values, principles, and process framework—resulting from the analysis of over two hundred design practices—could be reasonably implemented in a collaborative, hybrid setting.

The project started with a question derived from the design research problem guiding this research. Specifically, we wanted to understand if generative coding could be used in cooperation with traditional blacksmithing to define new applications for this traditional form of craft. We worked together with Carlo Guttilla, a Sicilian blacksmith with a four-generation tradition in blacksmithing, and his son Gianluca to upcycle metal scraps from their workshop into new design artefacts. Using the Process for New Design Craft defined in the Manifesto as a blueprint, a design algorithm for this specific project was developed to integrate different workflows. My workflow as the designer of the project, my workflow as the researcher observing the experiment, and the artisans' production workflow. The whole process was documented for further evaluation and validation of the New Design Craft Manifesto and resulted in the collection of observations necessary to identify areas of improvement in version 1.0 of the New Design Craft Manifesto.

Secondarily, the pilot was developed as an opportunity to disseminate the New Design Craft research through the publication of papers sharing an account of the experience, and the exhibition of the produced collection during the Milan Design Week 2025.

3.2 The Concept

Traditional blacksmithing faces a significant risk of obsolescence as industrial manufacturing increasingly replaces locally rooted artisanal practices, which used to be a crucial part of local economies and material cultures. These practices now struggle to survive against the rapid

advancements in technology and industrial manufacturing, and this background poses a crucial question: can emerging technologies be harnessed to regenerate, rather than replace heritage craftsmanship?

In response to this challenge, Generative Craft investigates if generative coding and traditional blacksmithing can work towards a shared vision, therefore collaborating rather than competing. In the age of Artificial Intelligence, as a designer, I was fascinated by the possibility of merging Artisanal Intelligence and computational design, using generative programming (with the generative programming language Processing) to create ever-evolving patterns that shape the forming process while still keeping the control over the final outcomes of the project still in the hands of the humans involved in the process.

To me, Artisanal Intelligence sits on the opposite side of the spectrum in comparison to AI: unlike its artificial counterpart, Artisanal Intelligence is extremely human. It doesn't think in terms of pre-made frameworks and schemata but it increases its knowledge organically through direct experience (Sennett, 2008). So, instead of rigid, predefined templates, the algorithm suggests forms that become collaboration tools between the designer and the blacksmith who, ultimately, interprets and adapts these inputs in real-time with their hands and intuition. This collaboration between human craftsmanship and machines is coordinated by the designer's ability to facilitate processes of knowledge exchange (Bistagnino, 2008). As such, Generative Craft aimed to demonstrate if traditional craftsmanship and computational design could be integrated within a process orchestrated by design's facilitation and mediation skills. In this sense, the designer's role is not diminished but reinterpreted in terms of the ability to manage the flow of information between machines and artisans.

3.3 Actors of the Project

Central to the *Generative Craft* project was the collaboration with Carlo Guttilla and his son Gianluca, the last of four generations of blacksmiths. In 1930 Carlo's father opened their workshop in Lercara Friddi, a small town near Palermo, Sicily. Carlo, now nearly ninety, has spent his entire life immersed in the craft. Formally starting at the age of eleven—but never recalling a day away from the

workshop—Carlo's profound relationship with blacksmithing was shaped by his father's pride in craftsmanship as an elevated art form. In fact, Carlo's father used to take pride in the fact that he had never put a horseshoe in his life, believing that the craft held higher potential than merely functional ironworking. Over the years, Carlo travelled extensively in search of his own creative language. His journeys took him through Australia, Germany, and Belgium, experiences he recalls not as periods of emigration driven by necessity, but rather as phases of artistic exploration. He describes himself during these travels as "a minstrel going from city to city, carrying his blacksmithing skills instead of a guitar," reflecting his deep attachment to his craft as a form of personal expression. His international experiences and artistic sensibility earned him recognition already in the 1980s when he was described as "a new hope for Italian material sculpture". Later, notable commissions followed, including the work conducted in the 1990s when he was commissioned several iron artefacts for the New Parish of St. Peter in Bagheria, designed by architects Cacciatore and Ciotta.

Figure 5.26 *Carlo Guttilla (on the right) and his son Gianluca (on the left).*

M.C.

ne della critica. La scultura non è dunque morta, anzi opere di questa fattura possono farci sperare nel perpetuarsi del suo volo.

GLI ARTISTI DI CUI SI PARLA a cura di MATTEO CAPODARSO

Nel prossimo numero:
CIO' CHE NON TUTTI SANNO [nemmeno il Giudice FOTI ed il Pretore MAISANO] SULLA GESTIONE DI «TELEITALIA» - CANALE 41 DI ROMA CHE [NON] TRASMETTE DA POMEZIA, MA OCCUPA IL CANALE

Otello LATINI

sivo ed espressivo i più fedeli strumenti per la sua poetica rappresentazione.

Fra i premi più importanti che hanno accompagnato la carriera artistica di Otello Latini ricorderemo il Trofeo «Cedar» e «Saturnia Tellus» di Roma, il «Pentagono» di Zagarolo, il «Tibidabo d'Oro» di Ostia, l'internazionale «Nuova Elite».

Del pittore romano Otello Latini e della sua figurazione abbiamo parlato sempre con viva ammirazione riconoscendogli uno stile personale inconfondibile ed una sensibilità umana che riscalda ed anima tutti i personaggi del suo ricco teatro sociale. Stile e sensibilità che trovano nei colori ottimamente armonizzati da una luminosità diffusa e nel disegno sempre inci-

Carlo GUTTILLA

Fra le molte, innumerevoli colombe che continuano a volteggiare nei cieli dell'arte, candide o inquinate da simbologie ideologiche - una per tutti la colomba picassiana lanciata per sponsorizzare la Pace e perdutasi nel buio delle guerre -, quella di Carlo Guttilla non è seconda a nessuna, anzi possiamo riconoscerle una consistenza ed un'armonia che testimoniano della raffinata maturità artistica di questo scultore.

Carlo Guttilla espone la sua colomba - in perfetto equilibrio su un ramo - nella collettiva del Centro d'Arte e Cultura «Nuova Figurazione» in Roma, riscuotendo un meritato successo e attirando l'attenzio-

LA VEDOVA SCALTRA

Signore, datemi la certezza che i Preti «conservatori» prima di tutti [come, per esempio, l'Arcivescovo Mons. Arrigo Pintonello ed il suo Rev. don Giacomino Feminò] e le donne a loro vicine [come, per esempio, «sorella» Lidia] credono veramente all'esistenza nell'al di là dell'inferno ... e poi raccoglietemi presso quell'anima benedetta.

Figure 5.27 *The journal TeleEuropa in March'83 defines C.Guttilla "a hope for Italian Sculpture".*

Today, the workshop is co-led by Carlo's son, Gianluca, who at 47 continues this family legacy. Both father and son maintain a meticulous approach to their materials, carefully preserving and cataloguing metal remnants for future use with each piece considered valuable raw material capable of new transformations. As Carlo passionately insists, this craft "cannot be taught; it emerges naturally and develops like an illness you barely notice," emphasising an intuitive understanding nurtured through practice rather than formal instruction. Their workshop retains traditional tools such as the forge, anvil, and hammer, but Carlo and Gianluca's approach to blacksmithing —marked by a total

openness to new techniques and materials— demonstrates a thoughtful continuous research between preservation and innovation. Carlo Guttilla –whose shy personality hides the genius in plain sight– is locally respected for his technical mastery and his profound dedication to his craft. Described locally as one of the last true masters of ironworking, Carlo's creations begin as 1:1 scaled sketches, quickly evolving through iterative adjustments and hands-on experimentation. The outputs of his craftsmanship have gone on to embellish numerous significant buildings in the region, resulting in a spontaneous, not artificially constructed deep cultural resonance at a local level. Carlo seems to be born with a natural predisposition towards the creation of cultural value through manual craftsmanship, in a perspective that sees the artisan's central role in shaping both objects and identities, heritage, and community. On the other side, within the Generative Craft project, my role and responsibilities derived from the need to wear two different hats, each distinct but interconnected, that is to say the designer and the researcher's hat.

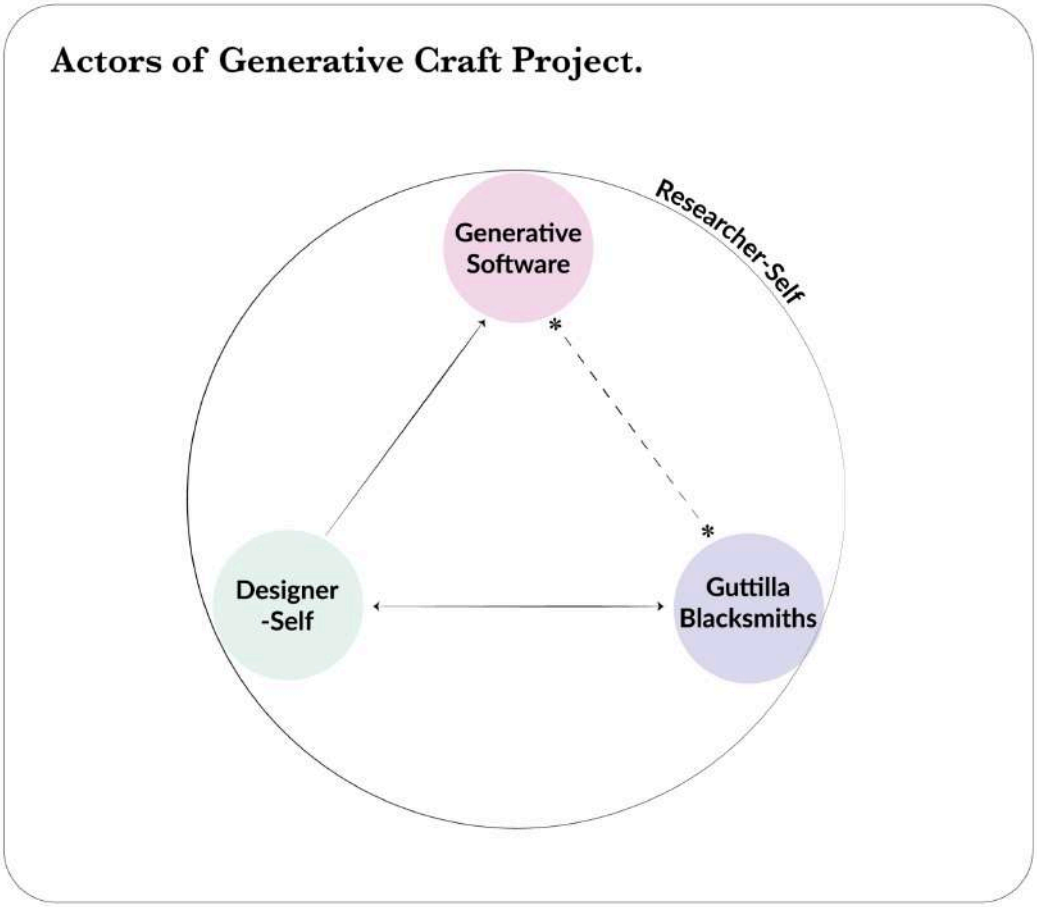


Figure 5.28 *The Actors of the* Generative Craft *project.*

As a designer, my principal responsibility revolved around conceptualising and bringing to life the Generative Craft concept which started by playing with the idea of bridging traditional blacksmithing with generative programming. Hence, I kicked off the process mapping the metal scraps in the blacksmiths' workshop and annotating their geometrical and physical properties.

Following this mapping phase, together with the blacksmith, I defined the requirements and constraints that the pieces needed to adhere to, to ensure their productive feasibility. A crucial responsibility of this role involved designing and developing a generative software using Processing which was imagined as a system able to build compositions of metal shapes, providing virtually infinite variations of blueprints for the production phase. I also performed an initial assessment of these digital outputs against predefined criteria related to structural integrity, visual composition, and technical feasibility.

This initial selection was instrumental for the facilitation of an effective dialogue between the digital outputs and the blacksmiths to mediate the hybridisation process and ensure mutual understanding between all parties. Lastly, after coordinating the final selection phase consisting in the definition of a shortlist of the most promising designs to be pushed for production, I got involved in the last detailed decisions regarding the final treatments, such as surface finishes and polishing.

As a **researcher**, my duties followed those suggested by an Action Research approach.
I began specifically with establishing a research topic that would guide the experience's planning. Since the experiment's goal was to evaluate the relevance and validity of the Manifesto and the process for New Design Craft, I focused on finding out whether these could be effectively implemented in a newly established design/craft collaboration. After defining the research question, I also articulated metrics of success to support the final assessment and evaluation of the experiment. More specifically, throughout the process, I continuously assessed the effectiveness and efficiency of the procedures as well as the clarity of communication among the stakeholders, and --at the end of the experiment-- I also assessed the artefacts' perceived value. To precisely document the experiment, I

kept notes of observations, interactions, decisions, obstacles, and changes in the design-craft cooperation dynamics, through the annotation of direct quotes from the parties, descriptive notes, and pictures. One last duty of my researcher-self was to evaluate these qualitative data to summarise insights and find areas for future improvement of the New Design Craft Manifesto.

3.4 The Process and a Generative Algorithm with Processing

3.4.1 Mapping of Metal Scraps

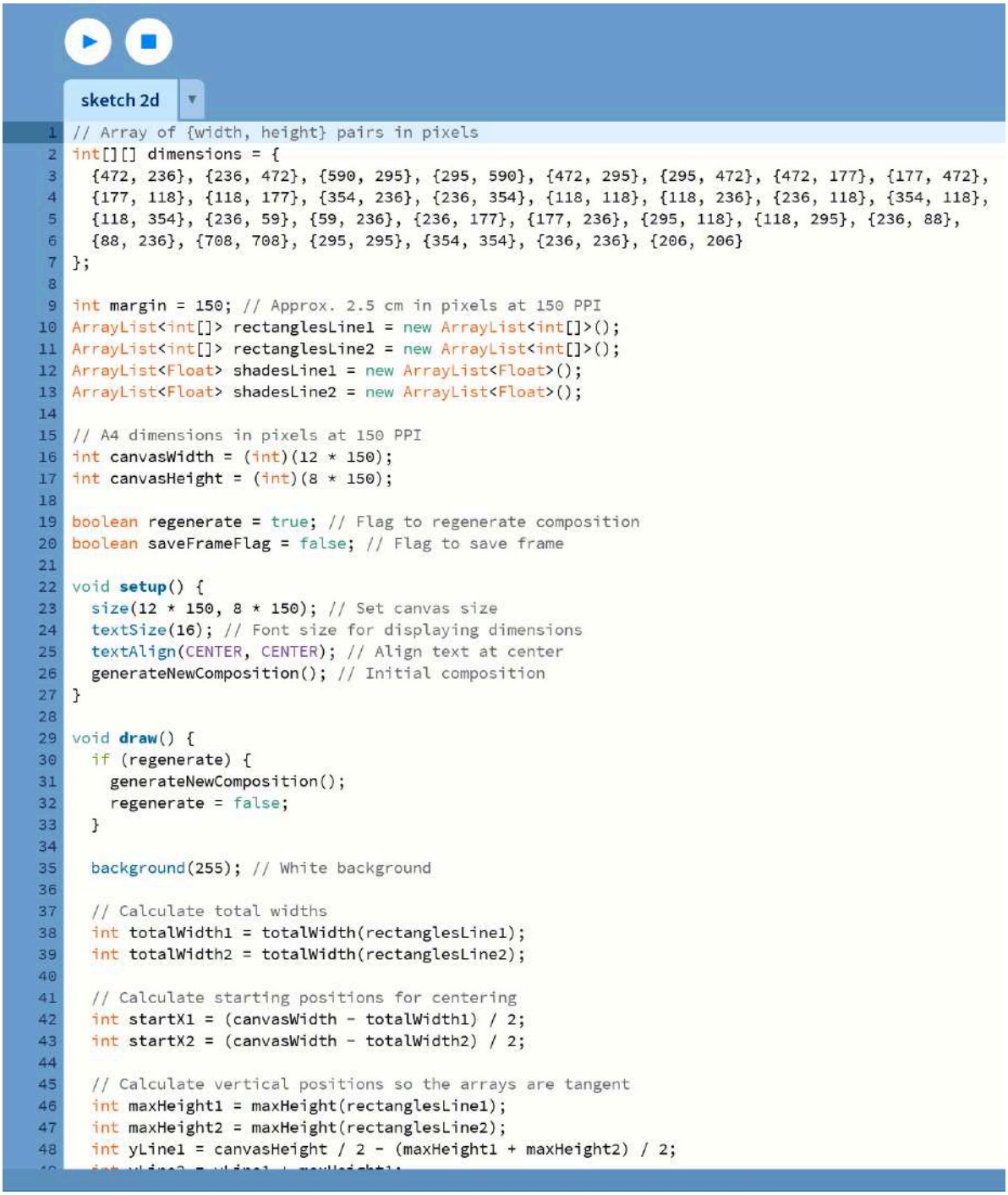
The process started with systematic mapping of left-over metal scraps from previous blacksmithing operations. Every scrap was gathered, measured with callipers, and recorded for its dimensions, form, texture, and structural state. Every element was captured through records comprising textual observations and pictures, which were then utilised to create the dataset needed for the next generative analysis.

Figure 5.29 *Mapping of Metal Scaps.*

3.4.2 Developing the Algorithm

Following the mapping phase, a generative algorithm was developed in Processing to create design compositions based on the documented geometries. Designed to create a structured yet randomised composition of rectangles, placed in two horizontal rows on an A4-sized canvas, this Processing program was built on structural and functional needs and a set of specified measurements resulting from the mapping of metal scraps. From this pool of measurements, the program selects six rectangles at random –three for the top row and three for the bottom row. Every rectangle is shown with a greyscale fill, with black shades ranging from 20% to 80% and labelled with width and height translated from pixels to centimetres. The two rows are exactly placed to be tangent to one another, therefore preserving a visually balanced configuration. The sketch opens by specifying a global array of rectangle dimensions, expressed as an array of {width, height} pixel pairs. These values include a variety of proportions and sizes, ranging from small squares to elongated rectangles, one pair for every section of metallic tubular mapped in the workshop. Operating on a canvas size of 1800x1200 pixels, corresponding to an A4 sheet at 150 PPI. When translated to centimetres, this resolution guarantees that the printed result keeps the correct physical dimensions. To guarantee that the rectangles are not positioned too near the edge of the canvas, we introduced a margin of 150 pixels, which at 150 PPI equates to roughly 2.5 cm. The setup() function initialises the canvas and, immediately after setup, the function generateNewComposition() is called to produce the first arrangement of rectangles. Rendering the composition is handled by the draw() function, which runs constantly for the entire runtime of the program. It initially looks at whether the regenerate flag is set to true, so suggesting that a fresh composition ought to be produced. The software computes the total width of every row using the helper function **totalWidth(rectanglesLine1)** and **totalWidth (rectanglesLine2)** to guarantee correct alignment. Analysing the maximum height of the rectangles in every row helps to establish vertical orientation. While **maxHeight(rectanglesLine 2)** looks for the tallest rectangle in the second row, maxHeight(rectanglesLine 1) searches the first row. The software then computes the vertical placement (yLine1 and yLine2) so that the two rows are exactly tangent, therefore aligning the

bottom of the first row with the top of the second row. This computation guarantees that the two rows are always structured in a regulated form independent of the random selection of any rectangles.



sketch 2d

```
// Array of {width, height} pairs in pixels
int[][] dimensions = {
  {472, 236}, {236, 472}, {590, 295}, {295, 590}, {472, 295}, {295, 472}, {472, 177}, {177, 472},
  {177, 118}, {118, 177}, {354, 236}, {236, 354}, {118, 118}, {118, 236}, {236, 118}, {354, 118},
  {118, 354}, {236, 59}, {59, 236}, {236, 177}, {177, 236}, {295, 118}, {118, 295}, {236, 88},
  {88, 236}, {708, 708}, {295, 295}, {354, 354}, {236, 236}, {206, 206}
};

int margin = 150; // Approx. 2.5 cm in pixels at 150 PPI
ArrayList<int[]> rectanglesLine1 = new ArrayList<int[]>();
ArrayList<int[]> rectanglesLine2 = new ArrayList<int[]>();
ArrayList<Float> shadesLine1 = new ArrayList<Float>();
ArrayList<Float> shadesLine2 = new ArrayList<Float>();

// A4 dimensions in pixels at 150 PPI
int canvasWidth = (int)(12 * 150);
int canvasHeight = (int)(8 * 150);

boolean regenerate = true; // Flag to regenerate composition
boolean saveFrameFlag = false; // Flag to save frame

void setup() {
  size(12 * 150, 8 * 150); // Set canvas size
  textSize(16); // Font size for displaying dimensions
  textAlign(CENTER, CENTER); // Align text at center
  generateNewComposition(); // Initial composition
}

void draw() {
  if (regenerate) {
    generateNewComposition();
    regenerate = false;
  }

  background(255); // White background

  // Calculate total widths
  int totalWidth1 = totalWidth(rectanglesLine1);
  int totalWidth2 = totalWidth(rectanglesLine2);

  // Calculate starting positions for centering
  int startX1 = (canvasWidth - totalWidth1) / 2;
  int startX2 = (canvasWidth - totalWidth2) / 2;

  // Calculate vertical positions so the arrays are tangent
  int maxHeight1 = maxHeight(rectanglesLine1);
  int maxHeight2 = maxHeight(rectanglesLine2);
  int yLine1 = canvasHeight / 2 - (maxHeight1 + maxHeight2) / 2;
```

Figure 5.30 *Generative Algorithm.*

The composition is regenerated when the mouse is clicked. The mousePressed() function sets regenerate = true, which starts generateNewComposition() in the next frame, while the mouseReleased () function saves the current composition when the click is released. This allows users to quickly create several compositions and export them for later usage.

In summary, this Processing sketch is a randomised layout generator that methodically arranges two rows of rectangles maintaining a structured design. It guarantees exact alignment and proportionality by choosing from a pre-defined collection of dimensions, therefore balancing randomness with order. This stage generates a range of possible blueprints that were later used as a cooperative design tool.

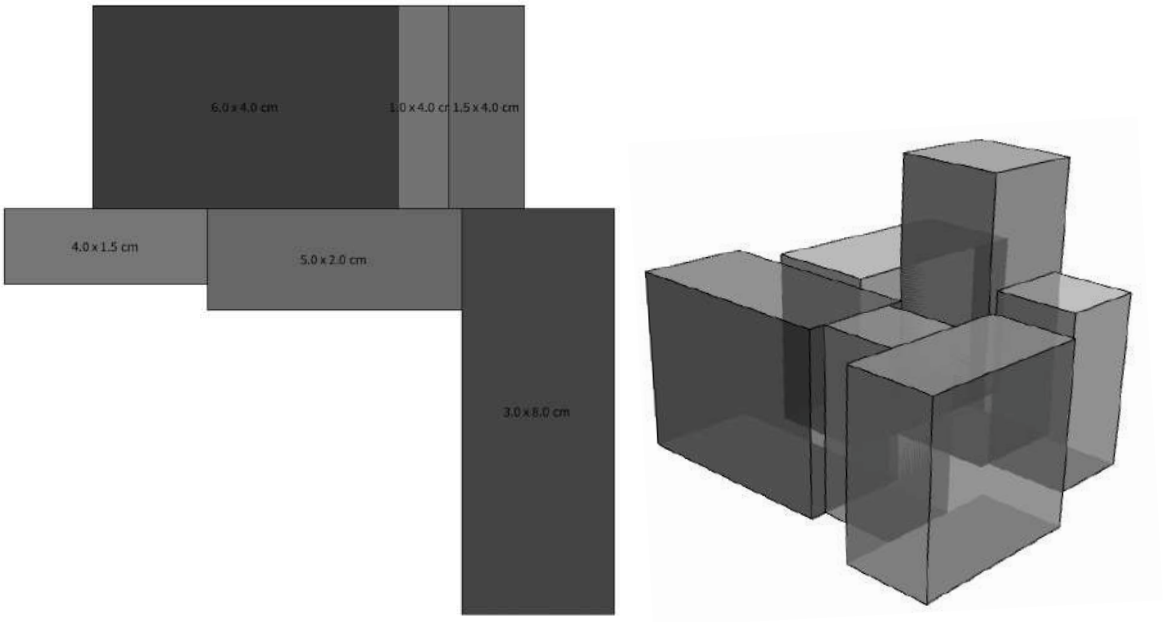


Figure 5.31 *Outputs of the Generative Algorithm.*

3.4.3 Blueprint Selection

Next, we carried out a thorough analysis to rank the blueprints from the pool of algorithmically generated designs. Blueprints were assessed against a set of metrics to evaluate their structural viability, material limitations, and visual appeal. In this phase, we compared and refined the designs depending on their productive feasibility with top priority given to the blueprints that challenged traditional form while still preserving functional integrity and the constraints of the scrap material.

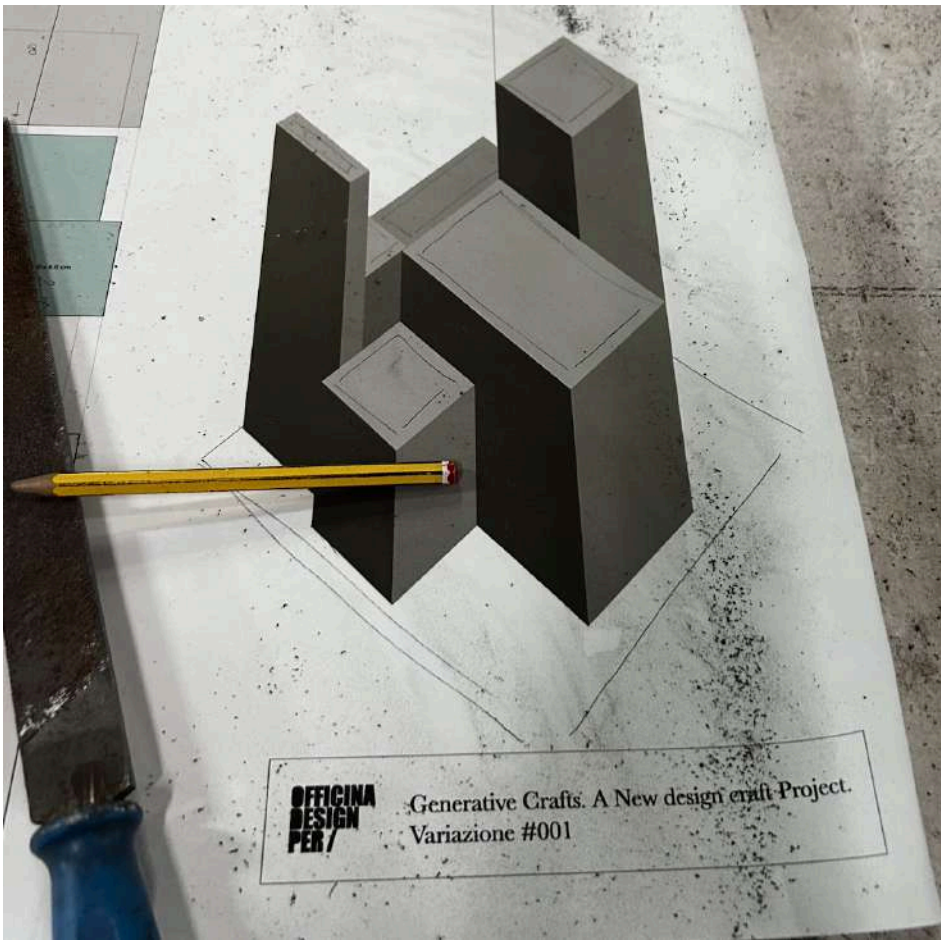


Figure 5.32 *Blueprints Selection.*

3.4.4 Metal Cutting & Preparation

Translating the digital drawings into tangible forms constituted the phase following the blueprint selection. In order to replicate the generative patterns, the mapped metal scraps were cut and processed with traditional tools --mostly milling machines and water-jet cutters. Edge and surface smoothing were the last steps of the preparation to guarantee that the metal scraps could be safely used and ready for the forging stage.

Figure 5.33 *Metal cutting and preparation.*

3.4.5 Hand-Forging and Welding

After the preparation of the material, the metal pieces are hand-forged by the blacksmiths. During the forging process, the generative blueprints acted as a flexible guide while the blacksmiths and the designer adjusted the designs to productive constraints. Specifically, the artisans iteratively made changes to the design upon observations of structural and material integrity to ensure feasibility.

Figure 5.34 *Soldering and assembly.*

3.4.6 Refinement & Finishing

The last stage focused on polishing and finishing the produced objects to achieve the intended functional and aesthetic quality. Every object had its surface texture and durability improved using conventional finishing methods like brushing, oiling, and polishing. The result is a small technical series of eight pieces that capture the effective fusion of generative design ideas with traditional blacksmithing techniques.

Figure 5.35 *Final Brushing.*

3.5 A Visual Identity for Generative Craft

This paragraph introduces the work conducted to define a visual identity for the Generative Craft Project, which is meant to combine symbols evoking traditional craft with symbols representative of generative coding. One of the requirements for this project was its ability to guarantee consistency and clarity independent of size: for this reason, it was conceived as a dynamic visual system of symbols meant to be a scalable asset that keeps its recognisability and impact.

3.5.1 Identity Concept and Construction

The fundamental idea is based on the fusion of craft techniques with generative programming. The idea first sought to depict this confluence using a matrix of symbols integrating craft-inspired elements with binary code. After incremental improvement, the idea was simplified into a horizontal array of three separate symbols: a full circle that signifies a zero, a vertical bar to represent a one, and a circle with a central X that denotes hand metal work—akin to seeing a screw from above. This design was selected to effectively communicate the methodical elements of generative coding together with the tactile and process-based features of conventional workmanship. With the mark anchored in a regular geometric module that accentuates the organised character of digital processes, the logotype was purposely designed to mitigate the geometric rigidity of the symbolic parts using a heavy, strong typeface with a regular circular module. The identity is formed as a family of elements to guarantee adaptability in many settings. In its extended form, the logo uses the fully spelled-out name of the project (*Generative Craft*); in the intermediate form, we shorten this to "*GNRTCRAFT*" by dropping the vowels in "*Generative*"; lastly, the compact form uses just the three-symbol logo.

3.5.2 Results and Applications

Figures 5.36-5.43 illustrate the conceptual exploration for the visual identity, the geometric construction of the logo, the moodboard for the colour palette and the chosen font. Following that, we present readability scales and the final identity both in the extended and compact versions. We close this paragraph with a collection of mock-ups and applications.

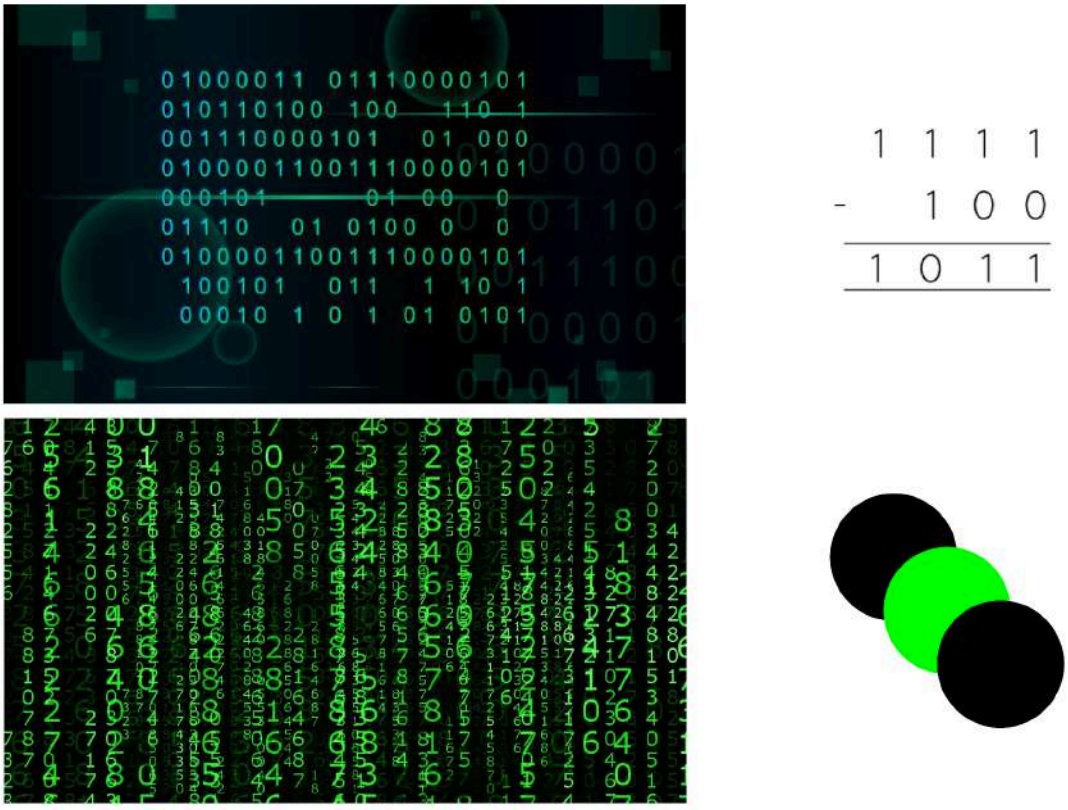


Figure 5.36 *Conceptual Exploration for a visual identity of the Generative Craft Project.*

Figure 5.37 *Preliminary studies.*

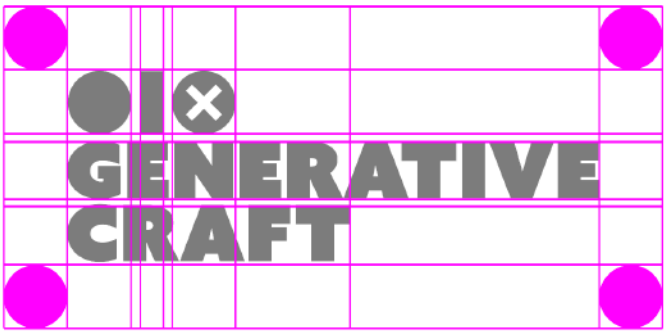


Figure 5.38 *Geometric construction of the logo.*

Figure 5.39 *Pangram showcasing the font Azo Sans Uber.*

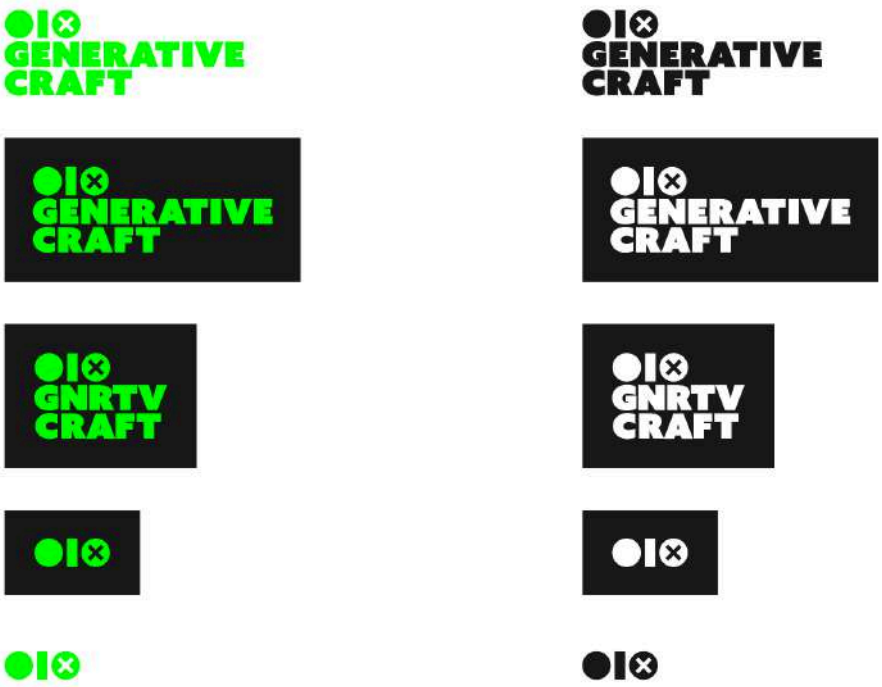


Figure 5.40 *Readability scales, extended and compact versions.*

Figure 5.41 *Final definition of dynamic visual identity, extended and compact versions.*

Figure 5.42 *Applications of logo against light vs dark backgrounds.*

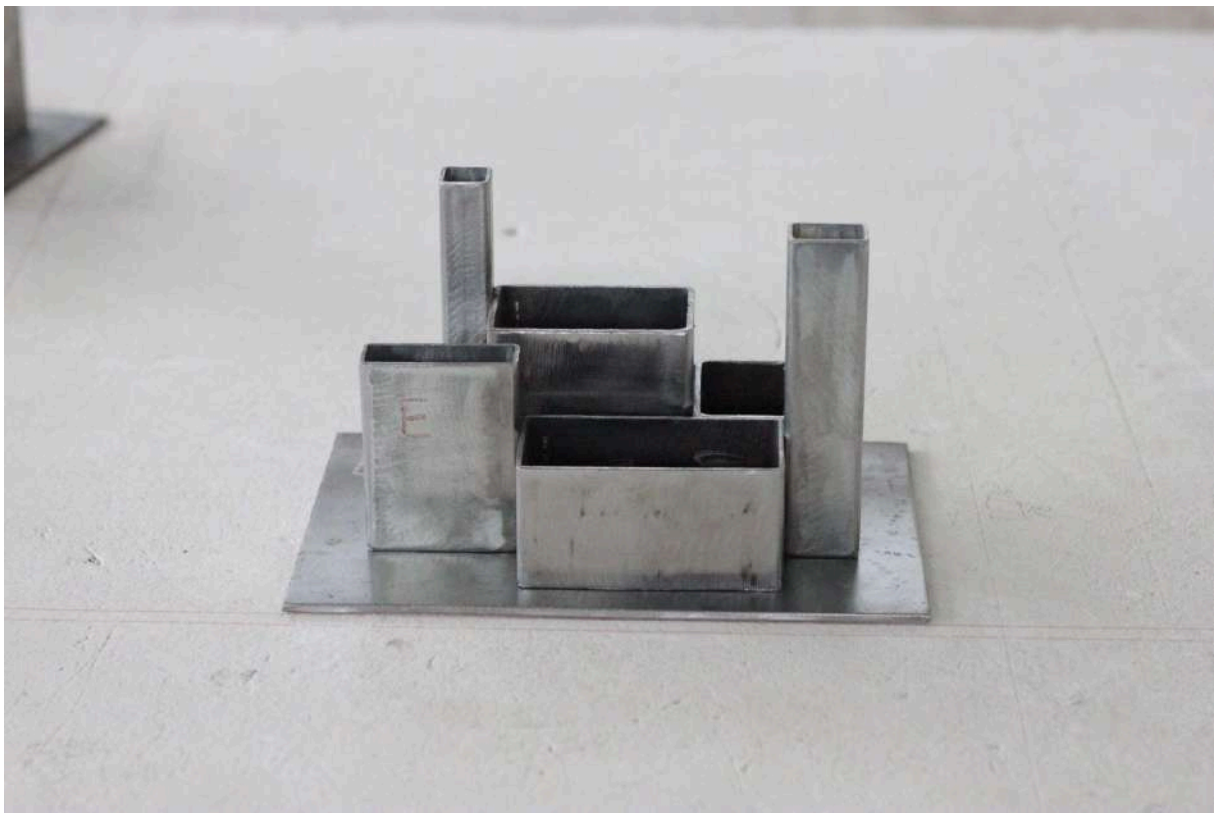
3.6 Outcomes of the Pilot Experience

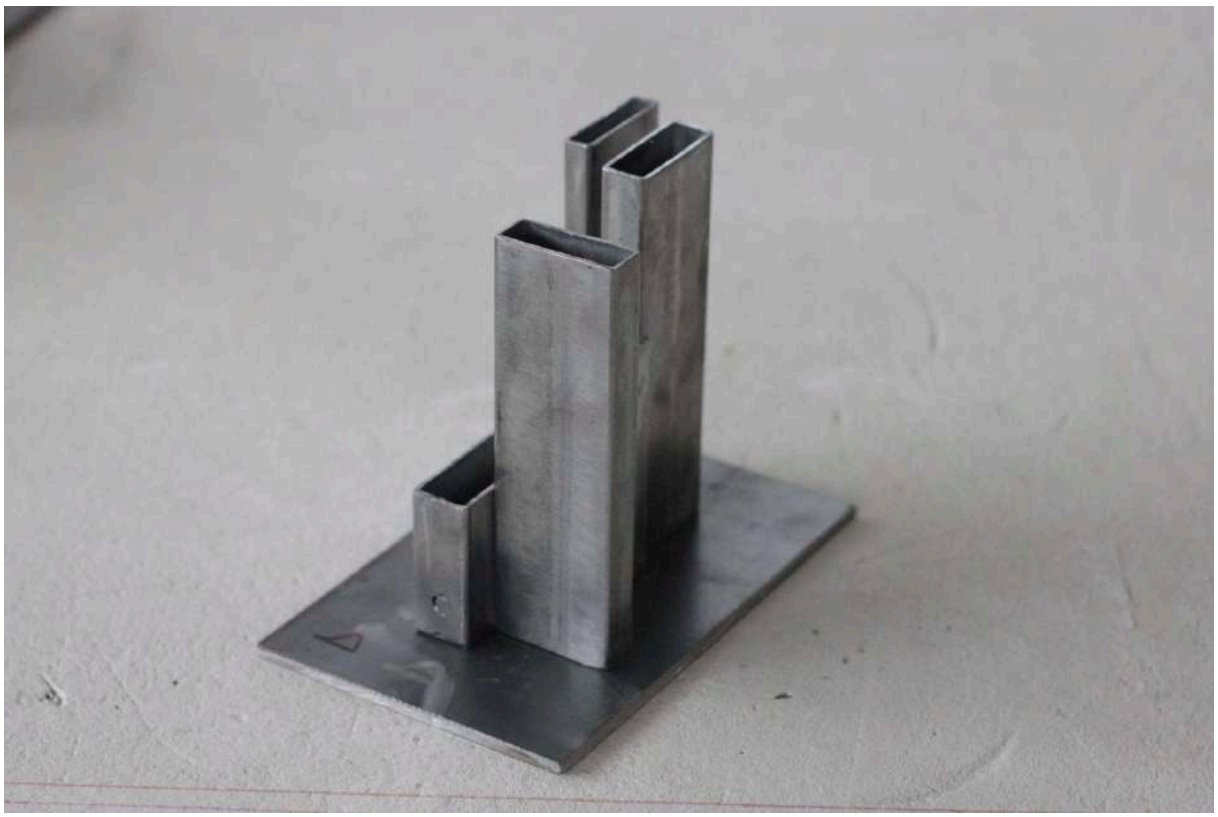
3.6.1 A collection of HyperObjects

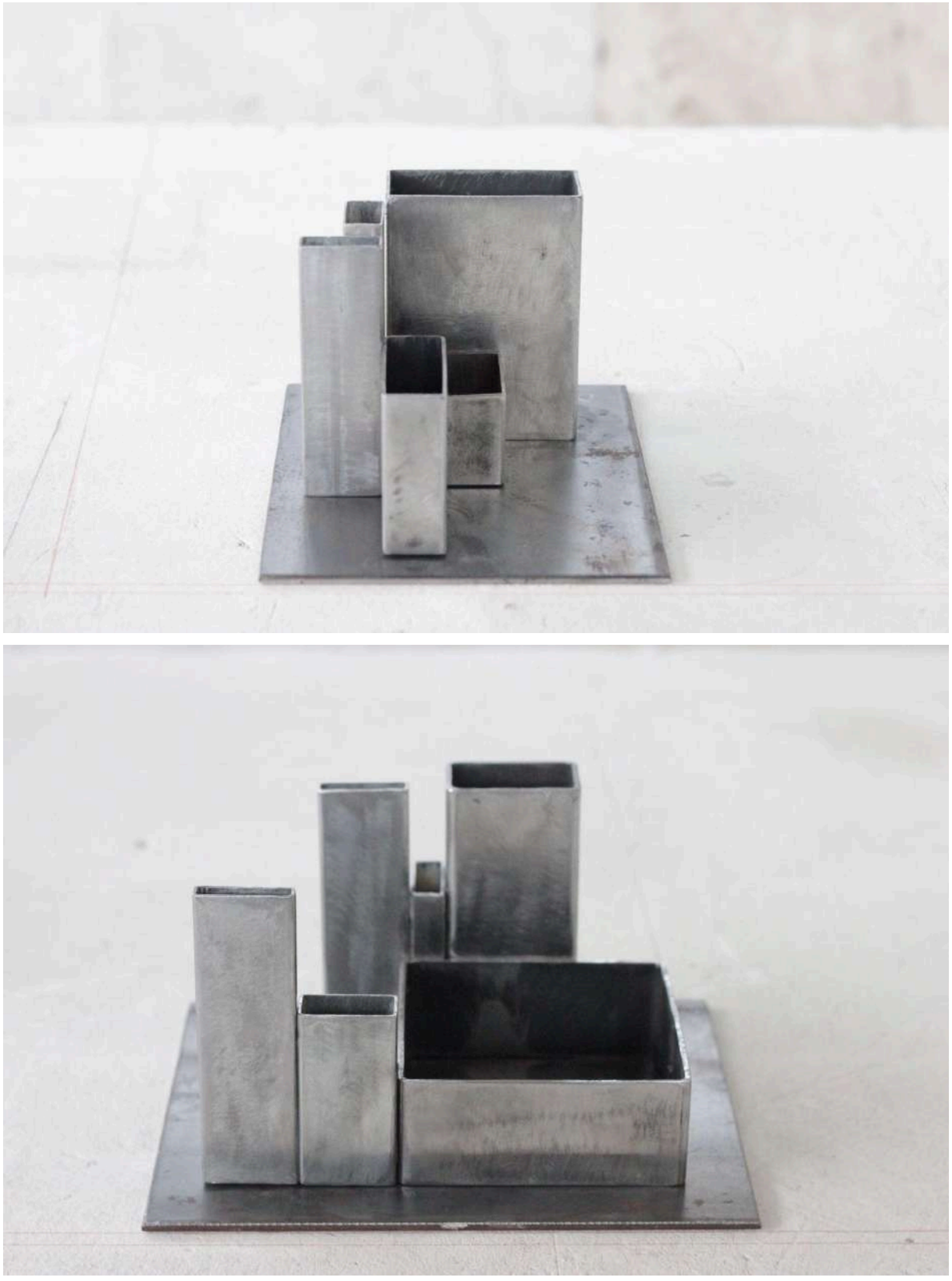
The outcome of this pilot experience resulted in a small technical series of eight pieces that were computer-generated, human-optimised, and hand-produced. Each of them is characterised by its geometric, modular aesthetics, designed and produced through a hybrid methodology blending generative computational design with traditional blacksmithing. The pieces display metal tubular sections arranged in a 3x2 matrix welded onto a solid metal plate with a raw finish which retains visible traces of manual craftsmanship —presenting the expressive qualities usually associated with traditional craft— and a rigid geometry of the composition that remains as a trace of the generative computational process behind the elaboration of these artefacts. These artefacts can be conceptualised as "hyperobjects" in alignment with Marco Petroni's definition. Petroni asserts that “the design of hyperobjects does not oppose the object; instead, it aspires towards an evolution closely adhering to contemporary complexity. It acts from within, through deep-digging and awareness-raising, betting on design as an agent of transformation and change” (translated from the original, Petroni, 2022, p. 7). These objects, which symbolise the intersection of design and post-industrial production, emerging technologies and crafts, go beyond their isolated identity to become expressions of more general reflections and interactions. Furthermore, the generative process used in the design of these products shows the transforming power of hybrid creative practices, which invites reflection on conventional manufacturing techniques, material reuse, and possible synergy between digital technologies and handcraft abilities. From an epistemological perspective, the project is in strong alignment with Petroni’s call for a necessary revision of design's historical, philosophical, and sociological categories of judgment. Petroni states “We live in a time when reformulating and recognising the fabric of history through revisiting philosophical, historical, sociological, and design categories is more necessary than ever” (translated from the original, Petroni, 2022, p. 19).
Bridging the traditional contraposition between emerging technologies and traditional craftsmanship, the collection wants to become a provocative dialogue on sustainability, social responsibility, and the resilience of heritage practices within contemporary hybrid frameworks.

Nevertheless, limitations concerning the scalability, replicability, and economic viability of these types of productions remain challenging within a system still predominantly governed by profit-driven logic. On this matter, Petroni notes that "the design of hyperobjects is closely linked to the transition from an economic world governed by profit and extractivism to an ecological one where careful attention and horizontality place care and coexistence at the centre of design—what Donna Haraway calls alliances, kinships between multiple actors, living and non-living, active and passive. It requires a queer, unconventional, interdisciplinary design capable of radical imagination. The design of hyperobjects is a concrete invitation to carry out a shift that is already underway. I am not advocating for primitivisms or more or less happy degrowth, but simply for an era of knowledge and awareness that we have reached a point of no return—the pandemic has clearly indicated this. Design must participate in and contribute to defining the new paradigms of the ecological revolution" (translated from the original, Quinz, 2022). Therefore, the value of the Generative Craft series, which does not directly address issues regarding the economic competitiveness of small-scale production, comes instead from its capacity to be radically imaginative, so supporting both a proof-of-concept and a stimulus for continuous exploration within this fundamental change towards sustainable and culturally relevant practices.

Figure 5.43 *Generative Craft, small technical series.*


F





Figures 5.44 - 5.50 *Generative Variation A, B, C, D, E, F. Design E. Maniscalco x Guttilla&Son.*

3.6.2 Video Documentary

To disseminate experiential information about the Generative Craft project, we produced a short documentary with the goal of building the narrative of a day in the life of Mr. Guttilla's workshop. The documentary wants to invite viewers into the physical environment of the workshop, allowing them to experience the sounds, imagery, and actions happening in this space.

The documentation process was conducted in an ongoing manner throughout the duration of the pilot experiment, employing continuous audio and video recording combined with observational annotations. Following data collection, and after building a storyboard for narrative coherence, we curated and edited the raw audio-visual materials. The final outcome of this process was a two-minute video, designed to highlight authentic images, sounds, and critical moments from the Generative Craft production phase. Figures 52-56 present the video storyboard and few key frames.

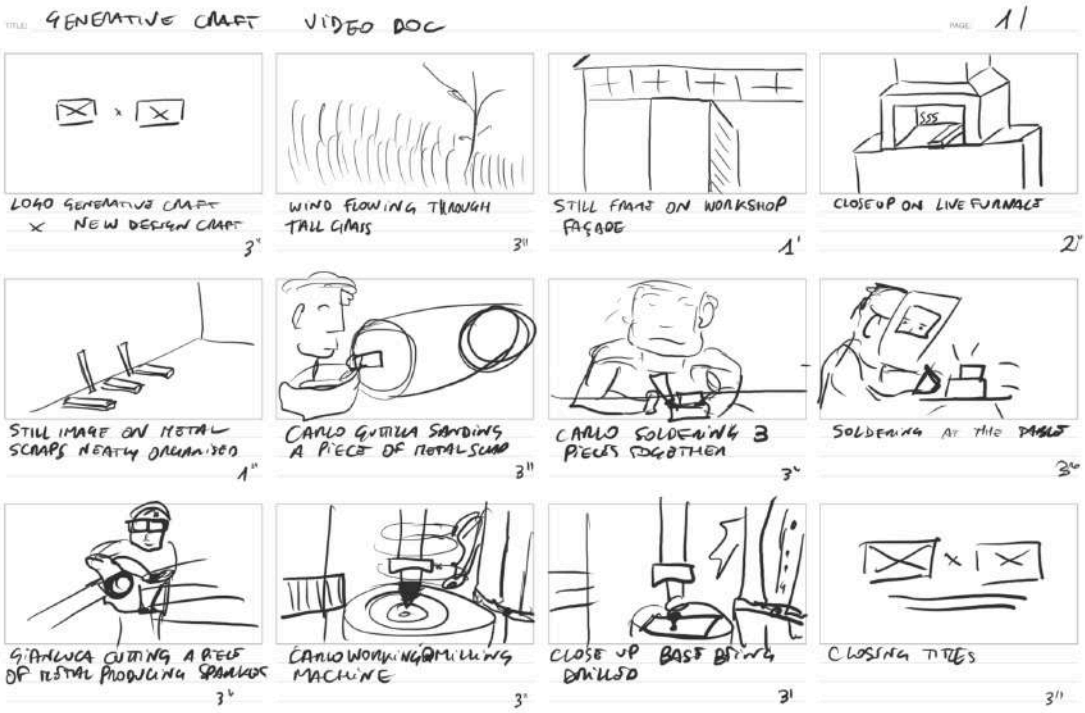
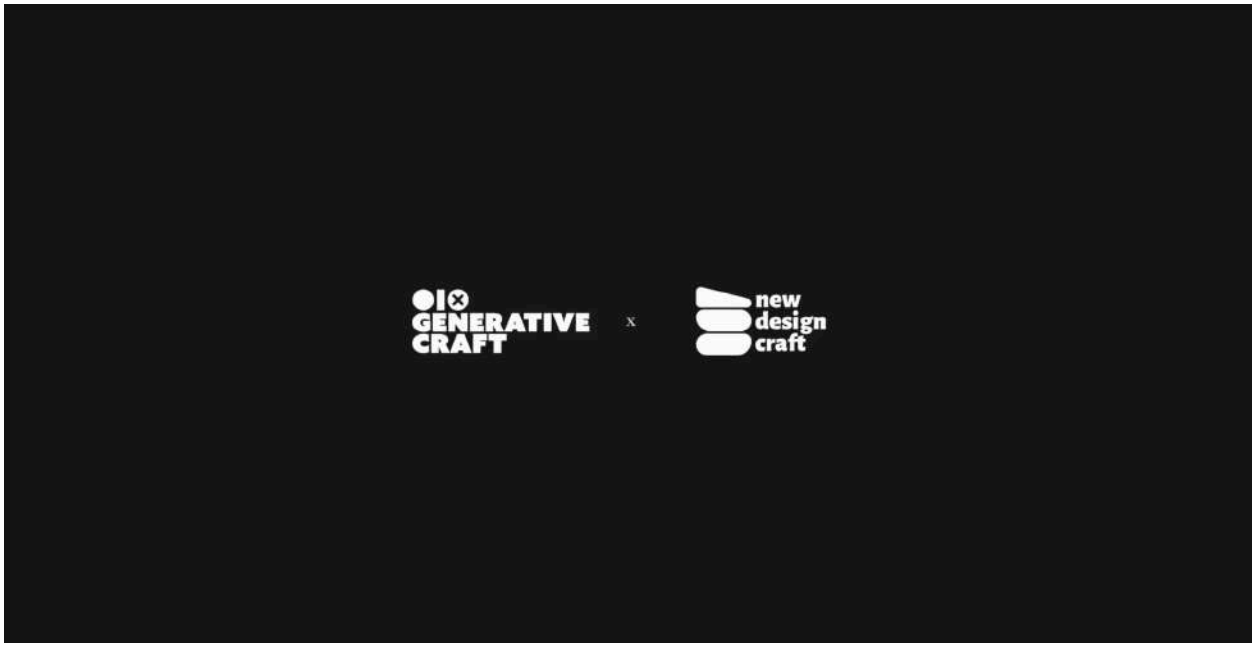


Figure 5.51 *Storyboard of Video Documentary.*


GENERATIVE
CRAFT
x
new
design
craft

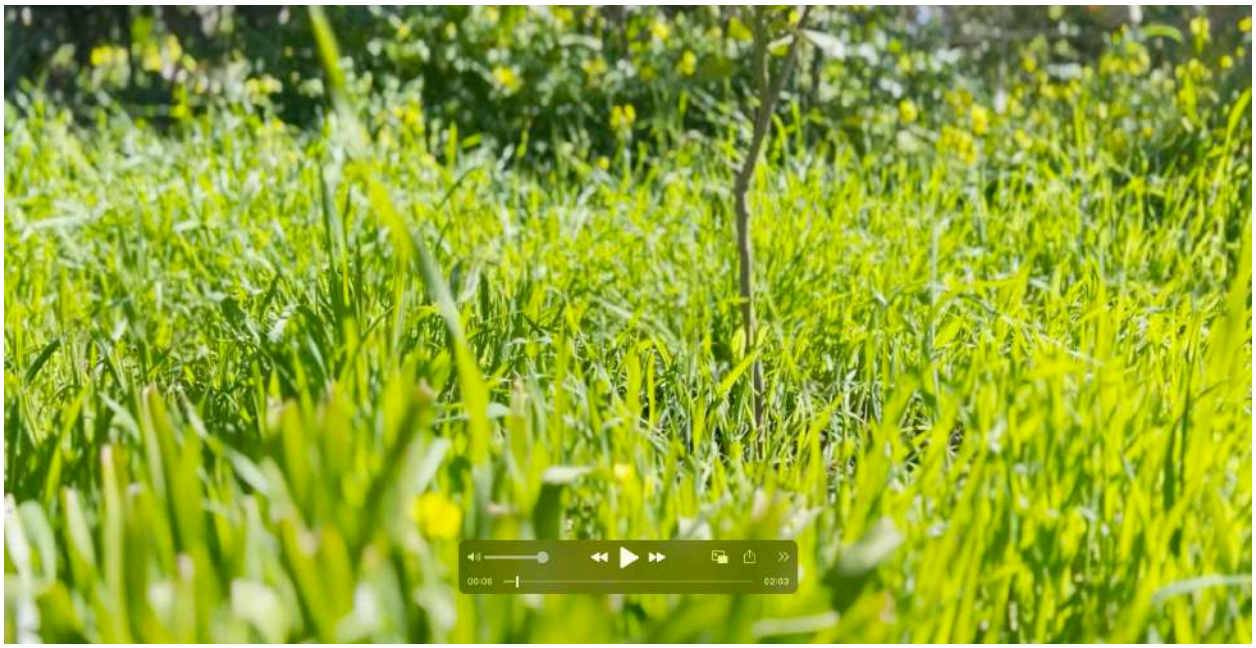


Figure 5.52-5.55 *Selected frames from Video Documentary.*

3.6.3 Milan Design Week 2025 and Testing the Manifesto

As part of our testing strategy, the Generative Craft project was showcased at the FuoriSalone exhibition "Design is Human", organised by Isola.Design during the Milan Design Week 2025. Hosted in a dedicated space at Stecca3 from the 7th to the 13th of April 2025, the event featured eight projects expressing the intersection of emerging technologies—such as generative programming and blockchain—and traditional craftsmanship. Our participation provided a unique opportunity to discuss the potential of hybrid creative practices to a global audience, fostering dialogue and validation of our work of definition of the Manifesto of New Design Craft and its applications.

Figure 5.56 *Location of Exhibition. Stecca3 Space, Milan.*

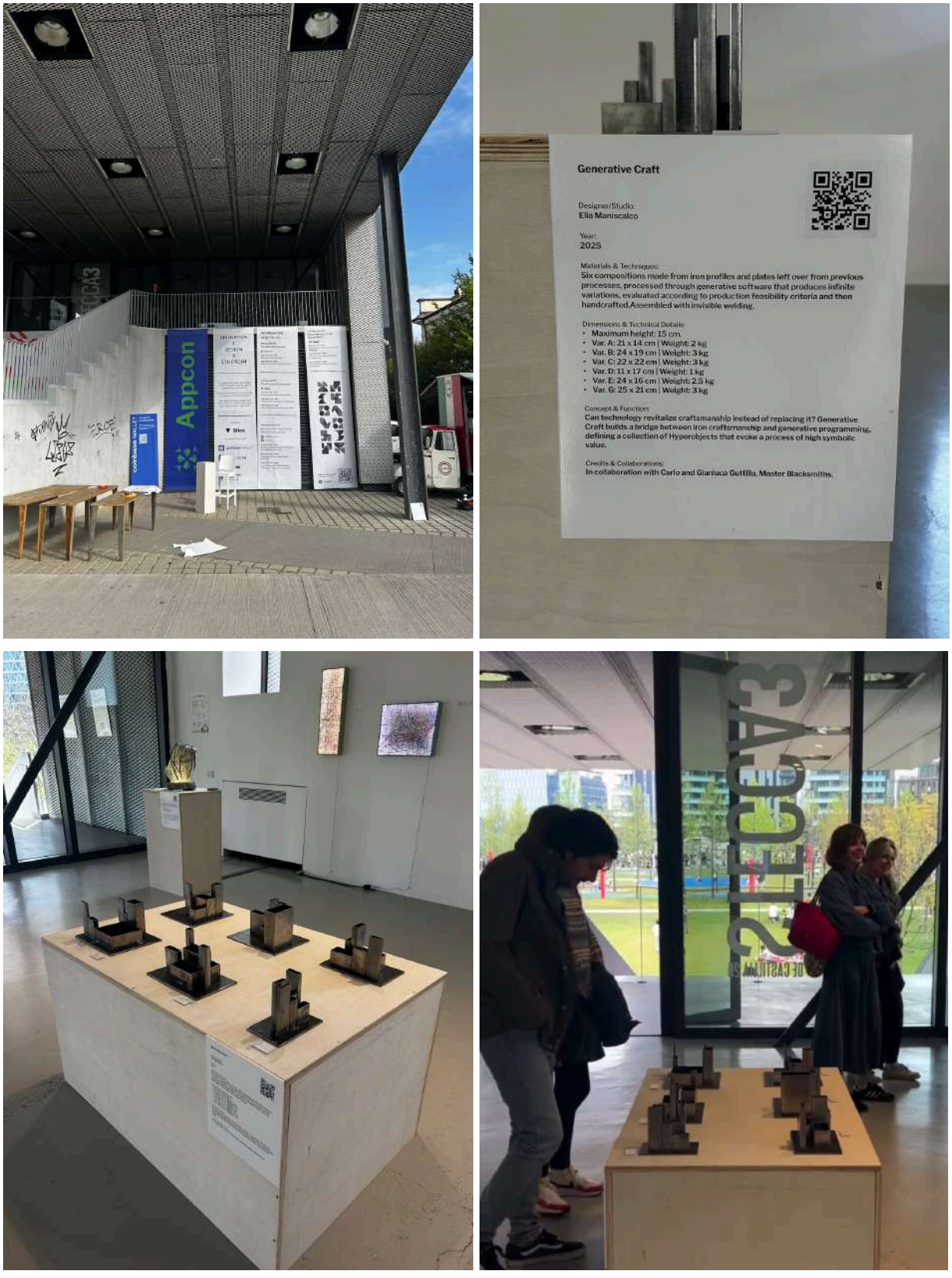


Figure 5.57-5.60 *Appcon Exhibition "Design is Human", Stecca3 Space, Milan.*

During this occasion, we administered a short questionnaire to validate our manifesto, targeting respondents actively engaged in hybrid design/craft practices and matching our predefined inclusion criteria. Participants expressed their views on a Likert scale from 1 (Strongly disagree) to 5 (Strongly agree), with significant positive responses:

- 80% agreed or strongly agreed with the necessity of a new name and identity to capture the unique essence of contemporary hybrid practitioners.
- 90% found their work values reflected in the Values outlined in the Manifesto.
- 65% identified alignment between their personal design principles and those listed in the Manifesto.
- 100% felt inspired or strongly inspired by the Manifesto's North Star.
- 90% considered the Holistic Process applicable or strongly applicable to their practice.

Additional open-ended suggestions included:

- Connecting inspirational case studies explicitly to the Manifesto's dimensions, values, and principles, ranging from DIY/prototypes to speculative projects and commercially available biomaterials, for tangible applicability and illustration of the Manifesto's strategies.
- Putting greater emphasis on systems thinking and more explicit definitions of complex design concepts, particularly regarding regenerative cycles and ecological integration, to enhance comprehension across diverse design backgrounds.
- Recognition of diverse design approaches, notably intuitive, hands-on explorations that organically shape conceptual clarity over time.

Many respondents expressed appreciation for the holistic and future-oriented vision of the Manifesto, bridging craft, design, and technology effectively and meaningfully.

4. Dissemination of the Research

As part of the strategy for the research, we also curated and carried out a plan of dissemination of its results. Specifically, the goal of the dissemination plan was to promote New Design Craft culture and raise awareness on its specific values, principles, as well as protagonists and experiences. In this section of the chapter, we introduce the specific artefacts and outputs produced for the scope which consist of a web platform to disseminate New Design Craft culture and the pilot experience Generative Craft, and an Atlas of New Design Craft intended as a volume condensing information about key practitioners and projects exemplifying the New Design Craft way to design. Lastly, we present a selection of published works, and attended conferences and seminars focused on the dissemination of New Design Craft knowledge and values.

4.1 A Platform for New Design Craft

Designed to provide a dedicated platform for the developing field of New Design Craft, the website was created as essentially a digital home for the movement. The main scope of this platform was to establish a central site for spreading the ideas and culture of New Design Craft, promote and support practitioners using hybrid approaches, collect relevant projects, and cultivate personal connections among hybrid practitioners. The website addresses two primary audiences that's to say hybrid practitioners working at the intersection of New Design Craft approaches and seeking partnership and visibility within the community; and academic researchers investigating post-industrial design paradigms, with a specific focus on those exploring socio-environmental justice, sustainability, and cultural preservation through design. Inspired by New Design Craft research and human-centred design principles, the website's design and development sterted with an exploration phase to fully grasp the particular needs, objectives, and preferences of the target audience. Next, we designed Personas and user journey maps informed by observational research to guide the ideation phase during which we defined content strategy, information architecture, and we identified the main functionalities of the website. The website was implemented first using rapid prototyping techniques

to quickly test and iterate ideas; and later digitised using Figma. Lastly, we developed and published the website using the no-code platform Squarespace. Figures 5.57-5.62 present the different stages of design and development of the platform, including research artifacts.

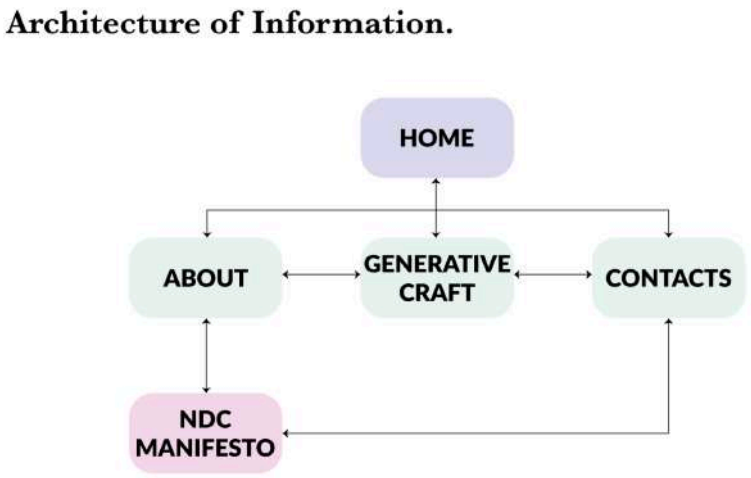


Figure 5.61 *Website flowchart.*

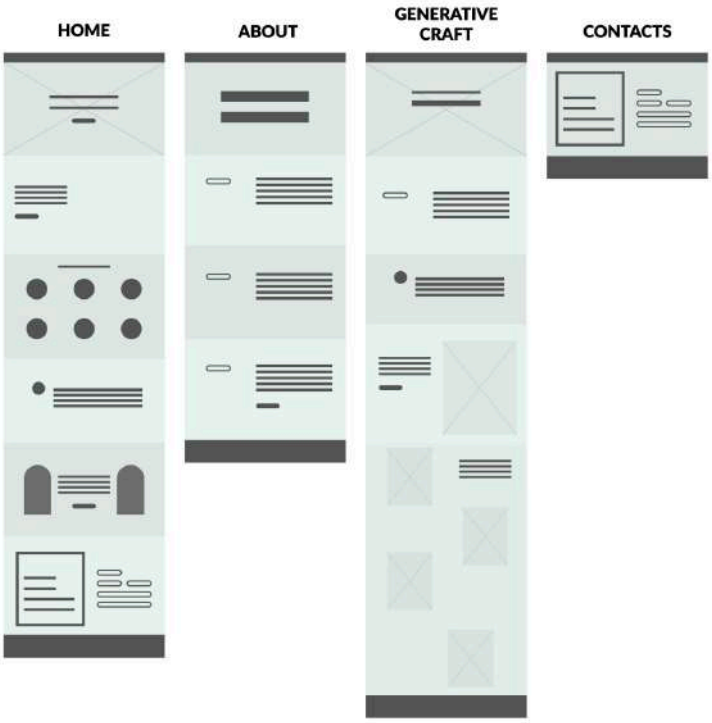
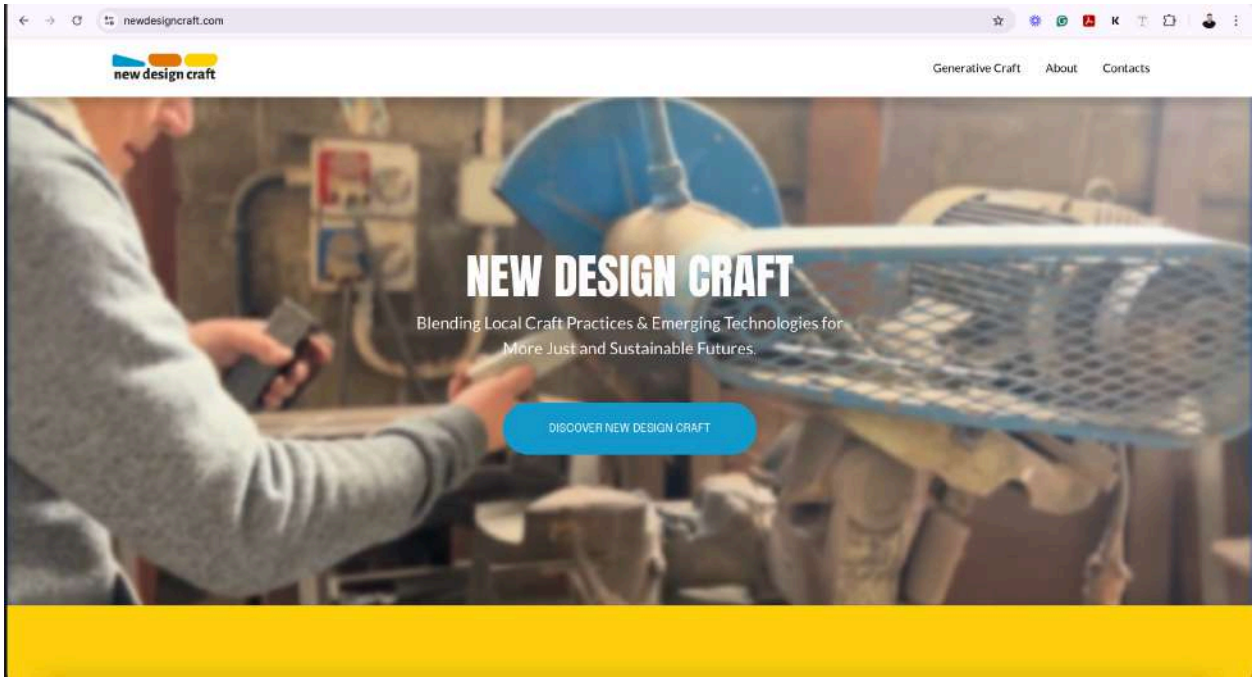


Figure 5.62 *Lo-fi wireframes of the four main pages of the website.*


newdesigncraft.com
new design craft
Generative Craft
About
Contacts
NEW DESIGN CRAFT
Blending Local Craft Practices & Emerging Technologies for More Just and Sustainable Futures.
DISCOVER NEW DESIGN CRAFT

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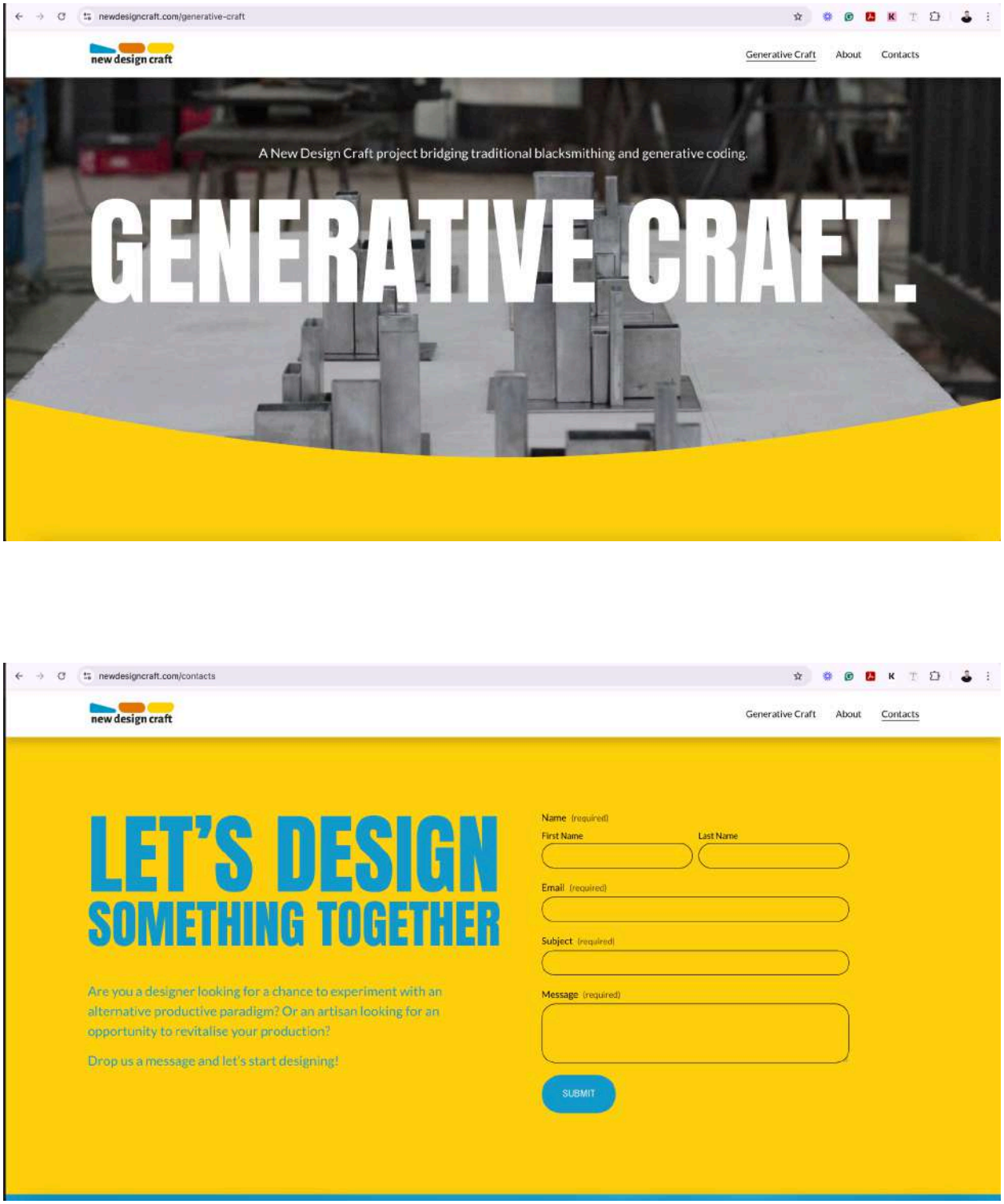
Generative Craft
About
Contacts
ABOUT NEW DESIGN CRAFT



Figures 5.63-5.66 *Hero-sections of the main pages of the website.*

4.2 An Atlas for New Design Craft

The Atlas of New Design Craft is a volume conceived as the offline counterpart to the New Design Craft website with the goal is to offer a reading companion for those interested in engaging with the culture and practice of New Design Craft. The Atlas is organised into three sections. The first section, "Manifesto of New Design Craft", introduces the conceptual framework of New Design Craft, describing its guiding principles, values, and North Star, as well as the Four Souls of New Design Craft. Additionally, the manifesto introduces the New Design Craft Process, offering readers insights into the methodological approach characteristic of this hybrid practice.

The second section of the Atlas is centred on the construction of visual narratives around demographic, geographic, and professional data related to practitioners in the New Design Craft field, through the use of infographics building a data-driven picture of who the practitioners are, their mission, their geographic distribution, and the diversity of their design approaches.

Finally, the third section, "The Protagonists of New Design Craft", is a collection of Practitioners' cards and Project descriptions, building a repository of examples of practitioners and projects aligned with the values and practices of New Design Craft. Each Card summarises information about individual practitioners and projects, including a mini-bio, as well as information about their design processes, sustainability efforts, their use of emerging technologies and/or traditional craftsmanship. Each card is closed by a project description detailing scopes, methods and rationale. Figures 5.63-5.70 present the editorial project as well as a few exemplifying spreads.

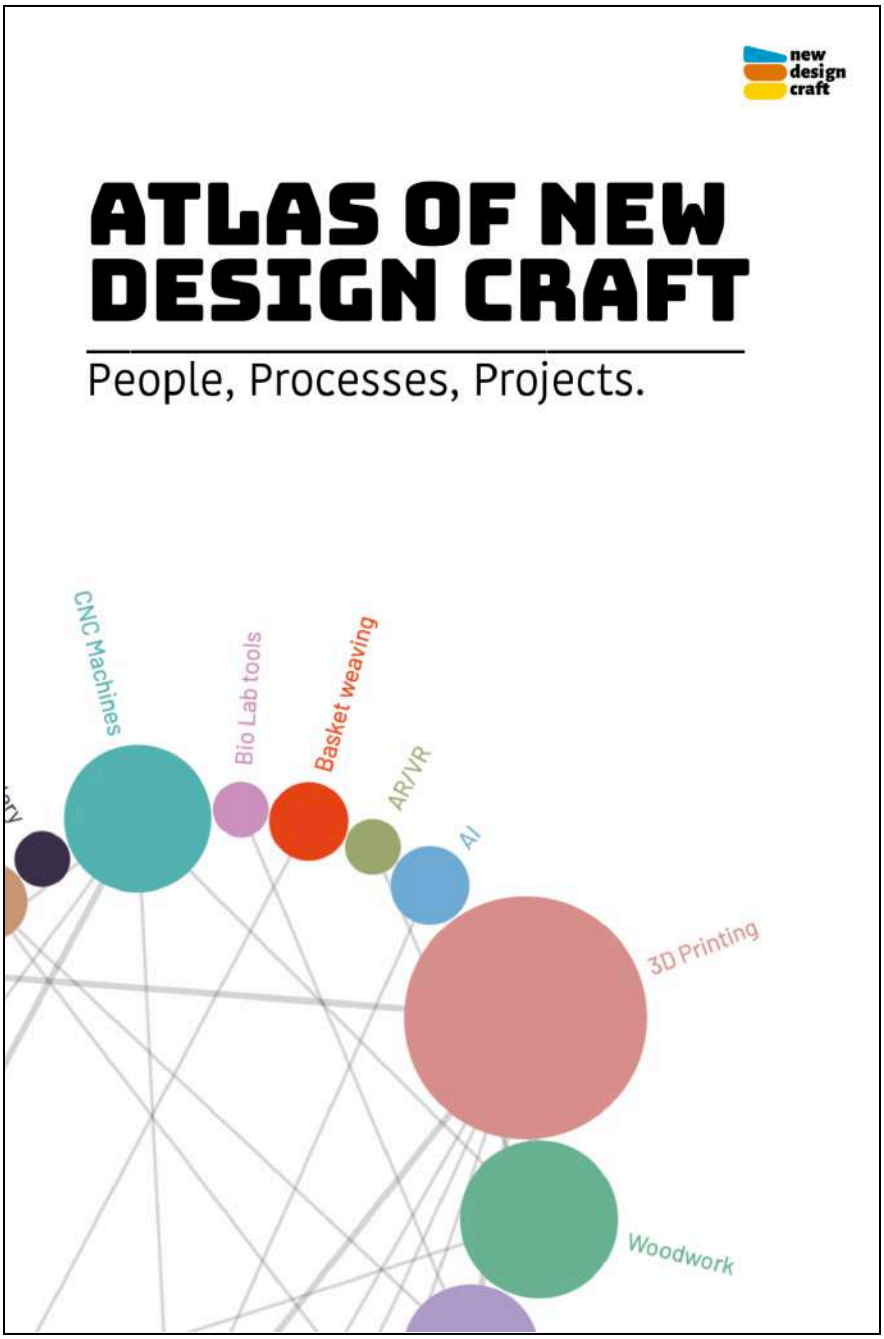


Figure 5.67 *Cover of Atlas of New Design Craft.*

MIDA LAB

Mida Lab, based in Eindhoven, Netherlands, explores the intersection of traditional crafts and modern technologies. The studio creates tactile messages by blending materials like ceramics, rattan, and biomaterials, with influences spanning Mediterranean and Nordic cultures. Sustainability is central, with biomaterials and workshops driving innovation through 3D printing.

Basic Bio	Eindhoven, The Netherlands, Female, Age 25-34
Design Mission	Mida Lab focuses on creating dialogues between dissimilar materials like ceramics, rattan, glass, and biomaterials. Projects are deeply rooted in cultural cross-pollination, combining Mediterranean and Nordic influences, with sustainability as a guiding principle.
Design Proceess	Mida Lab begins with intuitive exploration and meditative material preparation, followed by assembling and refining. The process incorporates traditional crafts and contemporary techniques to create tangible messages through tactile forms.
Material Culture	Mida Lab embraces the adaptability of roots, experimenting with local crafts like rattan weaving. The studio blends modular ceramic techniques with cultural and environmental awareness.
Emerging Tech	Technology enhances Mida Lab's process through 3D printing, 3D scanning, and animations for communication. The studio has recently started exploring AI to augment its creative practice.
Materials	Sustainability is vital but approached pragmatically. The studio prioritizes biomaterials while acknowledging challenges in entirely avoiding non-eco-friendly options like silicone. Regular workshops keep practices updated with innovations in bioplastics and biotextiles.

Atlas of New Design Craft A

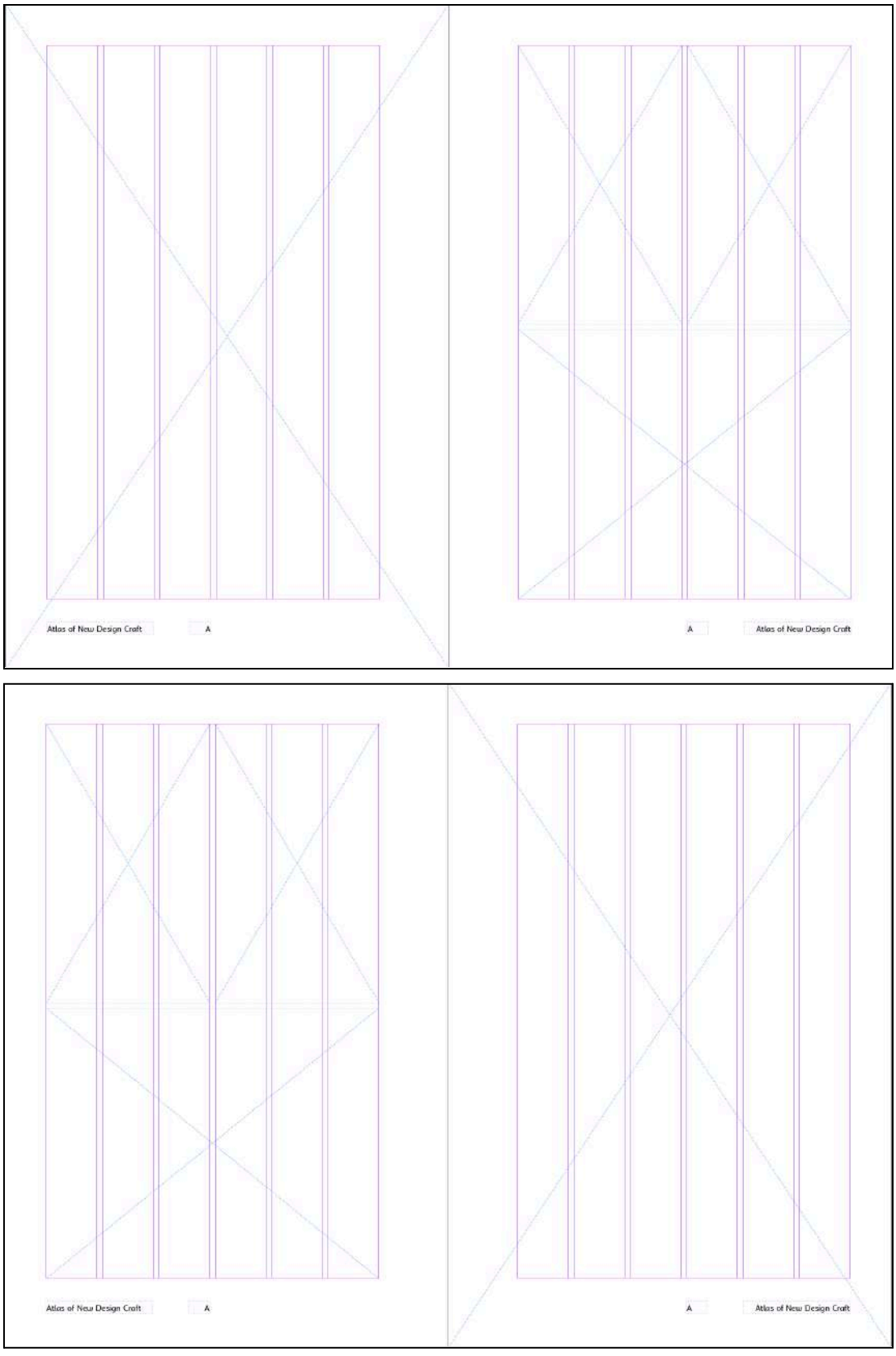
A Atlas of New Design Craft

PROJECT

Roots	This collection is the result of research that develops through experimentation. It consists of multiple series of lamps for the habitat. The chandeliers are handmade, one of a kind objects made with ceramics extrusions, silicone modeling, plastics recycling, raffia weaving, metal casting and led light connections. At the heart of the artwork lies a bronze rope, crafted through the intricate process of lost wax casting. Bronze, known for its durability and resilience, is a noble material with a rich history that speaks to its ability to withstand the test of time. Around the rope a twisting root unfolds encircling a series of ceramic and rattan segments that pulsate with dynamic energy and luminous light. Clay is one of the most malleable substances on the planet. Rattan is a living and sinuous plant material that allows to generate/to wave alternative surfaces, almost like a skin. The electrical components determine the functionality of the products in a logic of sustainability.

Atlas of New Design Craft A

A Atlas of New Design Craft


Atlas of New Design Craft
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/ul·tra·sém·pli·ce/
ALICE MANDELLI

Alice Mandelli /ul·tra·sém·pli·ce/ is a Copenhagen-based designer (age 25-34) whose sustainable design practice addresses contemporary social challenges through ethical furniture design. Emphasising a flexible, non-linear design process and the incorporation of traditional woodwork. She sources recycled materials and repurposes waste with an approach more philosophical than technological.

Basic Bio Copenhagen, Denmark, Female, Age 25-34.

Design Mission Alice Mandelli's practice is driven by sustainable design principles with a strong focus on addressing contemporary social issues. She advocates for design that is both ethical and socially responsive, striving to create products that improve well-being while integrating environmental responsibility.

Design Proceess Her design process is notably non-linear and adaptive. Depending on the project, she may begin with material exploration, sketching, or writing, which then evolves into a tangible concept. This fluid approach is influenced by her tendency to quickly move between ideas, resulting in an experimental process.

Material Culture Alice engages actively with the cultural practices of the places she visits. By experiencing local traditions firsthand, she incorporates diverse craft techniques—particularly in woodwork—into her work, reinterpreting them in a new language.

Emerging Tech Technology plays a secondary role in her practice. She prefers to prioritise the narrative and experiential aspects of design over technological innovation, favouring a philosophical approach to how people interact with objects and spaces.

Materials Sustainability is vitally important in her practice. Alice sources materials from recycled centres, construction waste, and even found objects on the streets. This commitment not only minimises environmental impact but also reinforces the ethical dimension of her design, transforming waste into functional, aesthetic artefacts.

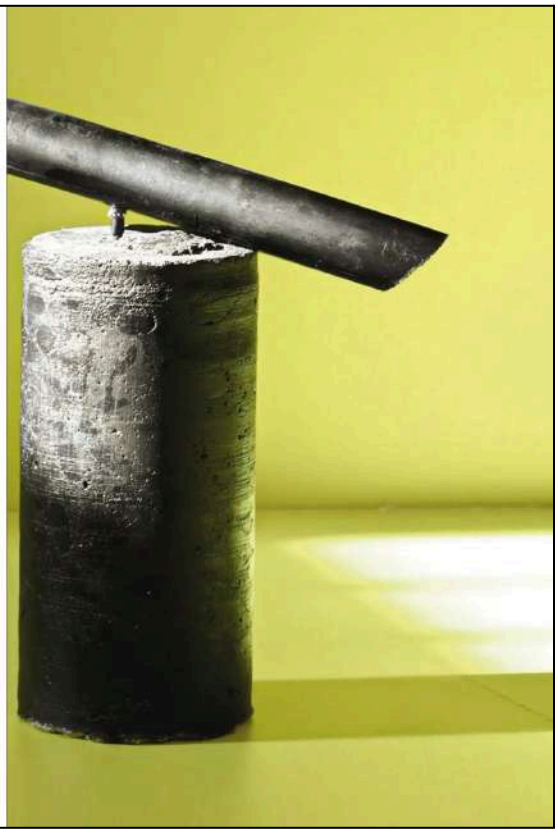
Atlas of New Design Craft 2

PROJECTS

/ fo-kuhs fo-kuhs is a desk lamp, composed of two very simple elements coming from construction waste materials. it is, indeed, a humble and elegant social disapproval of how much we pollute our planet. its aesthetics are minimalist and efficient: the concrete cylinder offers essential stability, while the upper cylinder is inclined at a precise 60-degree angle, directing the spotlight exclusively onto our writing or reading materials, ensuring our focus remains undistracted.

/ ken-dull ken-dull is an ambient lamp that has two very different faces: when turned off, is sculptural, it doesn't even suggest that it is a lamp, but when illuminated, it provides a sweet and calm atmosphere, surprising us that light can find its way through a black surface. the light is minimal and soft. the structure consists of a solid spherical base and a light bulb that, in a surrealistic way, melts like a wax candle.

Atlas of New Design Craft 4



Figures 5.68-5.74 *Layouts and sample spreads of the Atlas.*

4.3 Published Works

The results of the research were shared in a number of peer-reviewed, published publications covering the methodological approach, analytical observations, and results of the project. These papers provided a thorough description of the findings regarding the intersection of traditional craftsmanship and emerging technologies and they covered the conceptual framework, the survey and the action research approaches, and the practical pilot project, to generate knowledge and contribute to the conversation on socio-environmentally just and culturally mindful design approaches. See Table 5.2 for an annotated bibliography of papers produced as a result of this research.

Table 5.2 *Published papers for the dissemination of the New Design Craft Research.*

Year	Author	Title	Journal
2024	Maniscalco, E.	New Design Craft. *A new design paradigm blending local craft practices and emerging technologies for more just and sustainable futures.*	DistributedDesign Vol. 3. 2025. Barcelona FabLab ed.
2024	Maniscalco, E.	*Design as a mediator of languages and activator of virtuous processes. (Book of Full Papers)*	In D. HasIrcI, et al. (Eds.), *DSS 2024: Design Dialogues. Book of full papers*, Izmir Economics University e-lSBN: 978-625-6001-04-6.
2024	Maniscalco, E.	*Design as a mediator of languages and activator of virtuous processes. (Book of Abstracts)*	In D. HasIrcI, et al. (Eds.), *DSS 2024: Design Dialogues. Book of Abstracts*, Izmir Economics University. e-lSBN: 978-625-6001-04-6.
2023	Maniscalco, E.	*Design for a Better World: Meaningful, Sustainable, Humanity Centered.*	INFOLIO 41, Dipartimento di Architettura, Palermo. ISSN 1828-2482
2023	Maniscalco, E.	*Design e Artigianato in Sicilia. Scambio e contaminazione tra forme diverse della progettualità.*	KALÓS. L'accento sul bello 1/2023, Palermo, ISSN: 1827-8671.
2022	Maniscalco, E.	*La poltrona di Proust. Evoluzione ed epistemologia di una relazione di prossimità tra design e artigianato.*	IN FOLIO 39, Dipartimento di Architettura, Palermo. ISSN 1828-2482

4.4 Conferences and Seminars

The research was further disseminated by actively attending several national and international conferences where results were presented in both oral and keynote forms. These opportunities provided a vital platform to interact with an audience of academics, professionals, and small business

owners, facilitating open discussions and comments on the approaches and results of the research. While panel discussions and networking events enabled exchanges that enhanced the research perspective and promoted future cooperative opportunities, conferences provided unique insights into future design approaches. See Table 5.3 for an account of the active participation in live events and conferences.

Table 5.3 *Summary of scientific activity for the dissemination of the New Design Craft Research.*

Date	**Type of Event**	**Role**	**Summary**
7-13/04/25	Milan Design Week 2025	Selected Designer	Participation with the project *Generative Craft* to the *Design is Human* exhibition by Isola Design.
20/02/25	International Conference	Speaker	Participation the international conference DESIGN FOR•TO WITH IN BY FROM AS COMMUNITY, University of Palermo, with the talk: *Generative Craft. Design for Craft Revitalisation.*
18/11/24	Seminar	Lecturer	Delivered the session *"Building the New Design Craft narrative"* within the activities of the project TOURITAGE – Tourism-led Heritage Development (ERASMUS-EDU-2022-CBHE - STRAND 1 Capacity building in the field of higher education), Grant Agreement No : 101082832 Scientific Chairman: Prof. Calogero VINCI.
31/05/24	International Conference	Speaker	Participation the international conference DSS2024 - Design Studies Symposium, at the Izmir University of Economics, Türkiye, with the talk: *Design as a mediator of languages and activator of virtuous processes.*
21/03/24	Seminar	Organiser	Organisation of the Seminar: *"Design, Industry, New Craft"*, guest: Martinelli-Venezia Studio.
19/03/23	Seminar	Organiser	Organisation of the Seminar: *"Craft Notes"*, guest: Prof. A. Cocco, IED Cagliari.

5. Chapter Conclusion

In this chapter, we have presented the synthesis and evaluation of the outcomes generated by applying insights drawn from the analysed data. Specifically, we described how theoretical and empirical findings informed the creation of tangible design outputs: the Manifesto for New Design Craft, the Generative Craft pilot project, and the corresponding dissemination strategies implemented to communicate the research effectively. We illustrated the rationale, processes, methods, and results for each of these outputs, to prove their validity, efficacy, and replicability in real-world scenarios.

In the sixth and final chapter, we circle back on the initial Design Research Problem and research questions. We reflect on the extent to which these research was able to provide adequate answers, and we identify the limitations of our research. Lastly, with the goal of fostering continuous evolution and refinement in the field of New Design Craft, we suggest directions for future implementations.

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6.

Conclusion.

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1. Circling back to the Design Research Problem and Questions

In this final chapter, we reflect on the research journey and we articulate its overall contribution to the field of design. The primary objective of this chapter is to provide some closing reflections connecting the initial design research problem and questions with the findings and outputs generated throughout the investigation. Building on the analytical and synthetic phases presented in previous chapters, this conclusion circles back on the relevance of the Design Research Problem, that is:

“How can New Design Craft blend local craft and emerging technologies to support environmental and cultural sustainability by adopting a design justice approach to enable more just and sustainable futures?”. Through this chapter, we aim to highlight how this study of hybrid design-craft practices has provided new theoretical and methodological perspectives, as well as produced a practical framework to support more plural and just design futures. The chapter is structured into seven sections, each addressing a key dimension of reflection: we start circling back to the research questions, then we highlight the research contributions to design theory and practice, and we evaluate the adopted methodology and the research limitations. We then proceed to outline possible directions for future research and we conclude with a personal and philosophical reflection on the significance of New Design Craft as a cultural, political, and imaginative proposition.

Here we circle back to the Design Research Problem and research questions that guided this study. We contextualise the initial assumptions framing our research, highlighting the significance of examining how the need for more sustainable and just post-industrial paradigms as well as the integration of emerging technologies in artisanal practices have facilitated a closer relationship between design and craft, giving rise to the hybrid paradigm we have identified as New Design Craft. Grounded in preliminary observations and a pre-empirical literature review, the study was guided by the following Design Research Problem:

“How can New Design Craft blend local craft and emerging technologies to support environmental and cultural sustainability by adopting a design justice approach to enable more just and sustainable futures?”

To thoroughly investigate this problem, we deconstructed it into primary and follow-up research questions organised around the three core pillars of the research, namely material culture, socio-environmental justice, and emerging technologies. Over the next sections, we provide direct answers to each question, converging pieces of evidence collected in the different phases of the research and, ultimately, we address the design research problem. Table 6.1 presents the design research problem and the full list of questions.

Table 6.1 *Design Research Problem, Primary and Secondary Research Questions.*

"How can New Design Craft blend local craft and emerging technologies to support environmental and cultural sustainability by adopting a design justice approach to enable more just and sustainable futures?"	
Primary Research Questions	**Secondary Research Questions**
Q1. What are the differences and similarities in the epistemology of Making in Craft and Design?	**F/U1** Why do people make things?
Q2. Can Design and Crafts cooperate and overlap to generate material cultural value?	**F/U2** What are the first and most direct effects deriving from the direct relationship between design and craft?
Q3. What is the role of technology in shaping the relationship between Design and Crafts?	**F/U3** Can emerging technologies become a medium of hybridisation of Design and Crafts?
Q4. How can we define Socio-environmental Justice? Can it be pursued by Design?	**F/U4** What impact can hybrid creative practices have on local identities? **F/U5** Which role can they have in the pursuit of social environmental justice?
Q5. What new paradigm can we observe in contemporary design?	**F/U6.** Which general models can we draw from the analysis of contemporary design?

1.1 What are the differences and similarities in the epistemology of Making in Craft and Design? Why do people make things?

Traditional Craft and Industrial Design offer two contrasting epistemologies of Making. In craft, knowledge is local and embedded, growing in close interaction with materials and locations. Craftspeople learn by hands-on experience, often in workshops or guilds transmitting tacit knowledge through mentorship and community legacy. Richard Sennett identifies this as the oldest Value of craftsmanship, that's to say the concept of joined skill in community. Usually, the craftsperson's method is contextual and situated: practices are handed down via embodied instruction, hence fostering a communal continuity where local culture weaves together quality and ethical standards. So while Craft's epistemology is based on doing and engaging in an ongoing dialogue with the material that produces deep mastery and knowledge over time, design often runs in delocalised, abstract scenarios, depending on formal plans, blueprints, and ideas detached from any particular location. A characteristic trait in design's epistemology is its tendency to favour universal ideas instead of embedded knowledge, as well as to impose form upon materials, expressing a hylomorphic approach.

If on the one hand, this can result in more predictable, repeatable results that can be scaled up beyond one single specific community, it can also, on the other hand, risk missing the subtle implicit knowledge artisans gather through direct interaction with their environment.
The epistemology of craftsmanship has a strong social component and Sennett stresses how mediaeval artisan guilds and workshops operated with the objective to manufacture objects and forge community bonds. As a consequence, craft knowledge lived in people and places, carrying local legacy and collective identity. This "locally embedded" nature means that craft practice usually guarantees the continuation of tradition even as it allows slight creative evolutions within a community. As such, Craftsmanship becomes a kind of knowledge transmission interconnected with social life, thus becoming a relational fact. In fact, crafts unite people via the shared value of doing good work for its own sake and typically linking making to moral or spiritual fulfilment, or, as Carlo Guttilla would say, "making things well is a spiritual exercise". On the other hand, design's social role

tends to be less locally-situated since, focusing on abstract problem-solving and serving audiences outside any localised community, designers usually work inside global networks. As a consequence, the knowledge they produce is often detached from location and social context and actually spread worldwide.

Additionally, David Pye's distinction between the concepts of "workmanship of risk" and "workmanship of certainty" can offer another perspective to define the differences between the epistemology of making in craft and design, which generally positions craft in the realm of the workmanship of risk, as it is a way of making where outcomes are not fully predetermined, and the maker’s skill and judgement actively shape the final result.

A woodcarver, potter, or blacksmith works with contingencies and must react in real-time. Every interaction suggests how to improve the technique or change the design, hence producing unique objects and knowledge rooted in the uncertainty of the process.

On the other hand, industrial design and making are rooted in the idea of a workmanship of certainty, seeking consistency and predictability. In this approach, quality is "predetermined before anything is actually made", and this is achieved through exact specs, or automation which produces consistent results with little variation, guaranteeing repeatable perfection.

While Pye does not claim that one is intrinsically better than the other, he warns that ignoring the workmanship of risk and its creative potential would lead to a cultural loss.

Both strategies have their advantages: although certainty enables efficiency and distribution, risk promotes creativity and human expressiveness. They together show how craft's epistemology welcomes experiential knowledge and improvisation while design's pushes towards explicit knowledge and control.

Anthropologist Tim Ingold provides another lens through the concepts of hylomorphism and morphogenesis to describe the epistemic differences in making. Dating back to Aristotle's form/material dualism, hylomorphism views creation as imposing a predefined shape onto inert matter. This is the design-centric, blueprint-driven perspective where making starts with a mental plan

(form) that is subsequently materialised, which reflects the design philosophy of controlling outputs typical of the workmanship of certainty.

Morphogenesis, on the other hand, views form as something arising from the making process which becomes a co-development of creator and material. Ingold characterises morphogenesis as a process placing "the maker as a participant amongst a world of active materials" where materials are not inert but have affordances the maker has to listen and react to. On the opposite side is hylomorphic design, in which any departure from the plan is usually interpreted as an error rather than a development. So, while hylomorphism emphasises knowledge as plan and execution where the idea precedes and dominates the making, morphogenesis emphasises knowledge as emergent and situated in practice as the understanding of the process evolves during the act of making. Both approaches suggest why and how people make things that is to say either to fulfil a vision or to find meaning via action.

In emerging hybrid fields such as New Design Craft, these differing epistemologies enrich one another instead of being in open conflict. New Design Craft explicitly seeks to integrate traditional, local craftsmanship with emerging technology, thereby challenging any simplistic division between craft and design. Embracing local knowledge and material culture, hybrid creative practices ensure that the act of Making remains a situated practice, with a strong contextual and social importance. However, integrating this idea with the adoption of emerging technologies, they benefit from the scalability and innovation that a design-oriented mindset can offer. This hybrid approach responds to contemporary challenges such as the anonymity of mass production, cultural homogenisation, and ecological unsustainability by valuing diversity and situated practice, while simultaneously leveraging global knowledge networks and digital tools.

It represents, in essence, an epistemic dialogue: the bottom-up, material-led insights of craft intersect with the top-down, abstract planning of design. For instance, in a New Design Craft project, a blacksmith may collaborate with a generative coder – the craftsperson contributes a workmanship of risk and an intuitive understanding of metal, whilst the designer/coder brings algorithmic thinking (workmanship of certainty). The result is a more reflexive practice: plans are refined through material feedback (morphogenesis informs design adjustments), and traditional techniques are expanded

through new possibilities (hylomorphic designs become more ambitious or efficient through digital augmentation).

These epistemologies also raise the issue of what drives the motivation behind the act of Making. In fact, a completely craft-based perspective could imply that humans create to honour tradition, pursue personal excellence, and connect with others and the material world; while a design-oriented point of view would describe Making purely as an act aimed to solve utilitarian problems. Motives in hybrid practices are frequently mixed with design justice ideals often combined with a craft values. This combination implies that hybrid makers like those sharing New Design Craft values are not merely guided by the question "Can I make this well?", but especially by more ethical interrogatives such as "Should I make this? For Whom? With what materials? Involving which people?". This deepens the process of creation by anchoring it in both personal meaning and global contexts. But this approach also increases the complexity of the process as balancing the open-ended inquiry common to craft with the goal-oriented attitude of design can be difficult. Including the craftsmanship of risk into a project, for instance, can clash with expectations for efficiency or uniformity; on the other hand, too much planning could suppress the serendipity that promotes innovation. Nonetheless, this state of tension might be productive as it forces us to ask ourselves "What would it look like to bring the hylomorphic and morphogenic closer together?" Practically speaking, this could involve including artisans early in the design process so their tangible knowledge may influence the idea or letting users and communities guide a project's development, thereby co-creating knowledge.

Ultimately, the comparison of these epistemologies demonstrates that why people make things cannot be reduced to a single answer. The social, anthropological and design perspectives summarised by Sennett, Ingold, and Pye collectively suggest it involves a combination of intrinsic fulfilment, social connection, practical problem-solving, and creative discovery. A craftsperson might assert that we Make to feel human, engaged and connected; a designer might argue that we Make to improve the world or express an idea. New Design Craft practitioners would likely agree that we Make to reconnect the act of creation with both its roots (heritage, community, material) and its vision (innovation, justice, sustainability).

Hybrid Practitioners get a more holistic perspective by framing Making through several epistemological lenses. Though it opens new opportunities via developing techniques, this promotes respect for traditional tacit knowledge and social learning. Such a complex framework complicates hybrid practices (as it demands flexibility and reflexivity), but it also enhances their potential for impact as it encourages globally aware yet locally anchored, efficient yet sympathetic, technically skilled and culturally relevant projects. In summary, a critical comparison and combination of the epistemologies of craft and design provides a more profound answer to the question of why hybrid practitioners make things, an answer which takes into account both the heart and the brain behind the act of Making.

1.2 Can Design and Crafts cooperate and overlap to generate material cultural value? What are the first and most direct effects deriving from the direct relationship between design and craft?

There overlap of design and craft has a long history as, prior to industrialisation, the "Maker" was both a designer and a producer who made items for daily use in accordance with regional customs or guild systems (Sennett, 2008). Mass production brought about by the Industrial Revolution separated design from manufacturing and reduced the craftsman's traditional social role (Schaefer, 1958). Early responses to the alienation of industrial labour, like William Morris and the Arts and Crafts movement of the 19th century, aimed to bring artistic design and handcraft back together. Design theorist Herwin Schaefer (1958) observed that once guild structures disappeared, the modern craftsman ran the risk of turning into a "ill-equipped amateur" who produced ornamental but unnecessary items. He made the bold claim that embracing the industry was the path to true creativity for makers. However, other pioneers started investigating hybrid strategies in which artisanal values could be incorporated into industrial design. A balance was sought by the middle of the 20th century, particularly in Italy, where designers and businesspeople began to view design as a bridge connecting traditional handicrafts and modern industry (Soares et al., 2016). This perspective recognised that craft techniques carried

cultural significance which, if modernised through design, could yield new forms of material cultural identity and value. As Soares' study observes, in places like Italy and Portugal design was used as a "stimulator of old processes and techniques typical of craftsmanship, transforming them into new material cultural identities" for contemporary society (Soares et al., 2016). In other words, rather than viewing craft as obsolete, progressive designers began treating it as a rich repository of skills, aesthetics and cultural narratives that could be interpreted and reimagined through design for modern life.

This evolution elevated the social role of the "Maker" from anonymous labourer to co-creator of cultural value. The Arts & Crafts ideology cast artisans as key to restoring authenticity and humanity in production (De Fusco, 2009); later, the Bauhaus likewise valued the unity of art, craft and industry as proven, for example, by the integration of handcraft training into design education in the famous *Vorkurs* (Dardi, Pasca, 2019). In Italy, a nation with strong regional craft traditions, the designer often naturally collaborated with artisans. Gio Ponti, one of the fathers of Italian design and founding editor of Domus, actively promoted craftsmanship as integral to Italian design identity. For example, in the pages of Domus, he strongly supported initiatives to update traditional crafts, such as the ISOLA project in Sardinia led by Eugenio Tavolara (Altea, 2005. p. 114). Under Tavolara's direction, mid-century Sardinian crafts like textiles, basketry and woodcarving were revitalised with modern aesthetics and put them in a relationship with the global market. The success of such efforts – enthusiastically covered by Ponti and others – showed that when designers act as interpreters of local craft culture, the results can preserve tradition while innovating form and function. Here the craftsman's role shifted from merely preserving heritage to actively contributing to contemporary design narratives. Post–Word War II Italy provides many examples of fruitful design-craft collaboration. Economic conditions meant that small family-run workshops in furniture, ceramics, glass, etc. were central to Italian production, and many iconic designers partnered with these skilled makers. Gio Ponti himself designed modern porcelains for the Ginori manufactory, marrying fine artisanal porcelain techniques with modernist forms and patterns. In doing so he showed how a designer's vision could

amplify a craft's cultural value – Ginori's centuries-old porcelain craft was renewed through Ponti's designs, gaining international acclaim as both useful objects and art pieces (De Fusco, 2009). Similarly, Bruno Munari – renowned for his experimental approach – often blurred the boundaries between art, design and craft. In the 1950s and 60s, Munari created whimsical handcrafted objects such as his Xerographs and paper "travel sculptures", and taught children's workshops in making toys, emphasising that to design could also mean to play and craft with one's hands. His dictum that "art is a profession" (*Arte come Mestiere*) encapsulated the idea that creative design should still be rooted in the craftsman's practical know-how (Munari, 1966).

Enzo Mari took a more radical stance, believing in empowering individuals to be makers as expressed by his 1974 project Autoprogettazione, explicitly aiming to democratise creation and reconnect people with the act of making (Mari, 2002). Each of these figures kept the craftsman's ethos alive within modern design, whether by collaborating with expert artisans or by encouraging the user themselves to become a craftsperson (Mari, 2004). Italian designers also conducted literal experiments in craft mediums, particularly ceramics,as a way to explore form and material beyond the strictures of mass production, like for example Sottsass and La Pietra.

A similar hybridity can be seen in Alessandro Mendini's work of the 1970s–80s. Mendini famously rejected the strict modernist dogma of anonymous mass production by reintroducing ornament and handwork. For example, his Redesigns series involved taking found objects or furniture and having them painstakingly hand-painted or decorated (the most iconic being his Baroque-style Proust armchair, hand-painted with Pointillist dots). By incorporating artisan painting techniques, Mendini created one-of-a-kind pieces that straddle design, art and craft. He later curated projects (such as the Tea and Coffee Piazza in 1983 for Alessi) where designers collaborated with silversmiths and other craftspeople to produce limited-edition teapots – functional objects elevated to art through exquisite handcraft. Bruno Munari and Enzo Mari also explored ceramics and craft in their own ways: Munari experimented with ceramic forms and glazes (often in workshops in Faenza, Italy's ceramic heartland), while Mari designed simple objects meant to be crafted in wood or ceramic as exercises in form (e.g. his wooden puzzle 16 Animals, cut by artisans). Each of these experiments showed that objects carry

the imprint of the hand and local heritage, yet also the conceptual leap of design, thus generating new artistic and cultural value beyond what either could achieve alone.

Perhaps no figure has more deliberately forged a direct relationship between design and craft in Italy than Ugo La Pietra. An architect, artist, and designer active since the 1960s, La Pietra has spent decades working with artisans across the Italian peninsula to merge contemporary design with traditional making techniques. He refers to his approach as research-oriented toward the "revival of manual skills" (Fondazione Cologni dei Mestieri d'Arte, 2020), insisting on full recognition of the artisan's authorship. "Manual work is a fundamental part of my research, precisely because my works are handmade by craftsmen," he explains; tellingly, he is "the only artist who signs his works with two names: mine and the name of the artisan who carried out the work. To name someone means to give him importance and recognise the added value his name can bring to the work" (Fondazione Cologni dei Mestieri d'Arte, 2020). This ethos addresses one of the most immediate effects of design-craft cooperation: it raises the visibility and dignity of the craftsman, transforming an often-anonymous executor into a co-author. For La Pietra, the exploitation of artisans within the traditional industry is an ongoing injustice he has worked to correct through his lifelong practice (La Pietra, 2021).

As he explained in our interview, this approach emerged in the early 1980s, when over 70% of Italian production still followed classical historical styles, often in poor reproductions. What Italy lacked, he observed, was a widespread "cultura del progetto" (culture of design), though it had retained a "cultura del fare" (culture of making). This realisation motivated a long series of exhibitions and collaborations that brought designers, architects, and artists into contact with small artisanal enterprises and larger firms supplying traditional furnishings internationally (La Pietra, 2025).

Crucially, his work has largely been experimental rather than serially produced: La Pietra has created over 2,500 unique objects over more than two decades, many of which never entered the formal world of design because they were not mass-manufactured. He laments that design history often ignores this kind of production, privileging instead only what sells: "The museums and books only remember what was industrially successful. But a real discipline begins with research, and in design, we have not yet understood the value of research" (La Pietra, 2025). La Pietra's collaborations often highlight both the

cultural embeddedness of craft and the potential for experimental renewal. Beginning in the 1970s during the Italian Radical Design period, he participated in Global Tools, an experimental design-education network advocating hands-on learning and craft knowledge. By the 1990s, he elaborated projects that directly involved master artisans' skills. A famous case is his collaboration with the ceramicists of Caltagirone, Sicily (La Pietra, 2021). These artisans, renowned for their ornate Moor's head planters (teste di moro), worked with La Pietra to reimagine the typology in imaginative, contemporary forms. His project Unity in Diversity featured 21 head sculptures representing the cultural identity of each Italian region, including one for Italy as a whole (Manzetti, 2011). The pieces, exhibited in Milan, were a tribute to Sicilian ceramic heritage "that has been alive for many centuries without losing the ability to innovate" (Manzetti, 2011). La Pietra emphasised how such objects function as more than decorative design, they materialise cultural narratives through a fusion of contemporary concepts and inherited techniques (La Pietra, 2004).

He replicated this model with other traditional forms and regions. For example, in 2018, La Pietra collaborated with Giulio Candussio, a master of Friulian marble mosaic, to create Interno/Esterno: CasAperta, a project blending ancient craft with contemporary design vision (La Pietra, 2021). This was part of Michele De Lucchi's Homo Faber initiative, celebrating fruitful encounters between traditional-making techniques and modern imagination. The resulting pieces demonstrated that when designers honour and challenge the craftsperson's practice, they create new forms of cultural and material value (La Pietra, 2021). As La Pietra argues, even the act of naming the artisan adds market and cultural capital to the work, a gesture that reverses the erasure historically imposed by industrial design systems (Fondazione Cologni dei Mestieri d'Arte, 2020).

La Pietra's legacy is made up of his formal experimentation and his ideological commitment to redefine the designer's role to that of an operator acting within local contexts, drawing from specific material cultures and resisting the effects of global markets (La Pietra, February 2025). Design critics and historians have also analysed the convergence of design and craft, and François Burkhardt has made this topic the centre of his life-long commitment to the analysis of the contemporary design landscape. A Swiss-born design theorist active in Italy, Burkhardt has long advocated for a holistic

approach to design that includes craft, ethics, and cultural context. This includes exploring "new forms of production and consumption" attentive to diverse cultural identities and sustainability. Within this vision, the "correlations between craftsmanship and design" emerge as a recurring and critical theme (Burkhardt, 2016). Burkhardt frames the craft-design relationship as part of a dialectic between globalisation and regionalism: in a global age, reviving regional craft traditions through design can be a strategy to preserve diversity against homogenisation. He sees value not in romanticising the past, but in using craft to inject social and cultural meaning into modern design. In his view, design should be a "critical exercise" that maintains an ideal perspective – a set of values that give sense to design choices (Burkhardt, 2016). Craft often embodies precisely such values: locality, durability, human scale, and tacit knowledge. Thus, Burkhardt's theoretical contribution is to articulate why and how design and craft must converge – to achieve not only aesthetic innovation but also to fulfil social and ethical objectives (for example, sustaining communities of makers and promoting ecological materials). His perspective legitimises craft as equal to industrial technique in the design process, calling for "interdisciplinary" designers who can integrate handwork and advanced technology in pursuit of meaningful results (Burkhardt, 2016). Burkhardt's stance essentially provides an intellectual framework explaining the "material cultural value" that arises from design-craft cooperation: such projects produce objects that carry stories and ideals (heritage, identity, sustainability) in addition to their immediate utility or visual appeal. This convergence, he suggests, is not nostalgic indulgence but a forward-looking strategy to humanise design in the 21st century.

In recent years, Italy has seen a resurgence of design-craft collaborations at both the grassroots and institutional levels, further proving a commitment to the understanding of how design and craft together can generate cultural value and tangible benefits. Across the country, a new generation of designers often work hand-in-hand with artisans, sometimes even reviving endangered crafts. For example, Palermo has an honoured tradition in this sense, rooting back to the work brought about by professor and curator Annamaria Fundarò which been a key figure in the research regarding the integration of craft/design education (Trapani, 2018). As a design historian at the University of Palermo, Fundarò exposed students to the rich crafts heritage of the region leaving a trace that still

persists in the DNA of the Architecture and Design education in Palermo (Trapani, 2018). Fundarò encouraged young designers to engage with these workshops thus helping re-energise local crafts (from metalwork to ceramics) by injecting fresh design ideas and by training designers to respect and utilise artisanal knowledge. The immediate effects include the preservation of dying techniques and the creation of unique products that communicate Sicily's cultural identity, aligning with what Burkhardt noted about balancing global and local. The social role of the Maker here evolves into that of a heritage custodian and creative entrepreneur (Ferrara, 2015).

More recently, this idea resonated with the work of Martinelli-Venezia studio, founded by Vittorio Venezia and Carolina Martinelli and working across Milan and Palermo, which became so inspired by Palermo's traditional metal craftmanship to the point of taking over an old blacksmith's shop to continue its cold-metalworking practice in a contemporary context (Patitucci, 2025) and explicitly seek out Italy's craft excellence, often travelling across the country to collaborate with small family-run workshops. Such direct immersion of a "modern designer" into an "ancient" craft setting was initially seen as surprising by the design press (Patitucci, 2025). Yet it prefigured a broader trend: as large industries faltered in the 2000s, many designers turned to small artisanal enterprises as sites of innovation and authenticity (Patitucci, 2025).

Over the years, Martinelli and Venezia have partnered with carpenters, marble carvers, ceramists and even luthiers to produce limited-series design pieces that fuse innovative ideas with hands-on skills. One project by Martinelli-Venezia is Orografie, a Sicilian brand for which they serve as art directors, connecting local artisan workshops (ceramics, woodworking, leather) with designers to create furniture that reflects Sicilian culture in modern forms.

The first and most direct effects of these efforts are tangible: they produce new designs with embedded cultural narratives (stories of a place, a material, a community); they sustain and modernise traditional skills (ensuring these crafts are not lost but evolve); and they differentiate Italian design on the world stage by leveraging heritage (in an era of globalisation, such distinctive local content is highly valued). Moreover, they contribute to social sustainability: young artisans see a future

in their trade, and young designers gain a deeper understanding of materials and processes by working alongside makers.

Sardinia provides another illuminating example. Historically, Sardinian crafts were isolated, but mid-20th century figures like Eugenio Tavolara showed how design input could modernise them. Tavolara's work in the 1950s–60s (through the ISOLA organisation) revitalised the traditional forms of Sardinian crafts, and put them in contact with international markets leveraging tourism and design media to give Sardinian artisans new outlets (Altea,2005). Gio Ponti's Domus magazine championed these efforts, recognising them as part of Italy's design renaissance. In recent decades, Sardinia has built on Tavolara's legacy. Initiatives like the DOMO Biennial of Crafts (which even won the Compasso d'Oro award) and the 2022 exhibition Faccio con la mente/Penso con le mani ("I make with the mind, I think with the hands") curated by Giuliana Altea, Antonella Camarda, and Luca Cheri have fostered collaboration between designers and local makers. Contemporary Sardinian designers – Annalisa Cocco among them – are working with traditional techniques such as weaving, ceramics, and filigree jewellery to create contemporary products that appeal to modern tastes. For instance, Cocco has drawn on the island's famed coral and textile crafts in her design collections, bringing a new aesthetic to materials deeply embedded in Sardinian culture. Projects often pair younger creatives with veteran artisans, yielding collections that are both avant-garde and rooted in tradition turning Sardinia into "a field of experimentation at the crossroads between design, craftsmanship, architecture and art" (e-flux, 2022). One outcome has been a new economy around high-quality craft design: rather than cheap souvenirs, Sardinian workshops now produce design pieces (rugs, furniture, fashion) that carry local motifs into the present day, proving that embracing tradition can spur sustainable development. This statement epitomises the direct benefits of design-craft synergy: cultural innovation and economic opportunity go hand in hand.

Throughout Italy, numerous designers have adopted similar models. In our interview, we learnt how Giulio Iacchetti, for example, has explicitly focused on reconnecting design with Italian craft. In 2012 he launched Internoitaliano, described as a "fabbrica diffusa" (diffuse factory) – a network of artisans from different regions with whom he co-designs furniture and household objects. The project has

produced dozens of contemporary designs (chairs, lamps, kitchenwares), each made in a specific workshop by artisans expert in wood, metal, glass, etc. Iacchetti believes that Italian design's strength lies in these small-scale craft industries. The result has been objects that are unmistakably modern in function yet imbued with the tacit knowledge of generations of makers – in other words, objects with souls. At the same time, they provide continued livelihood for artisans and help maintain regional techniques.

Historically and in contemporary practice, the cooperation of design and craft has proven not only possible but profoundly generative of material cultural value. When designers and artisans collaborate, the resulting works are enriched on multiple levels. Culturally, they carry forward traditions, symbols and techniques into new contexts – a handcrafted ceramic or piece of furniture becomes a vessel of heritage that a purely industrial product rarely is. Creatively, the dialogue between conceptual design thinking and hands-on making opens "unique creative possibilities," as Lina Bo Bardi once noted, by looking to the "cultural foundations" of a place and unleashing their potential in fresh ways (Soares et al., 2016). Economically, these synergies often yield niche markets for high-quality, story-rich objects (from collectable design pieces to premium regional products), thus offering economic sustenance to craft communities. The first and most direct effects of a designer-artisan relationship can be seen in the object itself: it typically exhibits a heightened level of meaning and authenticity. A simple chair, vase or textile created through such collaboration is not merely a utilitarian thing – it is "imbued with the hand" and with narrative, often signed by both creators and thus commands a different kind of appreciation (and often higher value) in the marketplace. Another immediate effect is the empowerment of the maker. As Ugo La Pietra demonstrated by crediting artisans as co-authors, bringing craft into design elevates the craftsperson's status. The maker is transformed from a nameless supplier into an artist of equal dignity, helping to preserve intangible cultural heritage (skills, techniques, design vocabularies) by giving it contemporary relevance. This also impacts the social role of the maker: the artisan becomes a key figure in cultural production, sometimes even a local hero, rather than a marginalised labourer. Communities gain pride and younger generations may be more inclined to learn the craft when they

see it innovating and thriving. In essence, design-craft cooperation helps ensure that “the tradition is not static, but dynamic”, continuously evolving for new audiences.

Critically, it must be noted that such collaborations require mutual respect and the right conditions. Not every attempt automatically yields value; mismatched expectations or treating craft simply as a cheap means of production can perpetuate exploitation – which La Pietra warned against. The most successful cases, as we have seen, treat design and craft as a two-way dialogue. The artisan’s knowledge can challenge the designer’s initial ideas (pushing them to adapt a design to material realities), while the designer’s vision can challenge the artisan to expand their repertoire – the result is often innovation that neither could achieve alone. When done on an equal footing, the relationship between design and craftsmanship becomes one of mutual growth and dialogue.

The findings from the structured questionnaire and computational linguistic analysis of contemporary hybrid practitioners provide strong empirical validation of the historical arguments here outlined. In particular, the data affirms that the overlap between design and craft is not only possible but already flourishing in current practice, and that it generates clear material cultural value along with identifiable direct effects. With regular engagement in woodworking, ceramics, weaving, and metallurgy, more than 75% of the respondents said their design approach was influenced by traditional crafts.

The fact that 65.5% of respondents self-identified as hybrid practitioners suggests a rising blurring of disciplinary boundaries, resonating with the mid-century experiments of Italian designers such as Ponti, Sottsass, and La Pietra who seem to live on not only as inspiration but also as structural precedent. The high frequency of keywords such as "revitalisation", "reinterpretation", and "heritage innovation" implies that modern practitioners might be actively reinterpreting traditional crafts by means of experimentation, therefore becoming de facto "designers-interpreters" as theorised by La Pietra, whose output of objects reflects local identity.

Usually, these hybrid artefacts are generated from co-design or "collaborative creativity". Like La Pietra's Unity in Diversity or Iacchetti's Internoitaliano, these approaches create items that are both culturally rich and site/material-specific.

The empowering of the artisan function, now seen as co-author and cultural contributor, is another direct consequence of this convergence. The high frequency of keywords such as "Co-design," "community," and "knowledge exchange" among others, show that the relationship with crafts is a dialogic process shaping the design rather than a passive resource to draw from. Importantly, the relationship between design and craft is demonstrated to be dynamic rather than static. Responses on developing technologies analysed by the LDA and sentiment analysis support this even more: many professionals see digital tools such as parametric software, CNC machining, and 3D printing not as threats to conventional making but rather as extensions of it.

At last, the link between hybrid practices, activism, and sustainability points to a new ethical basis for the design-craft connection. High sustainability and activism scores, especially among female and younger practitioners, confirm Burkhardt's view of craft as a tool for social and ecological sense-making. In this sense, especially in the context of climate change and post-industrial reconstruction, the craft is no longer viewed as just a preservationist instinct but rather as a strategic route towards ethical and inclusive futures.

The Generative Craft pilot project provided a useful perspective to evaluate not just the relevance of the New Design Craft framework, but also to question some of the assumptions embedded in historical and contemporary narratives of design-craft cooperation. Among the most important insights was the need to rethink the designer's function in a design-craft dynamic. Instead of being a "saviour" of threatened crafts as some legacy narratives would suggest, the designer must operate mostly as a facilitator of dialogue and a coordinator of information flows between technologies and artisanal intelligence. This point of view is a significant shift from previous ones that saw design as the engine of craft innovation; in Generative Craft, the invention didn't come from a one-sided direction but from a collective negotiation of form, viability, and meaning. Here technologies played the role of a provocation, a means of suggestion and iteration whose results acquired cultural and aesthetic significance only by the interpretative work of both the designer and the artisans. This questions the idea, found in some historical instances and theoretical reflections, that design has to lead; rather, the work emphasises design's ability to start and hold space for developing kinds of co-authorship.

Generative Craft was by design a symbolic and exploratory act, intentionally a small-scale, site-specific prototype that gave priority to process experimentation over scalability. Inevitably, questions about economic scalability and replicability came up; nonetheless, they were not obstacles but rather horizons for future developments. In fact, while immediate generalisation could be difficult given the workshop's dependence on particular material circumstances, highly experienced craftspeople, and long periods of manual and digital iteration, these same points instead of compromising the model, actually suggest future viable areas of development. From this perspective, Generative Craft is a provocative proof-of-concept rather than a finished answer; it supports many of the values expressed in historical and theoretical sources while also pushing the discipline to rethink design's function as a listener, catalyst, and cultural interlocutor rather than a saviour.

Ultimately, yes: design and craft not only can interact and overlap, but historically they always have in the richest epochs of material culture. Their interaction has produced items that appeal to human touch and creativity. Immediate consequences of such direct connections are the definition of a design that results more meaningful, sustainable, and identity-based, and the strengthening of the artisan's role as a key contributor to contemporary economies. Our hands are "the most effective tool we have," as Michele De Lucchi put it, and by creating things with our hands we "connect our brain to reality". In design-craft partnerships, it is exactly this link that creates real cultural value. The union of design and craft produces what could be defined as the best of both worlds: the forward-looking creativity of design and the rooted knowledge of craft. Every project that effectively combines these fields serves as evidence that the gap between head and hand, between concept and practice, can be crossed to produce works that resonate with both heart and mind, therefore enhancing our material culture and preserving it for the future.

1.3 What is the role of technology in shaping the relationship between Design and Crafts? Can emerging technologies become a medium of hybridisation of Design and Crafts?

Recent discussions on design-craft interaction force us to rethink the function of technology as a possible mediator of hybridisation. If, historically, the Enlightenment's prevailing mythology of technology described it as linearly overtaking "primitive" craft processes, today, concepts like Radical Indigenism question this narrative by supporting the idea of the need for a decolonisation of design through the adoption of traditional making technologies and techniques. Originally used by Cherokee academic Eva Marie Garroutte, the concept of Radical Indigenism advocates for reconstructing knowledge from the radix (root) of indigenous ideas. Julia Watson's Lo-TEK (Low-Tech + Traditional Ecological Knowledge) exemplifies this method collecting indigenous infrastructures as sustainable design solutions, de facto reframing indigeneity as "an evolutionary extension of life in symbiosis with nature," not as something to be discarded or surpassed. Lo–TEK, as Watson puts it, "orients us towards a different mythology of technology" that develops humanism with indigenism, implying that innovation can stem from the co-existence of numerous systems of knowledge. This marks a shift from a perception of technology as a one-way trajectory of progress moving from the past to the future, to viewing it as part of a plural, regenerative ethos rooted in the idea that, in the Anthropocene, our survival cannot depend on superiority, but on the symbiosis with our living environment. Such ideas fit the ILEK framework which emphasises the mixing of advanced and local knowledge among stakeholders to guide hybrid solutions. Practically speaking, this implies that modern designers can work with craft knowledge to co-create solutions that don't strictly imitate traditional patterns but they don't even enforce high-tech homogenisation.

For example, architects of the Green School in Bali used sophisticated computational design in collaboration with indigenous Balinese builders to develop the Arc, a record-spanning bamboo pavilion, combining parametric engineering with traditional material mastery. The outcome is a hybrid architectural system: high-tech analysis allowed bamboo, a traditional material, to act like a high-performance framework, showing technology as an enabler of craft innovation rather than a replacement. Likewise, designers increasingly include robotic manufacturing and parametric

modelling into hand-made processes, preserving traditional craft through digital tools and even obtaining outputs that would otherwise be impossible to obtain by hand alone. Many of our case studies revealed the compatibility of generative design algorithms, parametric design, 3D printing etc with traditional forms of craftmanship, like textile and ceramic crafts, indicating immense potential in blending emerging technologies, and design with handcraft to revitalise the artisanal sector. Spanning architecture, product design, and manufacturing, these instances demonstrate how technology may be a medium of hybridisation connecting contemporary design approaches with ancient craft knowledge to produce unique, contextually-based results.

Most importantly, this perspective avoids any techno-utopian prejudice by acknowledging that the influence of technology is quite context-dependent. In fact, without any form of cultural sensitivity, emerging technologies could displace craftspeople or commodify traditional practices as quickly as they could empower them when mindfully used. This poses a certain urgency to the need for operations of cultural sensitisation like New Design Craft to ensure that hybrid practitioners can bring about their practices in a respectful and non-destructive way. Such contradictions draw attention to the fact that for crafts, technology is not a universally "redemptive" force; its effectiveness as a mediator relies on how ethically and inclusively it is used. Effective hybridisation calls for placing technology within local value systems, involving artisans as equal partners and honouring the ecological and cultural settings from which traditional methods arise. Ultimately, though they can help to link design and craft, future technologies must be aimed to enhance and link the embodied knowledge of craft rather than supplant it. Thus, technology is a deliberate enabler of multiple coexistence and regenerative design possibilities; one that has to be negotiated with awareness to prevent perpetuating the old idea of linear development with new instruments.

The findings from the analysis of our collected data tend to confirm the assumption that new technologies may act as enablers of hybridisation between design and craft. On the other hand, they also provide a more nuanced picture that implies that hybridisation is still somewhat context-dependent, shaped by elements including practitioner demographics, the field of application, and cultural proximity to traditional crafts.

To start, the strong involvement with traditional crafts claimed by 75% of respondents and the predominance of hybrid self-identification on the design-craft spectrum (65.5%) imply that the conceptual boundary between design and craft is already being actively reconstructed. Often based on local heritage, most practitioners fluidly cross both worlds and regularly use traditional approaches. This indicates a common dedication to the preservation and revitalisation of material culture, strongly in line with the ideas of Radical Indigenism and the Lo-TEK approach, which advocate non-linear, context-specific, and regenerative forms of knowledge and invention. These practitioners are critically reinterpreting craft as a place of environmental, cultural, and technical investigation rather than just restoring it as a static legacy. Second, the influence of technology is neither ubiquitous nor peripheral but highly context-specific. Although 3D printing and CNC technologies are the most utilised digital tools, especially among female practitioners and those in product and material design, 25% of respondents do not interact with new technologies at all. This inconsistency shows that although technology may be a bridge with great possibility, it is not a natural one, mostly because of the accessibility, cost, and complexity as major obstacles in attaining genuine hybridity we were able to highlight in our analysis. For our analysed practitioners, technology is more of an affordance than a prescriptive answer; a tool that has to prove its relevance by supporting cultural, environmental, or procedural values already ingrained in the craft.

We can also notice a great alignment with ILEK ideas as attention to locality, waste reuse, and knowledge co-production, reflected in our data, suggests a similar ethos with ILEK's multidisciplinary approach to low-impact construction and bioclimatic adaptation. Practitioners using raw materials, modular shapes, and experimental manufacturing techniques are creating a distributed intelligence not different from that of conventional vernacular systems, implying that the digital does not necessarily replace the vernacular but could be its unanticipated continuation.

At last, data strongly supports the notion that new technologies are viewed as part of a more general, activist goal rather than just a way to maximise productivity. Especially in fields like biomaterials and parametric design, design activism ratings (8–10) are highly related to sustainability initiatives and

often overlap with technical innovation. But this activism does not always mean commercial feasibility or scalability, a restriction previously recognised in the Generative Craft initiative.

In the Generative Craft pilot, technology was more of a positioned enabler and discussion facilitator than a production driver or main protagonist. The generative algorithm's purpose was to inspire interaction between the designer and the blacksmiths and to operate as a tool to sta art discussion rather than to control the final results. It invited the practitioners to reinterpret digital blueprints using physical knowledge and material limits rather than automating craft. From this perspective, technology was a means of hybridisation that delegated power to design assessment and craft knowledge. This approach challenges dominant narratives of design-tech integration, proposing instead a more relational and negotiated role for computation within craft processes.

At the same time, the pilot exposed the limits of this integration. While the algorithm successfully scaffolded a creative process that honoured both the digital and the manual, the outcomes remain symbolic and small-scale, a collection of “hyperobjects” that articulate a vision more than a viable production model. The scalability, economic feasibility, and long-term durability of such hybrid practices are yet to be demonstrated. However, Generative Craft validates the premise that emerging technologies can extend, rather than replace, traditional knowledge in the context of hybrid creative practices. These practices surely represent a new epistemological perspective based on design’s ability to steward the coexistence of the traditional and the emergent, mediate systems, and enable dialogues.

1.4 How can we define Socio-environmental Justice? Can it be pursued by Design? What impact can hybrid creative practices have on local identities? Which role can they have in the pursuit of social-environmental justice?

Socio-environmental justice refers to the intertwined pursuit of social equity and environmental sustainability. It recognises that social and environmental issues are deeply interlinked, often manifesting as a single complex crisis rather than separate problems. In essence, we cannot address ecological problems without also addressing questions of human rights, equity, and cultural survival

as environmental harms (pollution, climate change, resource depletion) disproportionately impact marginalised communities, whether it's low-income neighbourhoods burdened with toxic waste sites or Indigenous peoples facing deforestation of ancestral lands. In particular, socio-environmental justice demands respect for the knowledge and rights of local communities. It expands the traditional environmental justice frame to a broader eco-social vision: one where caring for vulnerable people and for nature go hand in hand. This is the core principle of environmental sustainability which includes social justice.

From this perspective, design is very social: the concept of a "total social fact" by sociologist Marcel Mauss provides a strong perspective to see how design influences society. In fact, design becomes the interface where local identities meet global influences including technology, economics, and climate, so that, every design choice has far-reaching social consequences. Design is never neutral, as late designer Victor Papanek said; it either heals or harms, hence strengthening world inequalities or promoting fairness and resilience. So, designers have to be cultural mediators and systems thinkers if we consider design initiatives as total social facts.

On top of that, sustainability can be considered a "wicked problem," which helps to explain why socio-environmental concerns are so complex. Wicked problems in design and planning theory are those messy, complicated problems without an obvious single answer where stakeholders' values clash, rules change, and every intervention produces unexpected results. Climate change fulfils all the characteristics of wickedness: the problem definition itself is debatable, there is no "stopping rule" or point at which we know it's resolved, and every action affects social and ecological systems in rippling ways. As a consequence, designers had to change their idea of sustainability: for a long time, conventional sustainability in design emphasised harm reduction, the standard "do less damage" approach, but restorative sustainability is about healing and enhancing social and environmental systems. One way to understand this change is by focusing on the passage from sustaining to restoring. Sustainability issues have no universal answer as solutions need to cater to particular situations and constantly adjusted. Design thinking and systems-oriented design empower people to jointly negotiate trade-offs between environmental, economic, and social imperatives. Guided by

holistic thinking and participative approaches, pursuing socio-environmental justice by design involves shifting from superficial sustainability to profound, restorative sustainability.

To help us in this sense, the principles of Design Justice tell us how to really combine social justice with environmental design. Sasha Costanza-Chock and the Design Justice Network describe a framework that reconsiders how and for whom design is performed. Design justice is fundamentally about making sure people who are most affected by design choices have a voice in those choices and that design really benefits underprivileged populations instead of excluding or abusing them. It's about co-designing with communities rather than for them, respecting experience as much as professional knowledge, and ensuring results benefit the group, not just the designer or client. Design justice encourages us to learn from historical practices and material knowledge and to magnify those in any new design rather than assuming innovation has to begin from zero. Designers that follow design justice ideas ethically mediate between global and local, while addressing the power disparities typical of critical and speculative design.

Critical design (and its twin, speculative design) provides tools for challenging the status quo and imagining different futures. Originally developed by Anthony Dunne and Fiona Raby, Critical design referred to employing design prototypes and ideas as commentary to criticise social, technological, and political directions by showing controversial artefacts instead of commercial products. Speculative design goes further by generating future scenarios and artefacts that enable people to discuss desirable vs. undesired futures. While critical and speculative design can be explored in support of socio-environmental justice, they must be combined with inclusivity and activism to prevent the social paradox of formulating an analysis of important social scenarios without involving the most impacted people in the discussion. In the end, critical design motivates us to view design as political, as every design choice either supports or opposes the prevailing systems.

At the crossroads of design and socio-environmental justice, one of the most exciting developments is the growth of hybrid creative practices combining traditional crafts and design ideals with emerging technologies. These hybrid approaches recognise that innovation and tradition are not polar competitors; rather, their synthesis can produce strong solutions that are both cutting-edge and

profoundly anchored in local culture. For communities under cultural and environmental dangers, the outcomes often serve as instruments of resistance, repair, or revitalisation. Regarding Resistance, hybrid creative activities might enable underprivileged groups to fight environmental exploitation and cultural homogenisation. Often serving as environmental statements, such hybrid initiatives help to counteract the erosion of local identities by global consumer culture. Examining Repair, hybrid approaches also support the healing and repair, of the social fabric as well as ecological ecosystems through partnerships restoring cultural continuity and confidence as well as physical objects, hence healing communities.

Finally, maybe the most significant effect of hybrid creative practices is the restoration of at-risk local knowledge systems and identities. These methods ensure that legacy is relevant in the present and future by combining old and modern. From all around the world, we observe designers collaborating with traditional artisans to produce items that attract contemporary audiences while maintaining heritage methods. Essentially, instead of a replacement, technology becomes a tool for craft knowledge recording, experimentation, and distribution.

These hybrid approaches show that local communities can become protagonists in creating solutions, as they enhance local agency by means of creative mixing of tradition with innovation, with designers becoming facilitators, and listeners, as they are creators.

Looking at our sample population, the gathered data fits rather closely with this particular frame of socio-environmental justice, especially in stressing sustainability, material experimentation, and the fusion of traditional crafts with modern technologies as core to these practices. Practitioners show a clear value in prioritising restorative sustainability, hence validating studies finding that socio-environmental justice is sought by balancing ecological responsibility and social equality. Moreover, their strong involvement in design activism, supports the assertion that hybrid approaches naturally have socio-environmental consequences and political nature. However, the correlation study reveals no clear linear connection between sustainability initiatives and activist intensity, hence implying different attitudes inside the larger socio-environmental justice framework.

1.5 What new paradigm can we observe in contemporary design? Which general models can we draw from the analysis of contemporary design?

Contemporary design is experiencing a significant paradigm shift. Historically, designers tended to be product-centric, focusing primarily on the artefact and their features. Eventually, this gave way to human-centric design, which emphasised a design rooted in the needs of the end-users and their experiences. By the late 20th century and early 2000, human-centred design had become the prevailing philosophy, broadening the designer's function from style to shaping interactions and experiences (Norman, 1988). But, recognising more general social and environmental responsibilities, the discipline developed adopting a humanity-centric view stressing the rights of all of humanity as well as those of the ecosystem (Norman, 2023).

Most recently, thought leaders have advocated for life-centric design, which focuses on all kinds of life including the environment and all living entities (Lutz, 2022). From a life-centred perspective, what is considered an advantage for people should not come at the expense of the planet. Ultimately, Design's struggle with related issues such as climate change and social inequality, forced us to recognise that every design choice affects future generations and ecosystems (Lutz, 2023). From the object to the user, to society, and finally, to the web of life itself, this evolution from product-centric to human-, humanity-, and life-centric design represents a widening moral scope.

Many efforts to discover new meanings for the design practice are emerging from this changing scene. Among them, the New Design Craft paradigm is a hybrid approach to Making which responds to the urge for socio-environmental justice in design. Originating as an alternative to the mass-production model that has separated us from our roots, values, and awareness of the influence of our industrial actions, NDC blends design justice ideas, emerging technology, and traditional local craftsmanship to produce more fair and sustainable futures. Specifically, NDC aims to restore the link between makers, communities, and the environment by creating relational, and culturally relevant methods. Essentially, it's a philosophy of Making at the intersection of Design and Crafts, closely linked to community empowerment, rather than just an aesthetic style or technical trend, that defines craft as a form of resistance, design as a critical instrument, and technology as a hybridisation enabler.

New Design Craft's guiding philosophy and principles are organised in a manifesto which rejects the idea that design's success can be evaluated only by volume or speed, and aims to accomplish better rather than more. Its view of the future is one where craft is not treated as a dying nostalgia or a luxury commodity but appreciated as an expanding system, available beyond high-end markets. From this perspective, technology should enhance human ability rather than replace cultural value, as it should support rather than suppress creativity. Likewise, designed objects are part of regenerative strategies for society and the environment. Design becomes a means to nurture relationships, between individuals, their history, and their environment, aligning with ideas of just and sustainable futures advocating for the decentralisation of power to local makers. Building on its ethos, New Design Craft lays out clear values and principles that define its practice, reimagining what matters in design. Honouring material Intelligence, Designing Relationships instead of objects, and advocating for a peer-to-peer relationship between handcraft and high-tech are the foundations of this approach. Sustainability is treated as a System, and Craft is seen as a tool for Future-Making through the adoption of its open approach to making knowledge accessible to all.

These values are put into action through concrete design principles that guide New Design Craft projects, which position technology in an enabling role. A deep ethical awareness underlies all principles: practitioners are reminded to recognise design as a political act, understanding that each design decision affects ecosystems, labour conditions, and cultural power dynamics. Consequently, NDC calls for honouring the work behind objects – ensuring fair compensation and respect for all hands involved. An interesting aspect of this paradigm is its flexibility achieved through the introduction of the concept of “Four Souls” of New Design Craft, that’s to say four core orientations or mindsets that differentiate how NDC practitioners relate to its principles and ideas, ensuring that New Design Craft remains open and holistic. We defined the Four Souls as approaches defining the relationship between practitioners and Making that can be either Material-Driven, Concept-Driven, Ethics-Driven, or Experiment-Driven depending on the prioritisation of either the tactile, physical properties of the materials; the focus on the site-specific cultural relevance of the projects; the focus of ethical concerns; or the production of new knowledge via hands-on experimentation.

The processes defined by New Design Craft are aligned with socio-environmental justice goal as they promote the co-creation with local communities and artisans, decentralising power and transferring agency to those traditionally on the periphery of design decision-making, thus tackling social justice issues of inclusion and equity. Each project is site-responsive with designers engaging with the cultural heritage and needs of a place (a direct counter to one-size-fits-all industrial models), which supports cultural preservation and diversity. New Design Craft is a visionary yet concrete paradigm that crystallises the ongoing expansion of design's scope – from products to humans, to humanity and life at large – into an actionable model for practice. It combines the human-centred ethos of empathy with the humanity- and life-centred tenets for justice and sustainability.

2. Theoretical and Practical Contributions

This research makes meaningful contributions to the academic debate and situated practices in the contemporary design landscape. On a theoretical level, it expands existing discourses on the concepts of hybridity, sustainability, post-industrialism, and the blending of traditional crafts with emerging technologies. It does so by introducing New Design Craft as an approach that sits within the broader Distributed Design movement, expanding its key principles and ideas to address the unique needs and opportunities of hybrid design/craft practitioners. By adopting and expanding Distributed Design's core ideas, like decentralised production, community empowerment, and openly shared knowledge, New Design Craft reimagines what sustainable and socially responsible design could look like. It presents a new take on contemporary hybrid practices, showing how new ways of thinking, such as regenerative sustainability, can lead to more equitable, culturally meaningful, and environmentally conscious design.

On a practical level, our research translates these ideas into a tangible tool for designers, educators, and policymakers, through the definition of a New Design Craft Manifesto crafted to help hybrid practitioners form a shared sense of purpose and community, and non-practioners find a new shared vocabulary to address the specifics of the movement. The manifesto serves both as inspiration and as a practical ethical guide, enabling designers to clearly place their work within a broader vision of cultural and environmental responsibility. Additionally, this research outlines a holistic yet adaptable

design process that embraces diverse methods and individual approaches to hybrid sustainable practices, allowing practitioners to blend traditional craft techniques with emerging technologies, experiment with bio-based materials, and actively engage in design activism.
Other than the Manifesto, the research produced a set of outputs that address both the theoretical and practical dimensions of New Design Craft. Key among these outputs is this dissertation, which synthesises the research insights. The study also produced a database of hybrid creative practices, made accessible through the design of an Atlas of case studies which capture different dimensions of the practices.

The pilot design experience, implemented in collaboration with a local blacksmith, culminated in a detailed account of the experience as well as a small technical series of eight design-conceptualised, computer-generated, human-optimised, and hand-produced pieces, serving as a practical validation of the collaborative paradigm. Additionally, the study produced a dedicated web platform to disseminate New Design Craft culture.

3. Methodological Reflections

Here we evaluate the strengths and weaknesses of our methodological approach, starting with the selection of our techniques. Though difficult to coordinate, adopting various strategies and methods was successful in producing rich insights. To navigate this complexity, having a robust definition of our design research problem and questions allowed us to preserve consistency and validity of our findings. Handling a large amounts of textual data presented operational difficulties that we resolved with the adoption of new analytical tools -borrowed from computational linguistics- which helped us to find recurring themes and nuances in practitioners' perspectives on fundamental topics such as sustainability, design activism, and the hybridisation of crafts and Making.
The *Generative Craft* pilot project developed with a local blacksmith introduced an additional variable to the complexity of our research which, although it offered direct insight into the an artisanal hybrid scenario, also posed the need for a strong ethical vigilance to guarantee we never objectified our collaborator. Interviewing experts and practitioners presented comparable challenges since it required

significant planning and adaptability to fit every discussion to the interviewee's particular background while trying to preserve objectivity and consistency. One of the strongest aspects of our methodological approach was the methodical construction of our research database, which stayed relevant and valuable throughout the three years of our study, despite the multifacete complexity we we were trying to capture. However, this same complexity an the risk of overcomplicating the research itself. Focusing the study on just one of this aspects might have helped to simplify some analytical work without actually compromising depth.

4. Limitations & Future Research Directions

Lastly, we need to acknowledge some limitations shaping the scope and outcomes of this research, and especially its geographic focus, budget constraints and human factor. The methodological decision to limit our research scope to the European, Ukrainian, and Turkish territories, while providing depth and specificity, also limited the broader generalisability of our findings. Budget limitations definitely restricted our ability to conduct in-person observational studies, thus impacting our capacity to explore hybrid practices in their own natural environments. Moreover, the human dimensions of the action research component was influenced by the ethical need to maintain sensitivity for the participants, thus occasionally constraining more radical experimentations.
An unresolved question concerning economic sustainability remains open. Specifically, we are left we the open interrogative of how these hybrid design initiatives could become more economically competitive, and how the New Design Craft paradigm could gain stronger traction among younger generations, considering the appeal of the dominant industrial narratives promising financial success and status. Although this question remained unanswered it made it evident that fully addressing this issue will require a multidisciplinary approach bring together design, sociology, legislative and financial skillsets to fully grasp the different forces playing under the surface of the hybrid making phenomenon. Moreover, addressing these limitations offers interesting directions for future research. Cross-cultural comparative studies could expand our understanding of the phenomenon by verifying whether the identified characterisations and trends of hybrid design hold true beyond the analysed

geographic scope, particularly through exploration of diverse dynamics within African and Japanese craft and design contexts which already offered important inspirations during the literature review phase. Furthermore, the New Design Craft framework itself presents opportunities for further evolution. Theoretically, it could be refined and expanded to serve not only as an inspiring manifesto for hybrid practitioners but also as a strategic policy-making instrument., clearly outlining the rights, needs, and duties specific to hybrid practitioners, and advocating for legislative protections and systemic support. From a pedagogical standpoint, the framework could inform the redesign of more contextualised learning experiences focusing on a structured definition of sustainability and design's responsibilities in the age of poly-crisis. On a practical level, both the holistic New Design Craft process and the Generative Craft algorithm invite further development and refinement. For example, they could be adapted to revitalise and recontextualise various traditional crafts, such as pottery, woodwork, and textile work, allowing for context-specific customisation that responds to local material cultures and production ecologies. Particularly, the Generative Craft method's intrinsic openness to adaptation could be leveraged to target production scraps or waste streams across diverse productive contexts, to foster a site-agnostic regenerative and sustainable material economy.

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1. Appendix A: Full Questionnaires

1.1 Screening Questionnaire

The survey was structured around a list of five questions, each focusing on specific information to capture the geographical distribution, demographic diversity, and academic background influencing the practice, as well as the longevity and evolution of the design studio/practice and insights into the core values and guiding principles that underpinned it. Questions were presented and formatted as follows.

_____

Q1. In which country are you currently based?

Question Type: Closed-ended, Single Choice.

Options:

Albania	Estonia	Italy	Montenegro	Slovakia
Andorra	Finland	Kosovo	Netherlands	Slovenia
Austria	France	Latvia	Macedonia	Spain
Belgium	Germany	Liechtenstein	Norway	Sweden
Bosnia	Georgia	Lithuania	Poland	Switzerland
Bulgaria	Iceland	Luxembourg	Portugal	Turkey
Croatia	Greece	Malta	Romania	UK
Czechia	Hungary	Moldova	San Marino	Vatican City
Denmark	Ireland	Monaco	Serbia	

_____

Q2. What is your age group?

Question Type: Closed-ended, Single Choice.

Options:

a. 18-24

b. 25-34

c. 35-44

d. 45-54

e. +55

_____

Q3. What is your most relevant level of education? Where have you learnt the skills you are currently using in your design practice?

Question Type: Closed-ended, Single Choice.

Options:

a. High-School

b. Bachelor's Degree

c. Master's Degree

d. Doctorate

e. Professional Course

f. Apprenticeship

g. Other

_____

Q4. When was your design studio/collective founded?

Question Type: Closed-ended, Single Choice.

Options:

a. Less than 1 year ago

b. 2-3 years ago

c. 4-5 years ago

d. + 5 years ago

_____

Q5. What is your design mission? What are your design principles? Think about your main values and the drivers of your practice (e.g., social justice, sustainability, material culture, etc.)

Type of Question: Open-ended, Long Answer.

1.2 Structured Questionnaire

The asynchronous and unmonitored questionnaire was administered via Typeform and sought to build a comprehensive profile of each selected practice/studio, to contribute to the development of a multifaceted database and an abacus of relevant projects. The questionnaire was structured into four sections, with Part 1 focusing on the relationship with local crafts and material culture, Part 2 focusing on the relationship with emerging technologies, Part 3 exploring the relationship with socio-environmental justice, and Part 4 focusing on the collection of project documentation and consent forms.

_____

Part 1: Relationship with Local Crafts & Material Culture.

Q1. Is your design approach influenced by any form of traditional craft?

Question Type: Close-ended, Yes/No Question.

_____

Q2. Which types of traditional crafts have the strongest influence on your work?

Question Type: Closed-ended, Multiple Choice.

Options:

Basketry	Beadwork	Bookbinding	Crocheting	Cross-stitch
Embroidery	Jewellery	Knitting	Lace-making	Lapidary
Metalwork	Mosaics	Needlepoint	Papier-mâché	Parchment
Patchwork	Pottery	Quilting	Rug making	Scrapbooking
Sewing	Glasswork	Tapestry	Weaving	Woodwork

_____

Q3. How long have you been practising this craft?

Question Type: Closed-ended, Single Choice.

Options:

a. Less than 1 year

b. 1-5 years

c. 6-10 years

d. 11-20 years

e. >20 years.

_____

Q4. What is your main field of application?

Question Type: Closed-ended, Multiple Choice.

Options:

a. Material Design

b. Interior Design

c. Furniture Design

d. Textile Design

e. Conceptual Design

f. Speculative Design

g. Other

_____

Q5. How would you describe the phases of your design process?

Question Type: Open-ended, Long Answer.

_____

Q6. On a range from design-oriented to craft-oriented, how would you define your approach?

Question Type: Closed-ended, 5-point Likert scale.

_____

Q7. How would you describe your relationship with your local crafts, materials and traditional expressions of design/production?

Question Type: Open-ended, Long Answer.

_____

Q8. How often do you use traditional techniques in your work?

Question Type: Closed-ended, 5-point Likert scale.

_____

Part 2: Relationship with Emerging Technologies

Q9. What's the role of technology in your process?

Question Type: Open-ended, Long Answer.

_____

Q10. Do you use any innovative technology? How does it constitute an advantage or a disadvantage for your work?

Question Type: Open-ended, Long Answer.

_____

Q11. Does your practice involve any of the following technologies?

Question Type: Closed-ended, Multiple Choice.

Options:

a. 3D Printing
b. CNC Machines
c. AI
d. Parametric Modelling Software
e. Generative Coding
f. AR/VR
g. Other
h. None of the Above

_____

Part 3: Relationship with Socio-environmental Justice.

Q12. What's the main focus of your design research?

Question Type: Open-ended, Long Answer.

_____

Q13. On a scale from 0 to 10, how much do you and your work relate to the following statement?

"Victor Papanek and Victor Margolin were among the first to call attention to ways that design could be practised outside the market and become a design for social good in the context of a developing world, as well as a design for people in need. They described these aspects as part of a dysfunctional social and political system that itself was badly in need of a redesign."

Question Type: Closed-ended, 10-point Scale

_____

Q14. How would you describe the political dimension of your design research? How does it manifest on a tangible level? Do you take part in any form of design activism? Does it influence your design choices?

Question Type: Open-ended, Long Answer.

_____

Q15. Are you involved in any of the following areas of research?

Question Type: Closed-ended, Multiple Choice.

Options:

a. Development of New Sustainable Materials
b. Development of New Technological Applications for Traditional Crafts
c. Development of New Crafts/ Artisanal Techniques
d. Development of New Sustainable Materials
e. Other

_____

Q16. How important is it to you to use sustainable materials in your work?

Question Type: Closed-ended, 10-point Scale

_____

Q17. How do you source the materials you use in your projects?

Question Type: Open-ended, Long Answer.

_____

Part 4: Closing Section.

Q18. Could you share a brief description of 1-3 projects that are particularly representative of your approach and research?

Question Type: Open-ended, Long Answer.

_____

Q19. Would you share with us a link to a selection of pictures of your most significant projects? (We welcome pictures of your process, prototypes, final product, etc.)

Question Type: Closed-ended, Link/File Upload.

_____

Q20. Would you be available for any follow-up survey or interview?

Question Type: Closed-ended, Yes/No Question

_____

Q21. We will strictly use the information provided in this survey for research purposes. These could include the publication of papers in scientific journals, books, and dissertations, and the diffusion of written articles & visual posters online and offline. We commit to always giving credit to the relevant authors, as the scope of this research is to scout, highlight and promote the forms and the protagonists of independent design in the contemporary age. By clicking "I accept", you permit us to use the information and pictures you have shared with us.

Question Type: Close-ended, Yes/No Question.

1.3 Manifesto Testing Questionnaire

The questionnaire was structured into five closed-ended questions and one open-ended question for further suggestions and feedback, as detailed below.

_____

Q1. Do you agree with the need for a new nomenclature and identity for hybrid practitioners?

Question Type: Close-Ended, 5-point Likert Scale.

_____

Q2. Do you see your work values reflected in the Value Section of the Manifesto?

Question Type: Closed-Ended, 5-point Likert Scale.

_____

Q3. Do you find the Principles listed in the Manifesto Design aligned to your own design principles?

Question Type: Closed-Ended, 5-point Likert Scale.

_____

Q4. Do you find the proposed Process applicable to your work?

Question Type: Closed-Ended, 5-point Likert Scale.

_____

Q5. Do you feel inspired by the North Star of New Design Craft?

Question Type: Closed-Ended, 5-point Likert Scale.

_____

Q6. Do you have any suggestions for the future implementations of this Manifesto?

Question Type: Open-Ended, Long Answer.

2. Appendix B: Manifesto of New Design Craft

new design craft
MANIFESTO.

We live in a paradoxical world where wicked problems set our priorities as creative practitioners, where heritage crafts must coexist with emerging technologies, where the urgency of sustainability coexists with extractive industries, and globalisation endangers local identities.

New Design Craft is not a fixed paradigm but a mode of thinking and Making that welcomes these conflicts and turns them into dialogue, innovation, and change.

New Design Craft is about cultural responsibility without nostalgia, where tech innovation exists without social exploitation.

new design craft
NORTH STAR.

New Design Craft aspires to do better rather than more and it seeks Futures where:

- **Artisanal Making** is not a prerogative of the luxury industry.
- **Crafts** is valued as an evolving system, rather than nostalgia.
- **Technology** complements rather than compete with creativity.
- **Objects** are not just things but part of regenerative strategies.
- **Design** develops relationships, knowledge, and futures.

New Design Craft is neither an aesthetic movement, a hyper-tech approach, nor a nostalgic trip back to the past. It is a way of designing in response to the world as it is, while actively shaping how it could be.

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VALUES.

1. MATERIAL INTELLIGENCE

Materials are not neutral. They are archives of environment, commerce, and culture. New Design Craft practitioners listen, respond, and work with substance rather than imposing form onto it. Whether natural, synthetic, or digital, we embrace the intelligence of materials and let their possibilities and restrictions define the process.

2. DESIGN RELATIONSHIP, NOT OBJECT

A product is a web of interactions between people, locations, and activities—never only a thing. New Design Craft questions the object-centric approach of industrial design and emphasises instead on developing links between producers and consumers, past and future, tradition and creation.

3. THE RIGHT TOOL IN THE RIGHT CONTEXT

Low-tech and high-tech, chisels and CNC routers, have no hierarchy. The only question that counts is: what need this project in this location with these resources calls for? Mastering a flexible, adaptive approach to tools, New Design Craft practitioners use digital manufacturing where needed, handcrafted techniques where important, and hybrid ways where possible.

4. SUSTAINABILITY AS SYSTEM.

Sustainability is about systems, cycles, and economies, not only about choices of materials. New Design Craft advocates profound, regenerative thinking over greenwashing and temporary environmental fixes. It probes: what does it mean for a design to really fit its ecosystem? In what ways does it honour the work of those engaged in its production, promote local businesses, and renew resources?

5. CRAFT AS A SITE OF FUTURE MAKING.

Craft is about the present—not about the past. Revised Design using historic knowledge as a continuous activity of creativity rather than as a static record, craft is profoundly future-oriented. It sees craft itself as a weapon for resilience in an uncertain age, artisan networks as templates for decentralised economies, and craft practices as blueprints for sustainable making.

6. OPENNESS AS A RESPONSIBILITY

We do not create just by ourselves. Every design choice has effects; every technique is inherited from someone. Not as trends, but rather as ethical requirements, New Design Craft pledges openness, shared information, and open-source ideas. Design is participation in a greater system, and with that comes the duty to leave it better than we discovered.

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PRINCIPLES.

1. LISTENING BEFORE MAKING.

Every project begins with a listening act towards materials, communities, historical and environmental background of a place. We co-learning with people who possess knowledge outside of formal design disciplines, not about knowledge extraction.

2. START FROM QUESTIONS, NOT ANSWERS.

Solutions are not imposed by New Design Craft. They starts with wondering what is needed. What already exists? What can be learned from other fields? Design is a conversation, not a prescription.

3. WORK IN CYCLES, NOT LINEAR PROCESSES.

We welcome iteration, feedback loops, and the unpredictability of experimenting rather than adhering strictly to processes.

4. REDEFINE THE VALUE OF OBJECTS.

Objects should not be mass-produced beyond need, trend-driven, or throwaway, unless absolutely necessary. Rather, they should be meaningful, change with the times, and have an afterlife that does not end in landfill.

5. TECHNOLOGY SHOULD EXPAND, NOT REPLACE, HUMAN AGENCY.

Digital fabrication, artificial intelligence, and computational design are extensions of craftsmanship not replacements for it. New Design Craft uses technology to improve work rather than to automate meaning away.

6. RECOGNISE DESIGN AS POLITICAL ACT.

Every design choice has ethical ramifications regarding who benefits from a design, who gets to make it or access it? New Design Craft understands its influence in shaping ecological futures, labour conditions, and economies.

7. HONOUR THE WORK BEHIND OBJECTS.

Every object—made by hand, by machine, or in partnership with artificial intelligence—carries human effort. We support fair pay, respect of creators, and ethical supply chains.

8. MAKE KNOWLEDGE ACCESSIBLE.

Skills should be distributed rather than hoarded. New Design Craft is dedicated to open-source education, multidisciplinary cooperation, and the total accessibility of knowledge.

9. DESIGN FOR REPAIR.

Objects should be made to be fixed, modified, or reinterpreted. A broken thing should present a chance for repair rather than for disposal.

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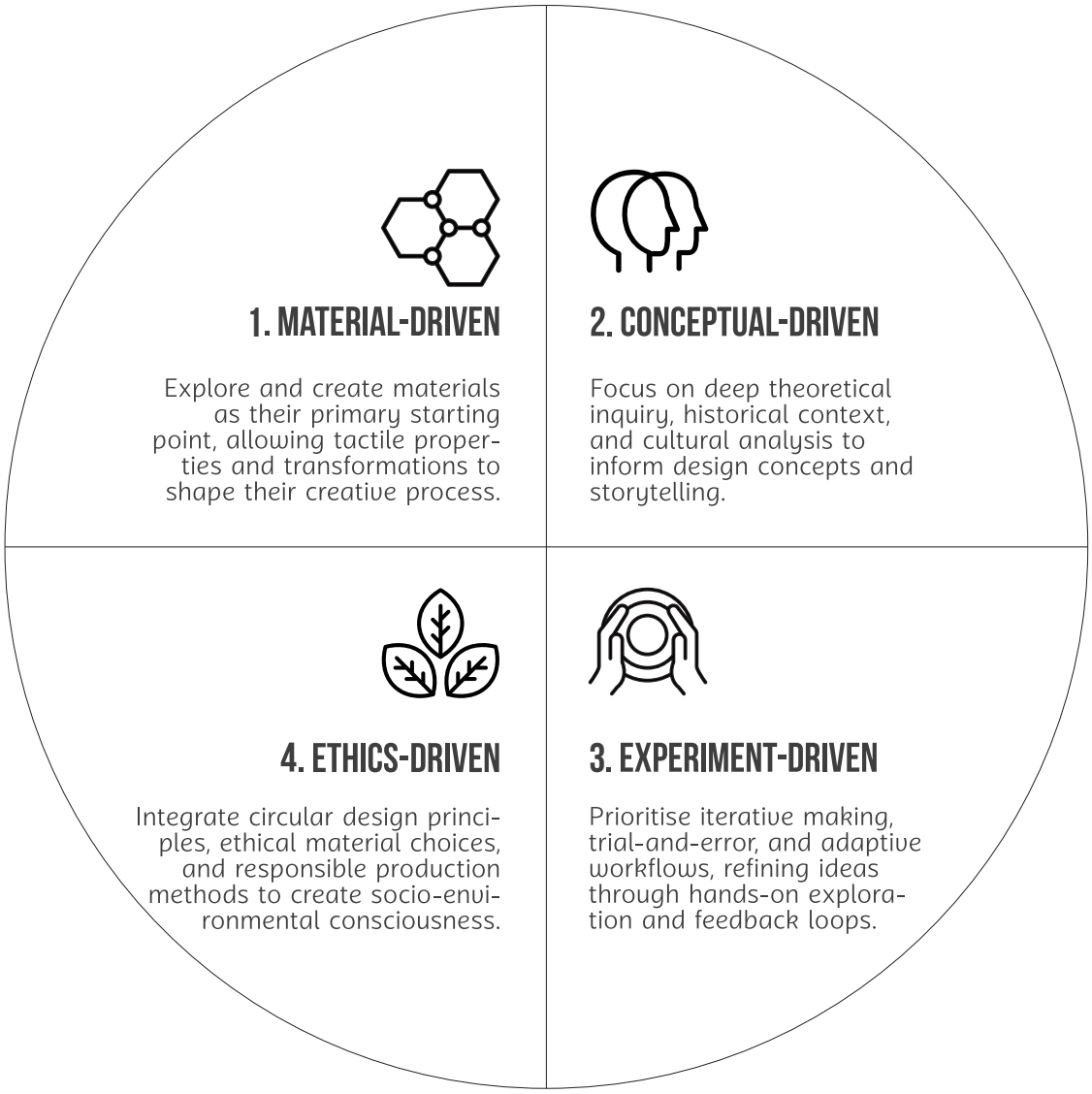
FOUR SOULS.



Through the analysis of over two hundred hybrid design practices, four distinct yet interconnected approaches to New Design Craft emerged, each reflecting unique priorities and methodologies. These approaches were identified by mapping recurring themes, keywords, and processes across collected data, revealing both their distinct characteristics and the shared values that unite them under the broader framework of New Design Craft.

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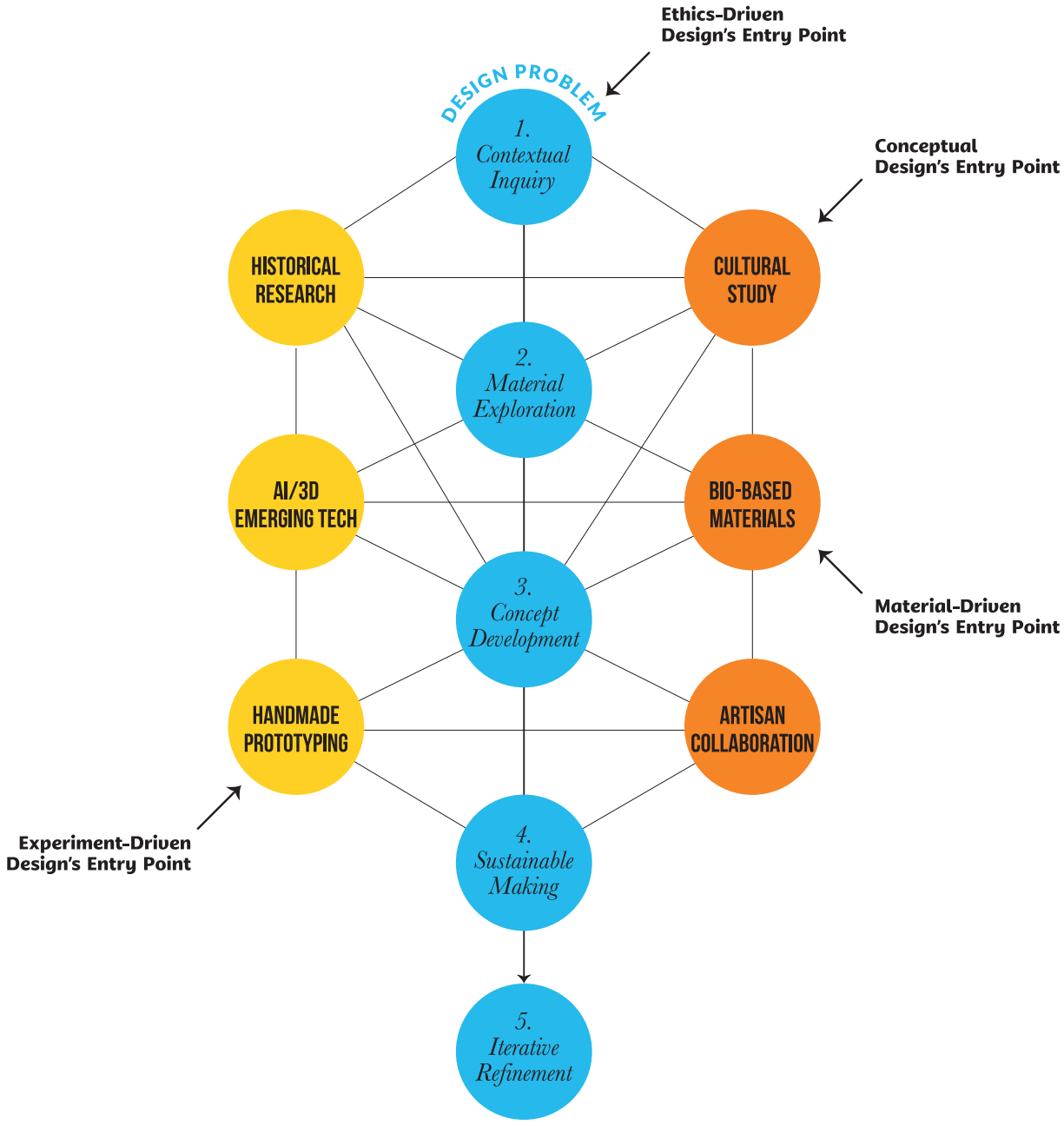
PROCESS.



This Process integrates the diverse methods of the four souls of New Design Craft into a modular framework that allows multiple entry points based on each designer's approach. Rather than enforcing a linear structure, it establishes shared core phases while branching into specialised pathways that accommodate different priorities to allow practitioners to navigate the process dynamically, while remaining adaptable to the complexities of contemporary design.

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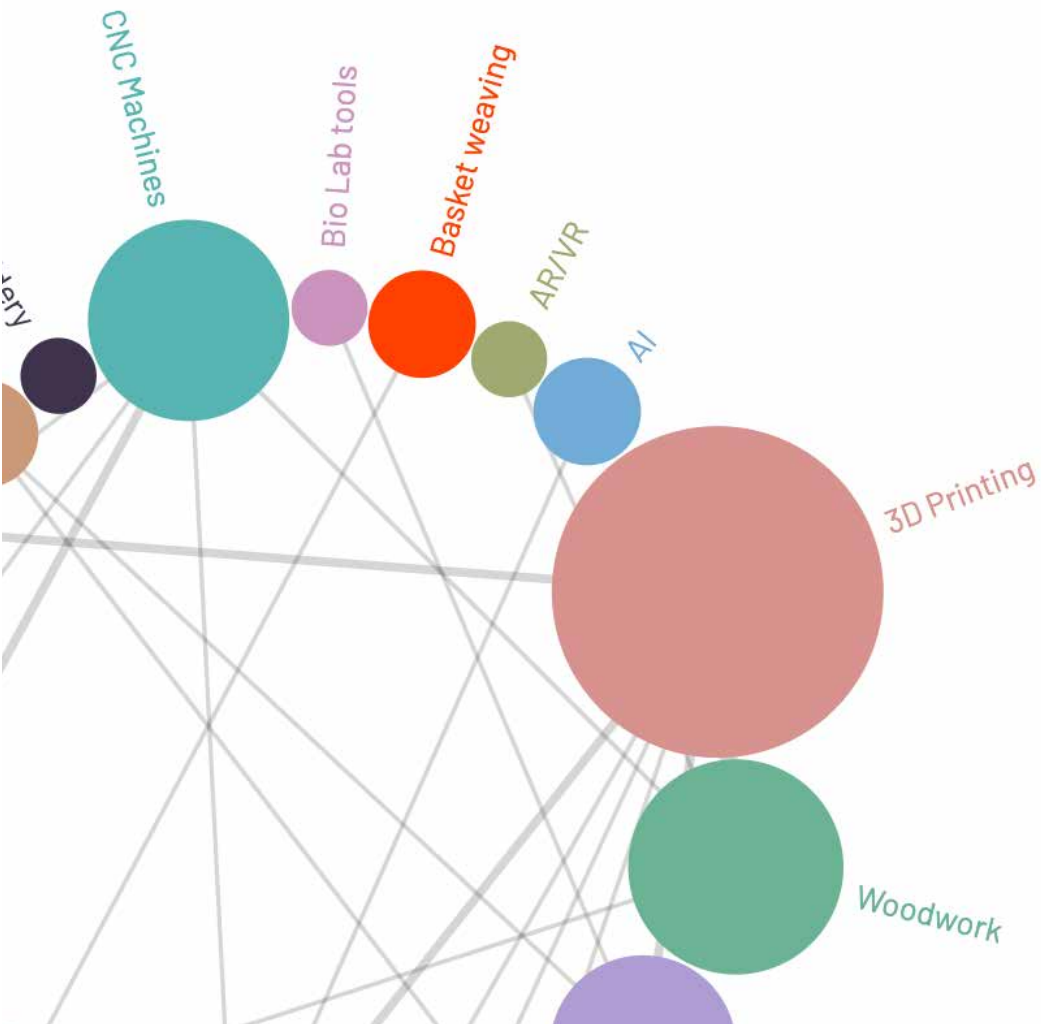
We value plurality of points of view and we welcome feedback on our work. If you are a hybrid practitioner working with alternative, post-industrial paradigms we'd appreciate your inputs. Scan here for a feedback form.

3. Appendix C: Atlas of New Design Craft

ATLAS OF NEW DESIGN CRAFT

People, Processes, Projects.



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/ul-tra-sém-pli-ce/
ALICE MANDELLI

Alice Mandelli /ul·tra·sém·pli·ce/ is a Copenhagen-based designer (age 25–34) whose sustainable design practice addresses contemporary social challenges through ethical furniture design. Emphasising a flexible, non-linear design process and the incorporation of traditional woodwork. She sources recycled materials and repurposes waste with an approach more philosophical than technological.

Basic Bio Copenhagen, Denmark, Female, Age 25–34.

Design Mission Alice Mandelli's practice is driven by sustainable design principles with a strong focus on addressing contemporary social issues. She advocates for design that is both ethical and socially responsive, striving to create products that improve well-being while integrating environmental responsibility.

Design Proceess Her design process is notably non-linear and adaptive. Depending on the project, she may begin with material exploration, sketching, or writing, which then evolves into a tangible concept. This fluid approach is influenced by her tendency to quickly move between ideas, resulting in an experimental process.

Material Culture Alice engages actively with the cultural practices of the places she visits. By experiencing local traditions firsthand, she incorporates diverse craft techniques—particularly in woodwork—into her work, reinterpreting them in a new language.

Emerging Tech Technology plays a secondary role in her practice. She prefers to prioritise the narrative and experiential aspects of design over technological innovation, favouring a philosophical approach to how people interact with objects and spaces.

Materials Sustainability is vitally important in her practice. Alice sources materials from recycled centres, construction waste, and even found objects on the streets. This commitment not only minimises environmental impact but also reinforces the ethical dimension of her design, transforming waste into functional, aesthetic artefacts.

PROJECTS

/ fo-kuhs

fo-kuhs is a desk lamp, composed of two very simple elements coming from construction waste materials. it is, indeed, a humble and elegant social disapproval of how much we pollute our planet. its aesthetics are minimalist and efficient: the concrete cylinder offers essential stability, while the upper cylinder is inclined at a precise 60-degree angle, directing the spotlight exclusively onto our writing or reading materials, ensuring our focus remains undistracted.

/ ken-dull

ken-dull is an ambient lamp that has two very different faces: when turned off, is sculptural, it doesn't even suggest that it is a lamp, but when illuminated, it provides a sweet and calm atmosphere, surprising us that light can find its way through a black surface. the light is minimal and soft. the structure consists of a solid spherical base and a light bulb that, in a surrealistic way, melts like a wax candle.

AASTHA PODDAR

Aastha Poddar is an inclusive designer, maker, and researcher committed to regenerative material and textile design. Her work blends traditional Indian craft techniques with emerging biomaterials research, focusing on sustainability and ecological restoration. By incorporating microalgae-based dyes into Jaipur's block printing tradition, Aastha challenges the environmental impact of textiles while advocating for design activism and cultural preservation.

Basic Bio London, United Kingdom, Female, Age 25-34

Design Mission Aastha defines herself as an inclusive designer, maker, and researcher, integrating craft, sustainability, and nature. She sees design as both an art and a science, focusing on working in conjunction with the environment rather than controlling it. Her goal is to advance textile futures, ensuring regenerative processes that promote positive socio-ecological impacts.

Design Proceess Research and conceptualisation, ideation and prototyping, material sourcing and refinement, testing and validation, and documentation. Aastha's work prioritises experimentation, collaboration, and sustainability, particularly in traditional Jaipur hand-block printing with microalgae dyes.

Material Culture Deeply rooted in her craft-oriented upbringing in India, Aastha actively engages with local artisans and traditional textiles. She believes in honouring craftsmanship and cultural heritage while adapting them to contemporary needs. Her work integrates block printing, felting, and weaving with eco-materials.

Emerging Tech Utilises Bio Lab tools, microscopes, and digital software to research and cultivate sustainable biomaterials. Technology plays a key role but balanced with tactile craft experiences.

Materials Sustainability is central, with a focus on regenerative design that not only mitigates harm but also remediates past damage. Aastha prioritises ethical material sourcing, collaborating with local vendors networks in India and the UK. She engages in active design activism in the fashion and textile industries.

PROJECT

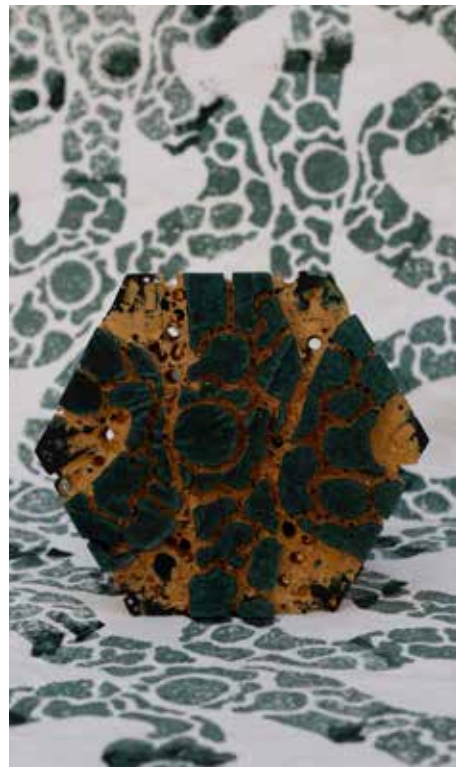
काई | KAAI

Born and raised in Jaipur, a city known for its rich textile heritage, I have always had a deep appreciation of traditional Indian block-printed textiles, yet I have equally witnessed first-hand the devastating effects that this industry has had on the nearby rivers, air quality and land. This project explores how this craft could become not just more sustainable, but carbon negative.

Microalgae are microorganisms that perform photosynthesis: they absorb carbon dioxide and convert it to oxygen. Algae produce more than 50% of the world's oxygen. They purify wastewater and have the ability to absorb the heavy metals commonly found in the synthetic dyes used in textile production. Spirulina is one such cyanobacteria and is commonly found in Jaipur.

Hand block printing is synonymous with Indian culture, and Jaipur is the city most associated with this craft. Block printing plays a major role in its community, supporting thousands of skilled craftspeople.

Although historically the industry used natural and local dyes, today it uses almost entirely synthetic and artificial dyes that contribute to the harmful effects of global warming and pollute the local waterways, and land with chemical compounds.



AGNE KUCERENKAITE

Agne Kucerenkaite (Eindhoven, NL) is a material designer focused on sustainability and waste transformation. Her work integrates industrial by-products and reclaimed materials into contemporary design, ensuring a circular and consistent material supply. Through projects like Ignorance is Bliss, she demonstrates the potential of waste-based ceramic glazes, textile dyes, and bio-composites, challenging perceptions of discarded materials while promoting ecological awareness.

Basic Bio Eindhoven, The Netherlands, Female, Age 35–44.

Design Mission Agne Kucerenkaite's practice is centred on sustainability, innovation, and the transformation of waste into valuable materials and products. Her goal is to create a circular, environmentally responsible design ecosystem, reducing waste and increasing public awareness of material processes and their impact on both the environment and human health.

Design Proceess Her design process follows a structured sequence: Sourcing waste, Identifying Issues, Material Research, Product Development, Iteration. By prioritising material experimentation and industrial waste recovery, her work bridges sustainability, resource efficiency, and craftsmanship.

Material Culture Rooted in appreciation and respect for local crafts and traditional materials. She actively promotes local culture through participation in exhibitions, digital platforms, and community awareness initiatives that highlight the value of traditional craftsmanship and sustainable material practices.

Emerging Tech While not explicitly technology-driven, her work is materials-focused, engaging with industrial processes to extract value from by-products and waste streams. She ensures consistency in material quality by working exclusively with industrial waste and reclaimed materials, allowing for systematic experimentation and scalable applications.

Materials Sustainability is at the core of Agne's work. She exclusively uses industrial waste and by-products, ensuring a reliable and consistent supply of reclaimed materials. Her projects challenge conventional manufacturing by proving that waste can become a functional, aesthetic, and durable design resource.

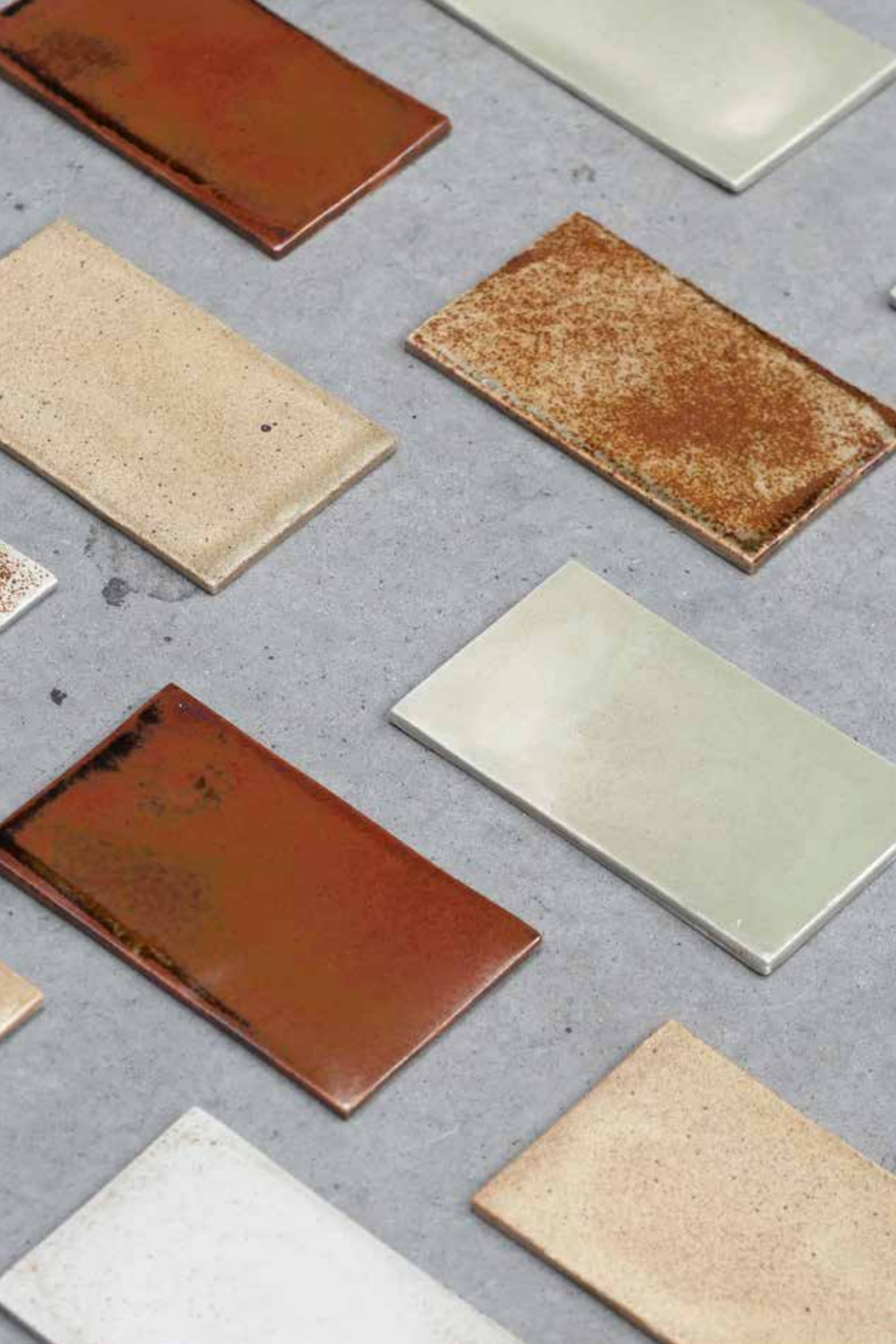
PROJECT

Ignorance is Bliss.

"Ignorance is Bliss" is an ongoing project that aims to incorporate the value of metal waste from various industries, such as water treatment plants and soil remediation companies, into new and valuable products and methods. Since metals are non-renewable resources, metal mining can have detrimental effects on air and water quality, as well as on various life forms. Agne Kucerenkaite has experimented with different techniques to find ways to use this waste product, and conducted broad-scale material research that demonstrated the great potential of these metals' colouring properties.

As a result of detailed research, the "Ignorance is Bliss" porcelain tableware collection was developed in 2016. The colours of the tableware are obtained purely by adding industrial metal waste, which functions as pigments. Waste from soil remediation produces warm green and white grainy colors, while iron waste from the drinking water supply gives shades of green, brown, and black. Each porcelain piece is handcrafted and fired in a unique reduction gas oven, which eliminates oxygen during firing and contributes to the appearance of the glaze. Interestingly, in this project, the more contaminated the raw material, the more vibrant the designed objects appear.

By reusing metal waste in this way, the project not only helps to reduce the negative impact of metal mining on the environment but also creates unique and beautiful tableware that incorporates industrial waste into a functional and aesthetic product.



ALARA ERTENÜ

Based in Izmir, Türkiye, is a young designer focused on integrating bio-based materials and zero-waste principles into product design to promote a circular economy. Her work transforms local agricultural and food waste into valuable products, combining material testing, prototyping, and traditional design methods like sketching and modeling with innovative technologies such as 3D printing. Engaging with local farmers and manufacturers, she emphasizes sustainability by sourcing raw materials like corn husks and pea pods.

Basic Bio Izmir, Türkiye, Female, Age 18-24.

Design Mission Alara focuses on integrating bio-based materials and a zero-waste philosophy into product design, with a mission to promote circular economy practices. Her work emphasizes utilizing local agricultural and food waste to develop sustainable materials that can be transformed into valuable, everyday products within the local context.

Design Proceess Alara's process begins with identifying holistic global problems and narrowing them down to tackle local issues. She emphasizes rigorous material research, including testing and prototyping, followed by traditional design techniques such as sketching and modeling. The process culminates in innovative production methods that blend craft and technology.

Material Culture She fosters strong connections with her local environment, engaging small and large-scale manufacturers and farmers at bazaars. Her hybrid approach merges local cultural knowledge with material and product design, aiming to highlight the potential of waste as a resource.

Emerging Tech Alara uses advanced techniques like 3D printing alongside manual methods to scale her projects and enhance efficiency in industry-focused designs.

Materials Sustainability is central to her work. She sources raw materials such as agricultural and food waste (e.g., corn husks, pea pods, wood residues) from local producers and transforms them into biodegradable solutions.

PROJECTS

Packioli

A water-resistant bio-packaging for commercial soaps made of artichoke leaves or peapods and 100% biodegradable materials.

PACKIOLI is a combination of the enormous artichoke and peapod waste especially in the west of Turkey to start a conversation about over-consumption of plastic and solve the problem of plastic packaging of the commercial soaps.
PACKIOLI is resistant to water even if it contacts with water regularly up to 1 week. It contains natural coloring from plants, without any chemicals. And, has a surface finishing that is suitable for printing/ bioprinting.
According to Zero Waste Week, the global cosmetics industry produces over 120 billion units of packaging every year, most of which is non-recyclable and ends up in landfill, or worse yet, the ocean.
On average 80% of each artichoke goes to waste... leaves and stems of artichokes.

How It's Made
It is made out of 'Artichoke leaves Bioplastic' and 'Peapod Bioplastic' which are durable, printable and flexible.

The Material/ The Design – The Solution
PACKIOLI is an 100% biodegradable and local-source alternative to soap packaging even for multipacks.
PACKIOLI can compete with traditional packaging materials which are currently used in the market with sealed edges - water, dirt and dust resistant and its compatibility with manufacturing methods - heat sealing...
It is flexible which can be formed in any shape.
It is resistant to water even if it contacts with water for up to 1 week. PACKIOLI biodegrades in the water in 10 to 15 days. It has a moisturizer property.

Lampunto

LAMPUNTO came to life through the investigation of local agricultural waste, starting with PACKIOLI and transforming it into a statement piece for indoor living.

ANETT PAPP

Anett Papp is a weaver, structural designer, and researcher exploring the intersection of living materials and textile innovation. Her work challenges the boundaries of natural and artificial systems, creating biodegradable and self-patterning textiles that grow alongside plant materials. Projects like Grassificial and Augmented Naturing demonstrate her experimental approach, merging weaving, biofabrication, and digital interactions to redefine the future of textile ecosystems.

Basic Bio Budapest, Hungary, Female, Age 35–44.

Design Mission Textile and structural designer, weaver, and researcher whose work focuses on the integration of living materials into textile structures. She develops protocols for self-expression and self-patterning techniques that allow plant materials to co-create with the designer, bridging natural systems and textile innovation to redefine the role of woven structures.

Design Proceess Her design process is deeply experimental and systems-based, focusing on how textiles interact with living organisms and environmental factors. She explores the structural potential of plant-based textiles, creating biodegradable and compostable materials that may replace oil-based manufacturing processes, examining the role of weaving.

Material Culture Anett sees weaving as an ancient craft worth preserving, researching, and passing down. She was trained in traditional weaving techniques using heritage tools and patterns, and she believes that only by deeply understanding these traditions can they be effectively evolved and reinterpreted.

Emerging Tech Anett has introduced a self-developed weaving technology that integrates natural growth cycles into textile structures. She also works with 3D printing to complement her textile systems, merging the principles of natural biological processes with technological advancements in structural design.

Materials Sustainability is a core priority. Anett selects materials based on raw composition and local availability. Recently, she has been working with vegetable-based materials like seeds to develop woven structures that are both biodegradable and ecologically regenerative.

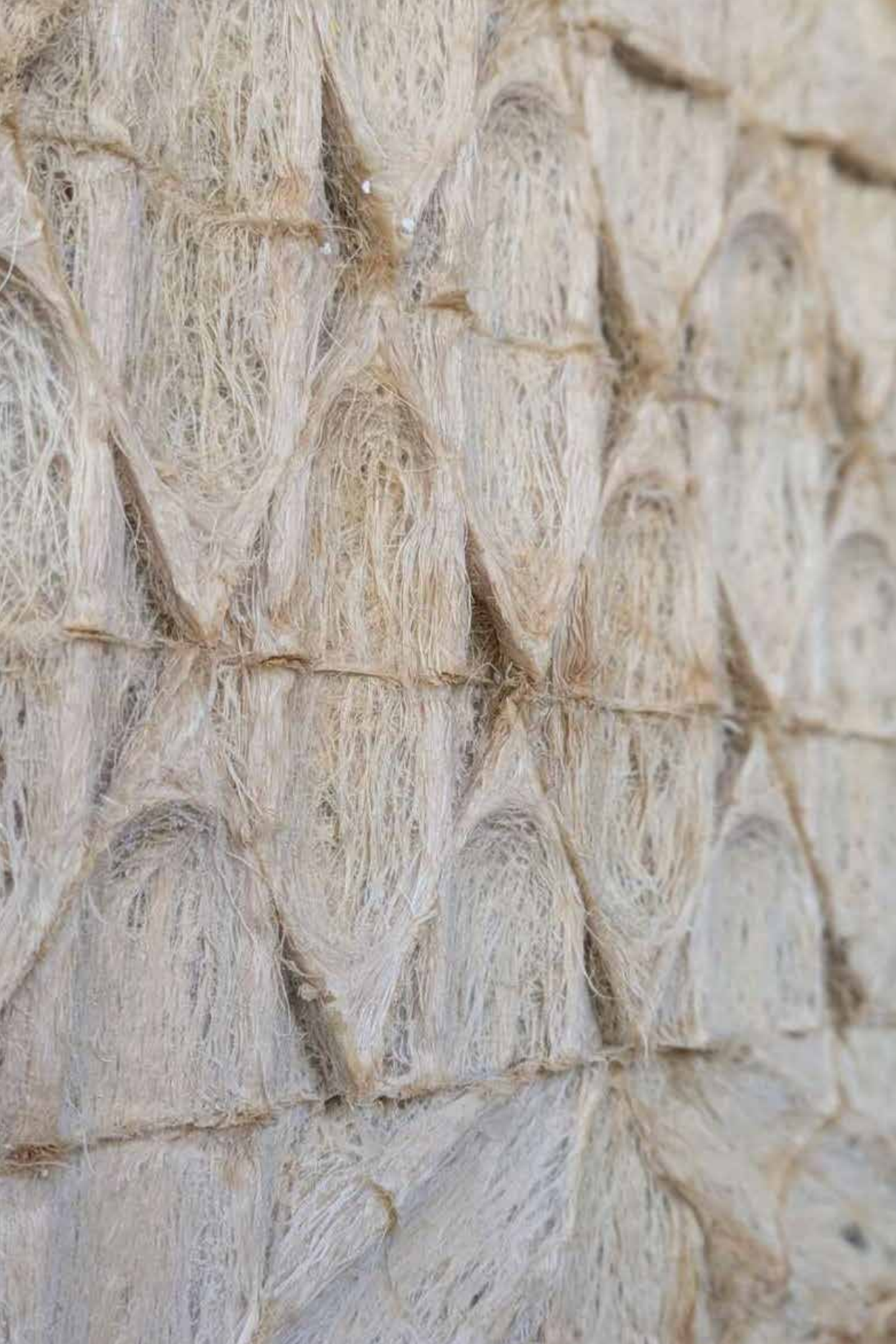
PROJECTS

Grassificial

The impact of natural and constructed structures and their interaction.
The work is an enlarged woven structure woven from strips of turf carpet. The lawn carpet appears as a component of the fabric, the yarn. Over time, the living grass becomes one with the underlying soil and the structure is transformed into a landscape.

Augmented Naturing

A remarkable ambition of contemporary art is to erase boundaries. By navigating on the margins of nature and man-made territory, crossover solutions emerge. Separate genres, and disciplines feed off each other, they can stretch each other's limits, and along analogies, then as a consequence of their migration, they can reinterpret their own definition. Textile is a genre that arises along the principle of interaction. Root systems that grow intelligently can develop into a continuous and connected surface, into a textile. By using the set of rules that guide the functioning of plant parts in motion, cooperation can emerge between the creator and the plant co-creator. This connection facilitates the understanding of textiles, and at the same time, it opens up new horizons.
Real-time biodata sonification through auscultation of the micro voltages existing in all plant organisms. Through bioelectrical signal processing these results are quantized in order to control synthesizers, manifesting as music generated by the living plant.



ANNA JOŽOVÁ

Anna Jožová (Prague, CZ) is a conceptual glass designer whose work explores biodiversity, geological history, and nature-inspired forms. With a background in Czech stained glassmaking, she merges traditional glassblowing techniques with digital fabrication, including 3D printing and mold experimentation. Her activist approach seeks to preserve biodiversity while challenging material constraints. Her projects illustrate her ability to transform natural phenomena into sculptural, experimental glassworks, redefining the potential of glass in contemporary design.

Basic Bio Prague, Czechia, Female, Age 25–34.

Design Mission Anna Jožová explores new approaches in glass design, drawing inspiration from geological history, biodiversity, and natural landscapes. Her work merges traditional Czech glassmaking techniques with contemporary digital tools, advocating for a return to nature and the preservation of biodiversity through conceptual design activism.

Design Proceess Her process follows a structured experimental and sculptural approach: Thinking, Concept, 3D Sculpting, 3D Printing & Mold Preparation, Glassblowing, Coldworking, Pedestal Presentation, Documentation, Promotion & Exhibitions. Her projects create primitive glass forms that recall geological evolution.

Material Culture Anna's interest in glassmaking stems from the long-standing Czech glass tradition. However, her work expands beyond Czechia, incorporating global inspirations from nature, such as the landscapes of New Zealand. Her practice continuously bridges craftsmanship with modern ecological concerns.

Emerging Tech Technology plays an integral role in her practice. She frequently employs 3D printing, mold-based casting, and material experimentation to push the boundaries of glassblowing. This fusion of digital fabrication and traditional glassmaking allows her to achieve organic and fossil-like forms.

Materials Sustainability is an important but balanced consideration in her practice. She primarily works with glass, ceramics, and polystyrene, materials with varying degrees of recyclability and environmental impact. Her projects aim to preserve biodiversity and environmental awareness, particularly through her conceptual activism in design.

PROJECTS

Chronos Glass clocks react to their environment by oxidizing their surface. Together with the rapidly changing climate around us, the surface of the object registers changes that are gradually inscribed in its structure. The clock shows the time remaining for our civilisation before we cross the “tipping point” by disturbing the natural environment, leading to the uninhabitability of our planet and the massive extinction of the species. So far aestheticising elements such as polished mirrors or cast glass represent irreparable damage to the environment caused by our untouchable civilisation.

Nava NAVA’s structural glass vases respond to the disruption of ecosystem balance by invasive species. The objects are blown into three-piece ceramic moulds and the ejichstructures are embossed using an iris technique. It’s a series of vases developed using pressure-blown glass techniques, where organic structures from nature are translated into glass forms via 3Dprint, photography, and cast iron molds.

ANNA RESEI

Anna Resei is a conceptual designer and researcher whose work explores climate change, speculative storytelling, and material innovation. By placing her design objects in future scenarios, she provokes reflection on contemporary environmental challenges. Her practice integrates craft and digital design, creating digitally-fabricated objects with deep historical and social narratives. Projects like WATER CARRIERS demonstrate how she bridges material experimentation, historical research, and ecological awareness to create speculative yet tangible design futures.

Basic Bio Vienna, Austria, Female, Age 25–34.

Design Mission Anna Resei's work is deeply rooted in sustainability, conceptual storytelling, and material experimentation. She uses speculative storytelling and design fiction to explore socially relevant topics such as climate change, placing her objects in a speculative future to encourage dialogue about the present and the past.

Design Proceess Her process is research-intensive, following a sequence: Time/Production Planning, Broad Research, Budget Planning, Material Testing, Sketching, and Visualisation, Focused Research, Concept Writing, Specialist/Collaborator Outreach, Production.

Material Culture Anna's work is always context-driven, with projects connected to specific places and histories. She has worked across various locations in Europe and Mexico City, collaborating with local craftspeople, textile manufacturers, and material suppliers. She also explores "digital crafts," where digital design processes reference traditional analog techniques but transcend geographic constraints.

Emerging Tech Generative design software, 3D visualisation, and digital fabrication play a major role in her process. She frequently explores unconventional applications of craft techniques through digital means, producing unexpected patterns, textures, and structural manipulations.

Materials Sustainability is a fundamental principle in her practice. She prioritises recycled, deadstock, and natural materials, and often reuses waste from previous projects. She collaborates with a Netherlands-based company that takes back material offcuts for further recycling, ensuring a circular approach.

PROJECTS

Water Carriers

"Water carriers" consists of several different objects and reflects on our relationship with the environment in times of rising sea levels. The work is placed in a speculative future where half of the world is already underwater and the other half is going to be flooded.

The digitally-created surface design of the objects echoes the patterns of ancient glass shards from the 1st to 3rd centuries BCE from the Antiquities Collection at the museum of art and design in Hamburg.

The research was placed in Hamburg, Germany wich has a strong history with water and connected my interested in speculative storytelling and design fiction. By using digital tools and creating physical objects which poetically reflect on climate change but also look into the history of a specific place, the work is exemplary for the way I work within the very broad design field.

ADELE ORCAJADA DI GIACOMO

Adele Orcajada Di Giacomo (Bilbao, ES) is a material designer and researcher at the Basque Biodesign Center, focused on waste transformation and biofabrication. She integrates local heritage, craft knowledge, and digital fabrication to create new sustainable materials. Her hybrid methodology merges technology with traditional craft, ensuring that materials remain both environmentally responsible and culturally significant. Projects like BIOSCULPTURE, BIOQUILT, and ARTILEA exemplify her commitment to biodesign, sustainability, and innovative material solutions.

Basic Bio Bilbao, Spain, Female, Age 35–44

Design Mission Committed to material innovation and sustainability. At the Basque Biodesign Center, she focuses on developing sustainable materials for the design industry, with an emphasis on reimagining waste and integrating traditional craft knowledge into contemporary material design. She honours heritage while pioneering new, environmentally responsible materials.

Design Proceess Adele's hybrid approach to material design follows a rigorous waste-to-material transformation process. Her process is highly iterative, ensuring that new materials balance performance, sustainability, and cultural relevance.

Material Culture Adele believes that tradition and heritage shape identity and environmental interactions. She integrates local knowledge and materials into her projects, ensuring that design reflects a circular relationship between nature, society, and self-expression. Traditional techniques inspire her work, influencing both material selection and craft methodologies.

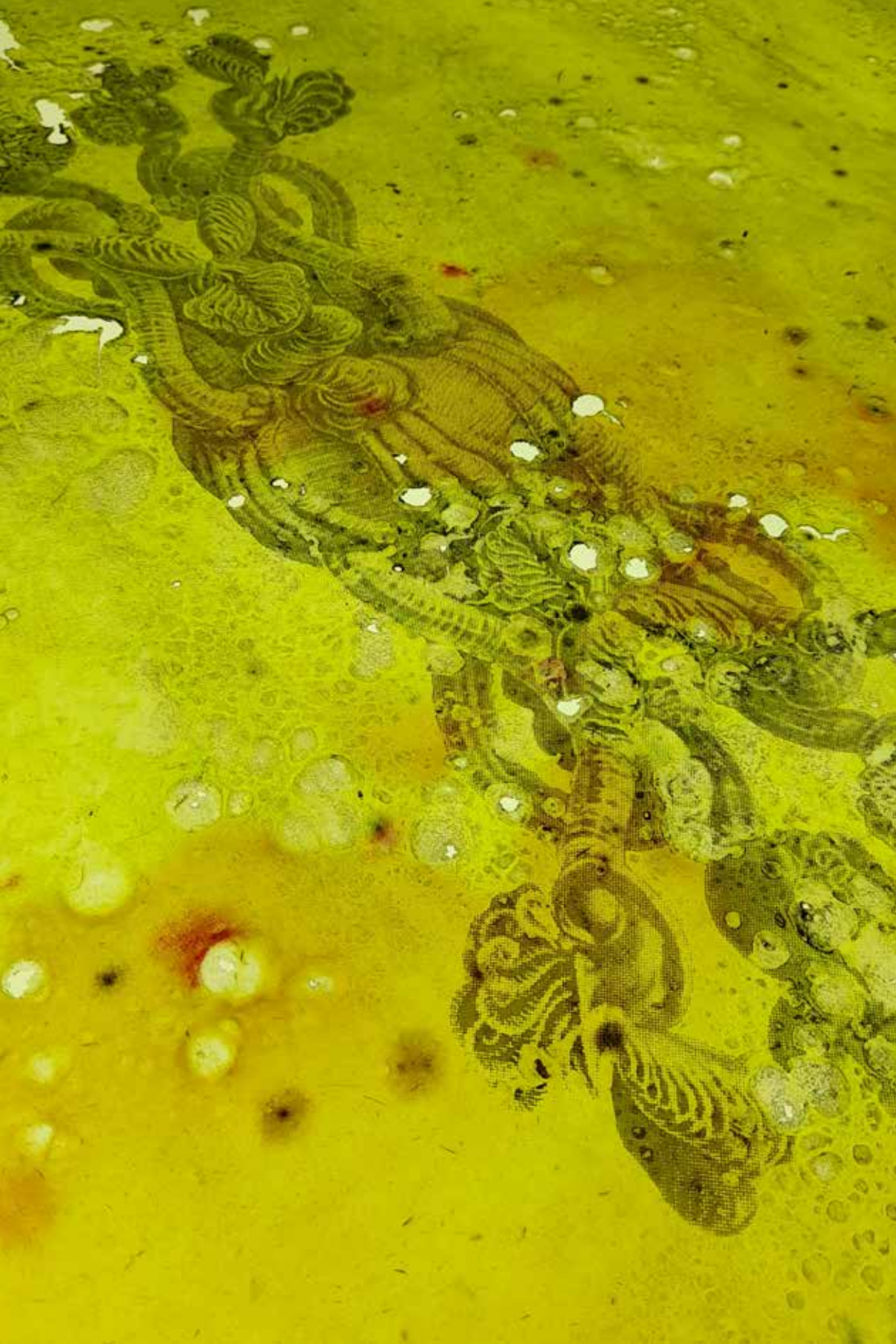
Emerging Tech Technology plays an essential role in her practice, enabling sustainability through advanced digital tools. She frequently works with Parametric Modelling software and 3D ceramic printing, integrating computational design techniques with biofabrication and craft-based production.

Materials Sustainability is at the core of her work. Rather than sourcing materials, her approach is to create them, experimenting with bio-based and waste-derived composites. She also collaborates with MaterialDriven's material library, ensuring access to innovative, eco-friendly alternatives that align with her commitment to sustainable production.

PROJECTS

BioQuilt Seeking to explore traditional craft techniques and reimagining them in the new context of biomaterials, we have created a BioQuilt inspired by the patterns and symbols that are identified with quilting. Using bacterial cellulose as our base material, we have explored the range of techniques that can be applied, looking to establish the basis of a Neo Quilting craft for future generations. These techniques include laser engraving, printing, and patchwork, working in harmony with the natural attributes that the bacterial cellulose offers. This quilt was created together by all the team members at the Basque BioDesign Center, very much in tune with the well known tradition of creating quilts within/for the community.

BioPrint Always looking to explore boundaries and the limits between design disciplines, this installation looks at the way something as innovative as biodesign can merge with traditional printing techniques. The result is unique and powerful, with a range of depths achieved through the use of new surfaces such as a bioplastic made with gelatin, or squid ink, as well as kombucha or potato starch combined with cellulose. The potential for this craft is varied and wide, from fashion to product, to packaging, the possibilities are unlimited.



by the end of may/ DAVIDE ONESTINI

By the end of May, led by Davide Onestini, is a design studio dedicated to sustainability, localism, and systemic change. Working at the intersection of craft and technology, they aim to revive local production ecosystems through open-source, decentralised design methods. Their project Post Paper Studio reimagines paper recycling as a local, collaborative process, turning waste into design material by blending traditional knowledge and digital tools—a clear manifestation of their politically engaged, materially responsible design philosophy.

Basic Bio Lisbon, Portugal, Mixed team, Age 25–34

Design Mission By the end of May is a studio founded by Davide Onestini, driven by the ambition to revive local, sustainable, and systemically integrated forms of production. Their work is guided by localism, post-consumerism, and non-linear economies, and grounded in the belief that design is inherently political, with each design choice impacting socio-economic structures.

Design Proceess Their approach is issue-led and investigative: beginning with the identification of systemic problems, then tracing their historical and social roots to imagine alternatives. There is no fixed methodology, as each project responds to distinct ecological, social, or material contexts, often combining traditional crafts with open-source digital tools.

Material Culture The studio sees traditional crafts as repositories of ecological knowledge. They believe that pre-industrial artisanal practices hold answers to today's challenges in building post-consumerist, locally-rooted economies. They explore regional materials and techniques to support local production systems.

Emerging Tech New fabrication technologies—like 3D printing—are central to their practice. Rather than opposing craft and technology, they see them as complementary forces, capable of creating decentralised, accessible, and open-source production models that empower communities and democratise design.

Materials Sustainability is non-negotiable in their process. Their projects start with what is already locally available, most often waste streams, which are revalued through craft knowledge and digital tools. The studio is particularly invested in distributed and small-scale upcycling systems.

PROJECTS

Post Paper Studio

Most companies are now switching from plastic packaging to paper ones, increasing the amount of paper and cardboard waste generated. Currently, the only way to recycle paper is through the large-scale recycling system, which relies on centralised facilities and on industrial plants—often abroad.

POST PAPER STUDIO aims to be a low-tech alternative to up-cycle paper waste at a local level, promoting its value and its potential as material for both design and construction.

It consists of a series of open source recipes and tools to enable designers, makers, craftsmen and small businesses to transform paper waste from their own communities and use it in place of conventional materials.
Recipes — A collection of recipes to illustrate the many ways in which different types of paper can be combined with natural and locally-sourced ingredients—like starches, alginate, resins and gums—to improve their properties, texture and workability.
Tools — A modular system able to press the paper pulp and create sheets, bricks or other basic shapes that can become the building blocks of new objects or furniture pieces. The structure—available online for free—can be downloaded, customised and made out of wood or recycled plastic with the help of a local makerspace or wood workshop.

Designers and makers are actually encouraged to change, hack and improve all the contents according to their needs, their geographical area and their local community. Overall, the open source and low-tech nature of the project wants to turn the paper recycling practice from centralised and exclusive, to distributed and accessible, sparking a conversation around the efficiency of the current recycling system.

STUDIO NIRUK

Design Studio Niruk (Hürth, DE) operates at the intersection of material innovation, sustainable product design, and hybrid craftsmanship. With a background in glasswork and furniture design, the studio merges digital and manual processes to develop emotionally engaging, long-lasting products. Their work—such as Corcrete and the Glass Vases Series—exemplifies how traditional techniques, modern tools, and sustainable materials can be integrated to produce design that is contemporary, meaningful, and materially responsible.

Basic Bio Hürth, Germany, Mixed team, Age 25–34

Design Mission Studio Niruk is committed to creating long-lasting, emotionally resonant products through pure material choices and balanced shapes and textures, to generate positive change through thoughtful design, particularly by reimagining the potential of plastics and composite materials, integrating a strong focus on experimentation, and sustainability

Design Proceess Their approach follows a clear yet adaptive structure throughout which they explore how designers can intervene in material production, using a mix of digital tools and hands-on making to arrive at relevant outcomes.

Material Culture While local traditions are not a central focus, Studio Niruk draws inspiration from traditional techniques globally, often interpreting them through modern tools and materials. Their designs reflect a globally connected yet locally grounded personality, integrating craft sensibilities with contemporary production needs and international reach.

Emerging Tech Technology is a key enabler. The studio uses 3D printing and rendering during development but also emphasises the importance of tactile engagement. They believe that working hands-on with materials leads to more grounded solutions, balancing digital design with physical craftsmanship.

Materials Sustainability is a guiding principle. The studio has extensive knowledge of sustainable materials gained through prior research and proactively introduces alternative, eco-conscious material solutions to their clients. This includes custom material development and collaborations with traditional producers to bring new materials into the marketplace responsibly.

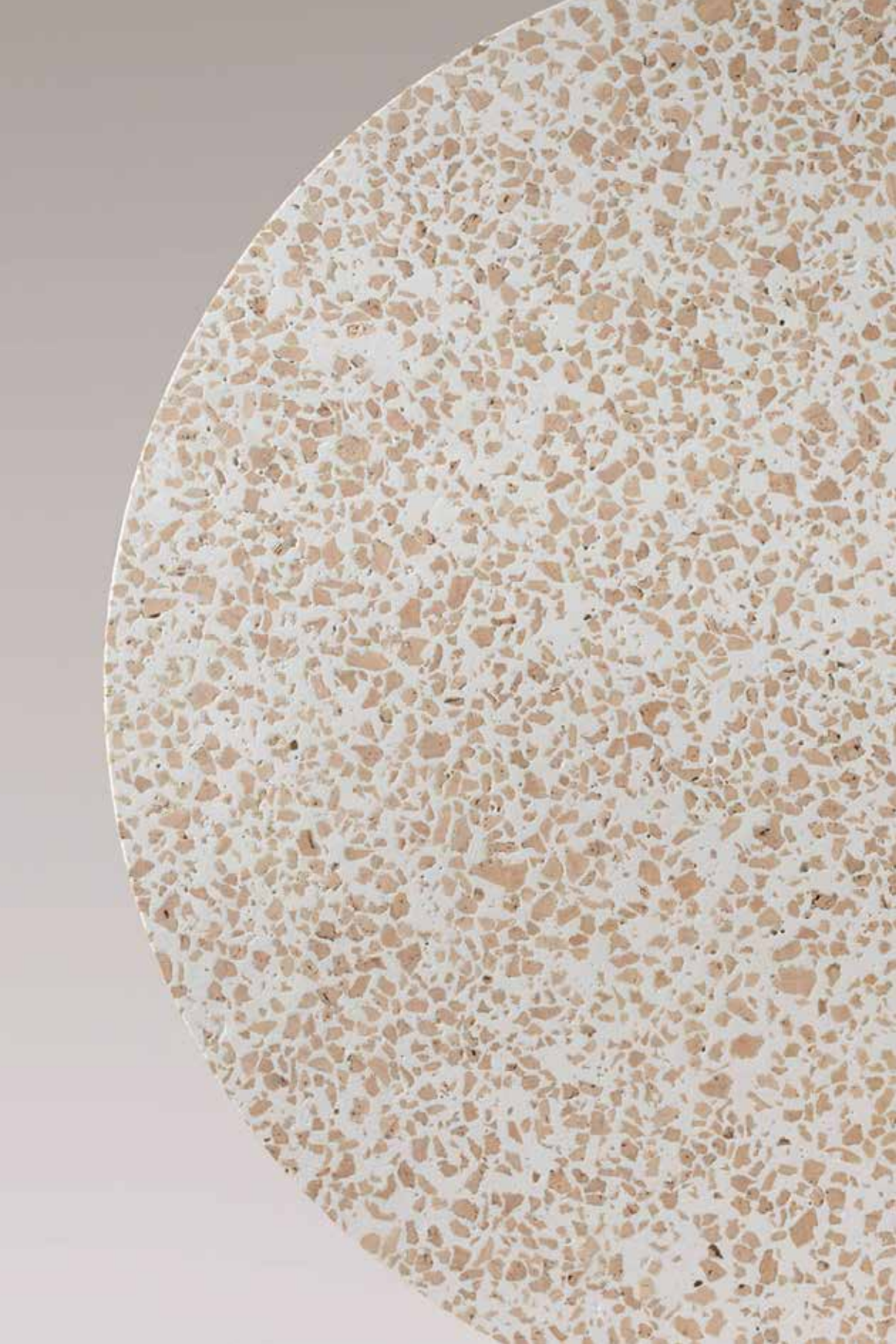
PROJECTS

COR-CRETE

A lightweight terrazzo material developed by combining cork and cement. After extensive experimentation, Niruk partnered with traditional terrazzo producers to scale up production, merging material innovation with artisanal know-how.

Ingredients
natural cork granules (ø 6-12mm)
cement
sand

Specifications
density: 1200kg/m3
slip resistance: R9 / individual
aging behaviour: resistant
uv resistance: medium
heat/frost resistance: +125°C / -40°C
flammability: class 6 – non flammable (cement), B2 (cork)
coating on request
thickness: minimum of 2cm recommended



GIUSEPPE AREZZI

Giuseppe Arezzi (Ragusa, IT) is a furniture designer and cultural researcher who reimagines local archetypes and forgotten functional forms. Working without digital tools, he focuses on natural materials and traditional techniques, collaborating closely with Sicilian artisans. His designs, like Fiscella and Carruba, bring together memory, identity, and regional heritage, promoting a slow, sustainable, and context-sensitive design approach rooted in the cultural fabric of Southern Italy.

Basic Bio Ragusa, Italy Male, Age 25–34

Design Mission Focus on the intersection of anthropological research, cultural traditions, and contemporary furniture design. He works to reinterpret obsolete functional archetypes through new production models, maintaining a dialogue between local craft knowledge and global design languages.

Design Proceess Arezzi's process begins with a client brief and a conceptual idea, which is then developed through continuous dialogue with artisans. Collaboration plays a central role, particularly with local craftspeople, ensuring that traditional knowledge and manual techniques shape the final outcomes in meaningful and sustainable ways.

Material Culture Arezzi's designs are deeply embedded in the cultural landscape of Ragusa, where rural identity, traditional objects, and craft practices inform the material and symbolic language of his work. He draws on the heirloom value of regional archetypes, engaging with basket weaving and sand moulding to craft objects that carry the memory of place and people.

Emerging Tech Focus exclusively on traditional production techniques and natural materials. This choice is a statement about authenticity and sustainability, prioritising human knowledge and local ecosystems over industrial or technological intervention.

Materials Sustainability is approached through the exclusive use of natural and locally sourced materials, and through collaboration with regional craftspeople. His work celebrates slow design, low-impact processes, and revitalised rural economies, promoting sustainability as an extension of cultural continuity and environmental respect.

PROJECTS

Fiscella The Fiscella is a project that started in 2019 in collaboration with It's Great Design: with its global yet local and neo-rural language, Fiscella finds its origins and takes its name from the classic straw basket used in Sicily and the Mediterranean area to make ricotta cheese. Fiscella is a generously proportioned suspended object (H 1.50 x Ø 1m) made from traditional wicker weaving on a structure of painted brass rods. It hangs from the ceiling and can contain as well as be a lighting spot. Fiscella is the fruit of a collaboration between a young designer who reinterprets archetypes and a young craftsman (Alex Maurizi - Intreccio Vivo) who continues an ancient technique of crafting natural materials.

Carruba Carruba represents a rural and authentic South Eastern Sicily, far from the recurring Sicilian folklore. The designer, originally from the area, thought of an object that represents the fruit of a typical tree in the rural landscape of the Hyblaean Mountains. Nature and artifact are combined in this timeless object, new but at the same time ancient. A fruit that is born in the territory and reproduced with the classic material of souvenirs: aluminum. Each Carruba is handmade in Sicily through the technique of the sand mold a sustainable process that makes the souvenir unique and at the same time infinitely reproducible. Carruba wants to reinvigorate a territory that is marginal but rich in traditions and know-how.

GUNIA PROJECT

Gunia Project is a design studio and heritage brand dedicated to reviving Ukrainian folk crafts through ethnographic research and contemporary design. Their collections reinterpret traditional practices like embroidery and glassblowing, maintaining cultural authenticity while addressing modern-day functionality. Projects like Pure Craftsmanship in Huta Glass illustrate how Gunia preserves endangered artisanal knowledge, blending ancestral techniques with refined aesthetics to sustain Ukraine's intangible cultural heritage.

Basic Bio Kyiv, Ukraine, Female-led team, Age 25–34

Design Mission Gunia Project is a Ukrainian brand focused on the revitalisation of traditional ethnic cultures through contemporary material design. Each collection is the result of a blend of design thinking, ethnographic research, and artisanal craftsmanship, aiming to make heritage crafts relevant for modern daily use while preserving their cultural and artistic depth.

Design Proceess The process begins with archival and ethnographic research, followed by the reinterpretation of traditional materials and techniques to develop collections that resonate both locally and globally. Although technology is not central, it supports scaling production without compromising craftsmanship.

Material Culture At the heart of Gunia Project is a mission to preserve and promote Ukrainian cultural heritage. They work directly with craftspeople, especially in embroidery and glasswork, and rely on traditional techniques as the starting point for every collection. Their work ensures that knowledge and identity embedded in folk crafts are sustained and shared.

Emerging Tech While not technology-led, the studio uses technological support to maintain consistency and scale. Their focus remains on manual and artisanal techniques, particularly in regions where industrialisation has threatened local crafts.

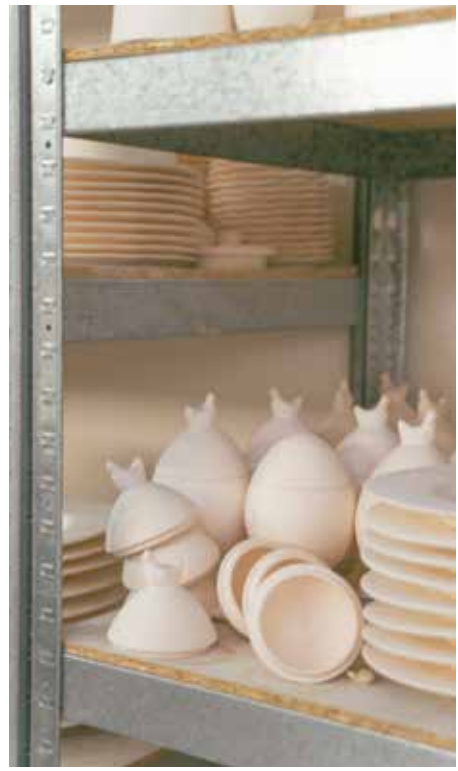
Materials Sustainability is approached pragmatically, sourcing materials suited to each project with an emphasis on durability and craft preservation. Although constrained by availability, they maintain high-quality and small-scale production values, helping extend product lifecycles and resist overproduction.

PROJECTS

Gunia Project

GUNIA project is an artisanal brand of exceptional handcrafted items, which are a reflection of Ukrainian cultural heritage in a modern design interpretation. The brand is engaged in the production of authentic decor, ceramics, glass, wood and vine products, as well as unique items of clothing and accessories, which are timeless, but relevant and fashionable at the same time. The brand was founded in 2019 by two Ukrainians, Maria Gavryliuk and Natasha Kamenska, both of whom have many years of work experience in the fashion industry. The name of the project comes from the Ukrainian word “gunya”, which was actually the first product created by Maria and Natasha. It is an authentic fur coat made of sheep’s wool, which is created on hand machines. Each such gunia is created by hand for several weeks, so then it is an absolutely exclusive item. The uniqueness of the GUNIA Project lies in the ability of the founders to rethink Ukrainian culture and traditions and pass them through the prism of modern design thinking. The founders invite the most talented Ukrainian craftsmen from different Ukrainian regions to work on each collection.

The main mission of the brand is to create exceptional handcrafted items with a Ukrainian soul. Unique cultural codes are encrypted in each product, which the whole world should learn about according to the dream of founders Maria and Natasha. GUNIA Project creates not just decorative items – each of them are family heirlooms, passed down from generation to generation. A trademark of the brand is handmade ceramics which are unique with its authentic patterns and a special design. GUNIA Project finds and unites the most experienced craftsmen from the whole country to continue the Ukrainian ceramics tradition. The process of manufacturing a ceramic product can include eight stages. Each step must pass flawlessly so that the product is perfect after kilning.



EMILY BURFEIND

Emily Burfeind is a material designer and sustainability innovator working at the convergence of biodesign and advanced manufacturing. Her flagship project Sneature illustrates a fully circular product model, integrating biowaste, 3D knitting, and mycelium materials into a repairable and compostable sneaker. Burfeind's work offers a visionary response to the ecological impact of mass production, proposing customisable, localised, and regenerative design systems.

Basic Bio Offenbach, Germany, Female, Age 25–34

Design Mission Material designer committed to environmentally conscious innovation. Her mission is to rethink materiality through the use of renewable resources, exploring how sustainable biomaterials and digital manufacturing can shape a more circular and responsible design economy.

Design Proceess Her design process unfolds in three main phases: Material experimentation, often with natural or waste resources; Implementation through additive manufacturing (e.g., 3D knitting/printing); and Concept development, including distribution strategies and circularity planning.

Material Culture Although not craft-oriented, Emily sees value in traditional techniques as inspirational starting points. Her relationship with local production lies in sourcing natural and biodegradable materials, often directly from local suppliers or ecosystems, and blending them with advanced manufacturing processes like 3D knitting.

Emerging Tech Technology is central to her process. She regularly uses 3D knitting and 3D printing, embracing parametric and additive manufacturing to achieve on-demand production, individual customisation, and minimal energy input. She is especially interested in micro-factory models for localised production.

Materials Sustainability is vital to her work. She focuses on using locally sourced, biodegradable materials, including biowaste and mycelium, to create regenerative products. Her projects are designed for full circularity offering an alternative model to industrial fashion systems.

PROJECTS

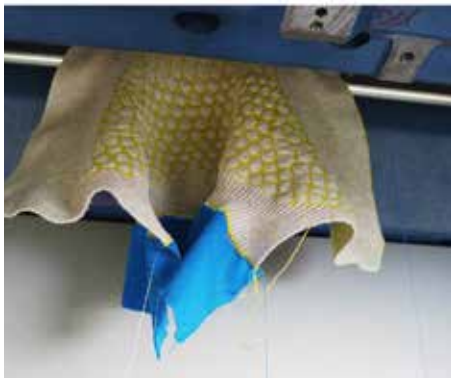
Sneature

Sneature is a holistic design concept for a sustainable sneaker. The design integrates the use of biological waste materials with generative manufacturing processes with the lowest possible energy input. The shoe consists of a 3D knitted upper from Chiengora (by Modus Intarsia), transition area made of natural rubber and a sole made of mushroom mycelium.

The material used for Sneature's 3D-knit is a wool made from combed dog hair. The company "Modus Intarsia" developed over the last years a method to collect the waste material and turn it into a high quality yarn that can be processed on industrial knitting machines.

The design integrates both functional requirements of a trainer and individual customization by the user. The integration of the 3D knitting technology enables both individualization and on-demand production. Thus, the product concept can be implemented locally in the form of micro- factories.

After use, Sneature can be disassembled, repaired or returned to the natural material cycle via composting.



HANNA WHITEHEAD

Hanna Whitehead is a conceptual designer and ceramicist whose work explores how materiality, craft, and environment shape everyday life. Through projects like Gentle Glow / Bow Cabinet, she experiments with local materials such as wool and straw, challenging norms in furniture design. Hanna blends traditional craft methods with digital fabrication tools, maintaining a process that is intuitive, sustainable, and rooted in the Icelandic landscape.

Basic Bio Reykjavík, Iceland, Female, Age 35–44

Design Mission Conceptual designer and ceramist whose work lies at the intersection of craft, material culture, and environmental awareness. Her mission is to challenge perceptions of everyday objects, often using locally sourced materials and combining traditional craft processes with experimental forms to explore how personal and domestic environments are shaped.

Design Proceess Her process is fluid and intuitive, beginning with ideas and evolving through exploration, flow, and openness to unexpected outcomes. Craft-based at its core, Hanna integrates technological tools when needed.

Material Culture While not strictly bound to local traditions, Hanna is deeply committed to using materials that grow around her. In Iceland, this has meant working with wool and straw—readily available in the region—and incorporating them into furniture and other design applications, advocating for resource-conscious production rooted in place-based materiality.

Emerging Tech Though craft-based, Hanna actively integrates digital fabrication tools, especially from her local Fab Lab, to support and complement handmade processes. She uses technologies such as CNC milling to overcome production challenges and enhance her ability to work with local materials in new ways.

Materials Sustainability is a key concern. Hanna harvests wool and straw from nearby farms, prioritising local over imported resources. Her material strategy aligns with ecological awareness and community resilience, particularly in resource-scarce environments like Iceland.

PROJECTS

Gentle Glow / Bow Cabinet:

A cabinet crafted from felted wool instead of wood, reflecting Iceland's abundance of wool and scarcity of timber. The project embodies Hanna's approach to local sourcing, craft innovation, and environmental consciousness, while questioning conventional material hierarchies in furniture design. Felted wool was used instead of wood to make furniture: the reason is that here in Iceland there's a lot of wool but not wood, so the idea was to source local materials to minimise the use of wood.

HÉLOÏSE PIRAUD

Héloïse Piraud is a material designer working at the intersection of ceramics and textile logic, focusing on craft-based exploration, repetition, and material tactility. Her work challenges the boundaries of clay through extrusion, developing complex forms from simple gestures. In projects like The Appeal Series, she uses manual techniques to create tactile, ambiguous structures that explore the visual and physical tension between softness and solidity, reflecting her commitment to tradition, material intuition, and conceptual depth.

Basic Bio Paris, France, Female, Age 35–44

Design Mission Practice grounded in the exploration of ceramics as both medium and language, often intersecting with textile structures like weaving. Deeply craft-oriented, focused on systematic visual experimentation, where simplicity meets complexity through the manual repetition of forms and tactility.

Design Proceess The process begins with intuitive manipulation of clay, using repetition to create complex visual compositions from elementary shapes. Manual techniques such as extrusion are used to develop tactile, textured objects. The technical impulse of tools like the ceramic extruder plays a key role in guiding her creative flow, acting as an “idea-developing machine” within her artistic process.

Material Culture Local traditions and inherited material knowledge are central to the practice. While her work is not explicitly site-specific, it often emerges from experiential encounters with local craft processes.

Emerging Tech Héloïse does not use digital or emerging technologies. Instead, her practice is rooted in physical experimentation and embodied knowledge, favouring hands-on techniques that preserve the tactile and rugged qualities of the ceramic medium, including tears, cracks, and fingerprints that defy polished perfection.

Materials Sustainability is relatively important in her practice. She works primarily with natural clay, a low-impact, durable, and biodegradable material, embracing its natural irregularities and expressive possibilities rather than modifying it with synthetic or industrial inputs.

PROJECTS

Appeal Series

By simple movements of curves and surfaces an entanglement of infinite shapes is created.
The Appeal series examines the possibilities of material control. Pushing the limits of clay's plasticity to its maximum, I play with the elements expelled by the extruder, this «idea developing machine», by pushing the shape itself and adding more and more oxygen. As I breathe more air in, the primary volumes, in this instance hollow earthenware tubes, fill up with air. In appearance soft and irresistible, the shape of Appeal might lead one to believe that it would make for a cosy nest to curl up in, but in reality, as one gets closer, it is hard, fragile and icy, or perhaps the very opposite.

IAMMI STUDIO

Iammi Studio is a design duo blending art direction, conceptual design, and material experimentation. Their work is rooted in personal symbolism, ecological responsibility, and the fusion of craft with contemporary language. Through projects like CLOUDS, B-fora, and Glassy Blades, they transform everyday objects into narrative artefacts that provoke emotion, reflection, and sustainable awareness, showcasing how design can be both poetic and impactful.

Basic Bio Milan, Italy, Mixed team, Age 25–34

Design Mission Iammi Studio, founded by designer Nicolau dos Santos and art director Alessandra Zangrandi, is driven by a mission to create emotionally resonant, symbolically rich, and sustainably conscious furniture. Their values include material research, social impact, and the fusion of tradition and innovation, designing objects to provoke reflection, sensation, and action.

Design Proceess Their process is deeply personal and conceptual, beginning with experiences or symbolic prompts that they translate into physical form. Each piece involves eco-responsible material exploration, followed by 3D conceptualisation and traditional making. Their work aims to communicate with the unconscious, often merging playfulness with deeper reflection.

Material Culture Iammi places significant emphasis on working with local materials and traditions, embedding contemporary aesthetics within a framework of cultural memory and artisanal techniques. Their hybrid practice pays homage to the past while revitalising its relevance for today's design landscape.

Emerging Tech Technology supports their visualisation and prototyping stages, including the use of 3D drawing and 3D printing, while the final execution is craft-based. They aim for precise formal exploration grounded in manual processes.

Materials Sustainability is crucial to Iammi Studio. Materials are sourced through industry networks, trade fairs, and human relationships, ensuring each piece reflects a conscious and responsible choice. The studio frequently works with recycled materials embodying their commitment to circularity.

PROJECTS

Clouds

A vision of serenity and sustainability through recycled foam rubber, the ethereal world of CLOUDS Collection where the boundaries between design and nature blur effortlessly. This collection redefines the concept of seating by embodying the grace and lightness of clouds, while embracing the principles of sustainability. Crafted with utmost care and using recycled foam rubber, each piece in this collection seamlessly merges whimsical aesthetics with eco-conscious materials.
Material: Recycled foam rubber
Technique: Sculpture
Colour: Variable
Size: Variable

B-fora

B-fora ironically shows what has been hidden for centuries beneath the amphora's robes, revealing generously and without veil the B-side of the traditional A-mphora.
The creation of these pieces stems from the idea of redesigning the original contour lines that belong to the classic Greek amphora, creating a modern piece that fits perfectly into the contemporary vision. The B-fora collections are divided into two types: open editions and limited editions, both signed and certified. Each piece is made entirely in Italy with casting moulds and finished by hand.
Material: Ceramic
Technique: Mold casting
Size: Variable

Glassy Blades

Inspired by jesters and designed to transform the mundane act of opening letters into a moment of joy and intrigue, these borosilicate glass letter openers captivate with their unique blend of functionality and whimsical aesthetics.
In the realm of artistic craftsmanship, the entire collection of little swords is handcrafted in borosilicate glass. Only four of each Glassy Blades design have been made, keeping each piece rare and special.
Material: Borosilicate glass
Technique: Lume glass processing
Edition: 12 unique pieces
Size: cm ~17 x 4 x 0.8

IOUS STUDIO

Ious Studio is a research-driven practice exploring the convergence of digital design, biomaterials, and sustainability. Through projects like Planter, they develop algorithmically modelled and 3D-printed clay systems that engage with natural processes. Their hybrid methodology blends computational adaptability with material consciousness, reflecting a design philosophy that is as technologically advanced as it is ecologically grounded.

Basic Bio Rotterdam, The Netherlands, Mixed team, Age 25–34

Design Mission To explore the intersection between digital parametric design, sustainable biomaterials, and advanced fabrication techniques. The commitment to material innovation, environmental consciousness, and the transformation of ancient materials like clay through digital means, aims to develop forms that blend algorithmic design and natural growth, redefining the designer as a mediator between technology and ecology.

Design Proceess The design process consists of dual development tracks: digital design and fabrication, both progressing through stages of research, system construction, parametric variability, evaluation, manufacture, and real-world testing. Grounded in computational logic and sustainability, the process includes feedback loops between material constraints and formal possibilities, encouraging efficient use of resources.

Material Culture While not focused on traditional craft, Ious Studio integrates insights from local cultures—particularly those of Argentina and the Netherlands—into their work, especially in the early research phases. They are inspired by ceramic traditions and architectural craft techniques, reinterpreted through parametric modelling and digital fabrication.

Emerging Tech Technology is fundamental to their practice. They employ parametric design software, 3D clay printing, and advanced modelling algorithms to explore complex geometries

Materials Sustainability is at the core of their studio philosophy. Ious sources natural or recycled clays and explores bio-based alternatives to reduce their environmental footprint.

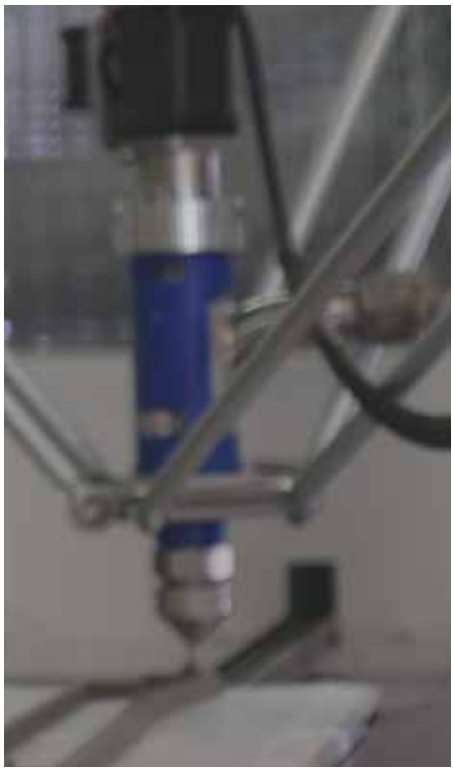
IOUS
studio
02.09.2023
#E003
IOUS
studio

PROJECTS

Planter

Planter represents a unique blend of digital design and natural inspiration. Its form was inspired by natural systems and their interactions. Using parametric design tools to create a structure that mimics natural growth patterns. By using clay as our printing material, we were able to create a tactile and organic object that encourages interaction and exploration. The object acts as a planter that allows for the growth of natural organisms. The intricate structure of the object creates an environment that's conducive to healthy plant growth, allowing natural systems to interact and thrive. By 3D printing clay, we are able to combine the precision and flexibility of digital technology with the unique properties of clay, exploring the limits of what is possible with this ancient material and modern technology. The designs and patterns that can be created using digital design are endless, unlike with clay, which has limits of shape. In this way, the application of this constructive technique constantly feeds back the form, transforming and optimizing itself between a rigid and definitive digital system and a malleable and versatile material. Our specialized software and 3D clay printers allow us to create highly precise and complex shapes, with the added benefit of consistent quality and minimal waste.

Planter is a physical object built digitally through parameters and organizative systems that define the shape, size and texture. This digital process allows us to define and analyze all planter parameters and create a gradient of variations. Planter is built from variations in height, diameter and concavity. Through digital analysis of the geometry we evaluate, classify the different types and quality of the concavities to define the the adaptability to accommodate natural systems are analyzed. Planter holes are digitally defined to fit the needs of natural systems and allow for growth on top of them. At the same time, the parametric design allows us to optimize the use of material and minimize its expense, creating structures that are lightweight, strong and environmentally sustainable.



IRENA ÜBLER

Irena Übler leads a practice that fuses material innovation, local craft integration, and sustainable systems thinking. With projects like PRIMA and COMO, she transforms waste into modular, locally rooted furniture and materials. Her approach blends design and activism, advocating for regional circular economies, community education, and responsible production.

Basic Bio Porto, Portugal, Female, Age 35–44

Design Mission To transform waste materials into sustainable objects, bridging sustainability, material experimentation, and community-based design, focusing on raising awareness of resource reuse. Her compositions derive from local waste, aim to inspire a shift in industry practices through small-scale innovation, creative knowledge sharing, and co-creation.

Design Proceess Irena follows a flexible, iterative process that begins with material exploration and co-creation, followed by prototyping, showcasing solutions, and knowledge dissemination. Her work arises from research-based residencies and is connected to place-based resource mapping and community.

Material Culture Deeply engaged with local traditions, Irena prioritises local resources and artisans in every phase of her projects. Her material selection process is rooted in regional sourcing and seeks to strengthen local production chains and promote circular economies. She actively collaborates with local craftsmen and artists, respecting and integrating their skills.

Emerging Tech While not tech-driven, Irena embraces a low-tech innovation mindset, utilising tools like CNC machining, 3D printing, and Precious Plastic open-source machines when relevant.

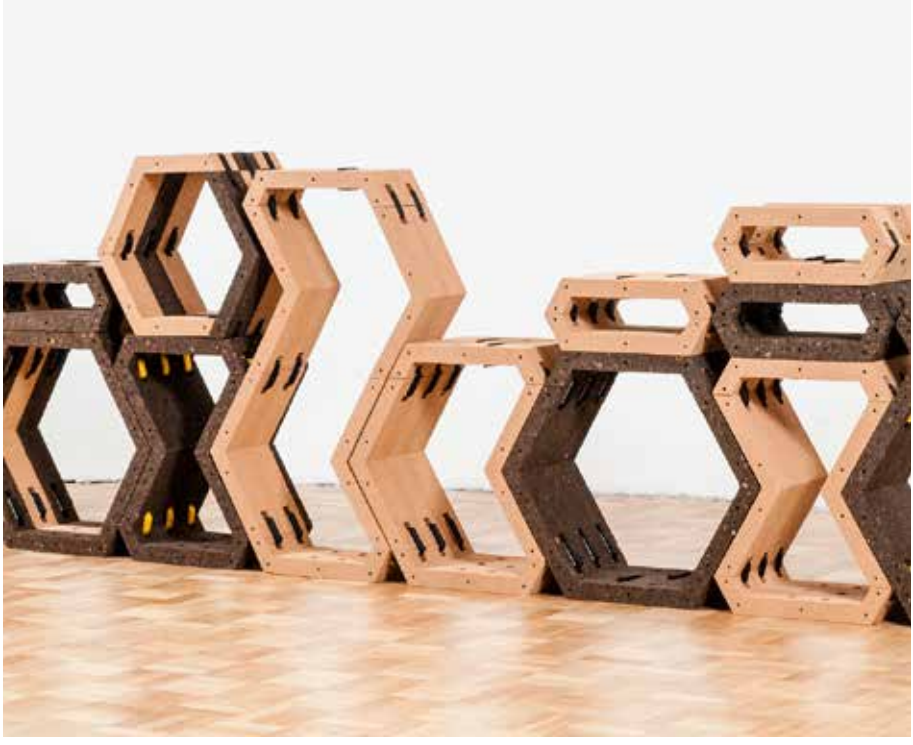
Materials Sustainability is central to Irena's practice. Through her projects she develops new material composites (e.g., recycled cork, plastic, paper, ceramics) to inspire others to see waste as opportunity. Her design consultancy helps brands and institutions rethink raw material sourcing, moving from extractive to regenerative systems.

PROJECTS

Como COMO, is a modular furniture system made from 100% Portuguese cork, enabling customisable configurations without tools. It reflects her values of co-design, sustainability, and accessibility, turning traditional materials into flexible, contemporary applications.

Prima PRIMA is a material-focused design research project developed during the Aviero 2027 European Capital of Culture initiative. It explores local residuals and crafts to create innovative material combinations from waste, intended for use in design and art.

EUROPE



JAMES HAYWOOD

James Haywood explores the intersection of material sustainability, technological experimentation, and critical aesthetics. His work challenges conventional production by using locally sourced waste materials—such as slag, algae, and discarded industrial components—to craft enduring, conversation-starting objects. Blending digital fabrication with physical iteration, his hybrid process prioritises environmental responsibility without compromising form.

Basic Bio Occitanie, France, Male, Age 25–34

Design Mission To provoke conversations around the materials we use to shape the built world. His practice is grounded in the pursuit of material longevity, aesthetic resilience, and deep ecological awareness. Each piece challenges dominant paradigms of material use and consumption.

Design Proceess His creative process is deeply personal and iterative. Ideas evolve over years of reflection and material testing. Once a concept solidifies, he tests variations repeatedly rather than working through traditional prototyping stages. This hands-on, improvisational approach embraces trial-and-error to reach formal and technical excellence. His first project spanned four years and nearly 300 iterations.

Material Culture Although not driven by traditional crafts, Haywood engages with local ecosystems and resources. He prioritises materials sourced from his immediate environment reflecting a symbiotic relationship with the local landscape.

Emerging Tech Technology plays a central role in his work. He uses 3D printing extensively, particularly in mould-making and detail generation.

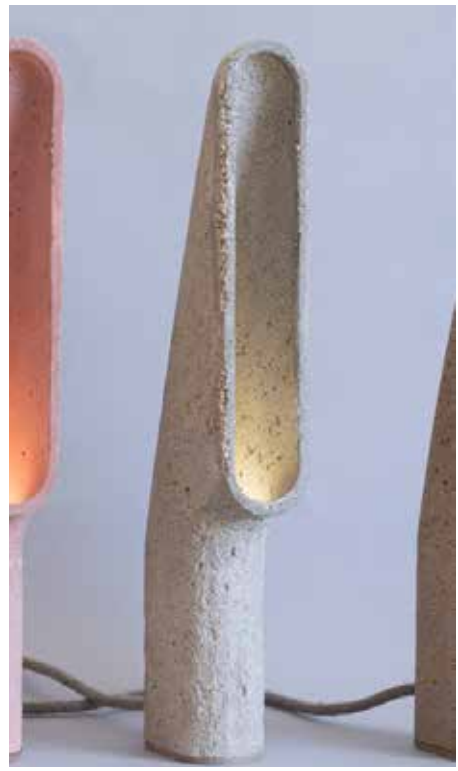
Materials Sustainability is at the core of his philosophy. Haywood works exclusively with locally sourced waste materials and by-products with a strong focus on durability, lifecycle thinking, and minimal environmental impact. His work critiques current production and consumption systems and proposes viable material alternatives that are regenerative and future-proof.

MESH
20/40
30/60
80
NET WT
TI PLUS
SLE A
AÇONNER
HEAVY
25kg

PROJECTS

Erreur 404

A collection of furniture that reimagines concrete through a sustainable lens. The pieces are made from blast furnace slag (a steel-industry by-product) and aggregates like ceramic, concrete, glass, and plastic waste. Through brutalist aesthetics and material hybridity, the collection draws attention to the urgent need to shift away from polluting materials toward environmentally conscious alternatives.



JESSICA DEN HARTOG

Jessica Den Hartog is a Dutch designer focused on revealing the aesthetic and functional value of plastic waste through experimental material design. Her project Chrysalis exemplifies her goal to close the loop in plastic recycling by developing monofilament yarns from post-consumer HDPE. Jessica's work highlights the creative and sustainable potential of waste through colour theory, iterative experimentation, and circular design thinking.

Basic Bio Culemborg, The Netherlands, Female, Age 25–34

Design Mission Jessica's mission is to explore the reuse of plastic waste through aesthetic research. She aims to reveal the hidden beauty of post-consumer plastics, transforming them into graphical and functional design objects. Her work combines sustainability with colour theory and experimentation.

Design Proceess Jessica's process is highly experimental and iterative. It begins with open-ended exploration of plastic waste, leading to the creation of a colour and material library. From this evolving archive, she develops new collections. Each project is built around a new thematic investigation—ranging from compositional studies to typographic forms.

Material Culture While not explicitly rooted in traditional craft, Jessica is interested in how plastic waste can be reworked using both industrial and low-budget local techniques. Her sourcing network includes friends and family, who contribute to her stock of household waste plastics.

Emerging Tech Jessica collaborates with labs to turn plastic waste into design materials. She manipulates waste into new raw materials and explores processes such as monofilament extrusion for textile applications.

Materials Sustainability is central to Jessica's work. She focuses on post-consumer HDPE, which is often downcycled. Her goal is to close the loop by turning undervalued plastic waste into high-quality, recyclable materials, with the aim to influence both perception and production systems.

PROJECTS

Chrysalis

In the Netherlands only 59% of the 25kg of plastic waste generated p.p.p.y. is recycled. Plastics like PET and PP are increasingly recycled for high-grade applications but HDPE is mostly down-cycled.

Project Chrysalis develops recycled monofilament yarns for closed-loop textile products out of HDPE sourced from household waste. Post-consumer HDPE mostly comes from packaging and can have any color. This color mix results in grey pellets after processing at the recycling plant.

We aim to increase the potential application of grey post-consumer HDPE by developing both its functional and aesthetic qualities in textile yarn. We want to show its potential through the design of inspiring product samples. The Chrysalis yarn is being developed to work on industrial knitting machines and may be used for applications ranging from nets to spacers.

KICK VELDMAN

Kick Veldman is a young conceptual designer based in Amsterdam whose work seeks to reclaim personal agency over design and production. Blending traditional metalwork with found materials, his hybrid approach critiques industrial dependence and champions self-sufficiency. In Casting Mirrors, Veldman explores what it means to make independently, using self-built tools to transform aluminium waste into reflective surfaces. His practice transforms curiosity and frustration into acts of resistance, to shift consciousness about everyday objects and their hidden costs.

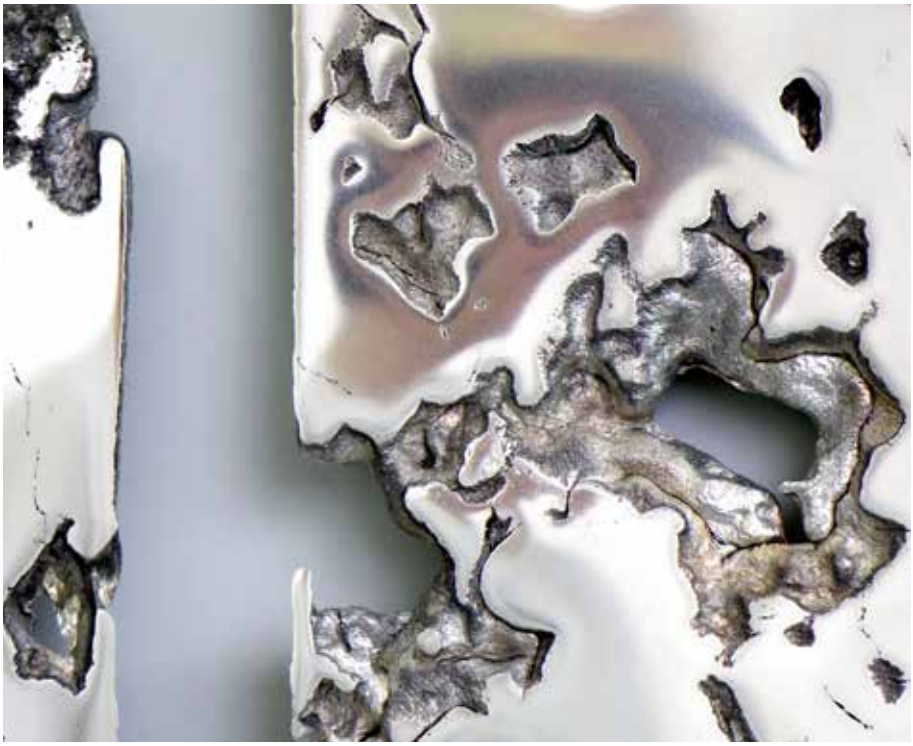
Basic Bio	Amsterdam, The Netherlands, Male, Age 18–24
Design Mission	Kick explores the autonomy of making, aiming to enlarge perspectives on functional objects. His work reclaims agency over production and critiques material systems.
Design Proceess	His process begins with a frustration or curiosity, followed by historical research into an object's origins. He reverse-engineers the making process, seeking independence from industrial systems.
Material Culture	Rather than engaging with local traditions, Kick focuses on the immediate and mundane—scrapyards, his waste bin, and natural surroundings—highlighting the potential of overlooked materials.
Emerging Tech	He avoids reliance on advanced tech, instead revisiting older technologies and physics-based principles to achieve production independence.
Materials	Sustainability emerges through a commitment to local material sourcing and reuse. By using aluminium waste, he reclaims value from discarded matter.

PROJECTS

Casting Mirrors

“What is the true cost of reflection?” it’s the question from which CASTING MIRRORS arose.
“CASTING MIRRORS” by Kick Veldman is a collection of handmade mirrors manufactured from aluminum waste.
Kick’s project investigates man’s relationship with their reflection, examining how this relationship has evolved since the invention of mirrors and exploring all the metaphors it has brought.
History inspires, though Veldman gives it new entity, makes it his own, investigates meaning in the context of the already existing and fully connect. All while being as independent as possible.
His practice produces works on the borders of functional objects and non-functional monuments.

GEBOL
MICRO FLEX
Size
9/L



Lea Studios

Lea Studios is a ceramic-focused design and manufacturing duo based in Treviso, Italy. Their hybrid practice fuses digital fabrication with traditional craftsmanship to create sculptural interior objects. Deeply connected to their local material culture and influenced by the architecture of nearby Venice, Ionela and Valentina blend distinct practices: one rooted in computational modeling and 3D printing, the other in wheel-thrown and hand-built ceramics. Committed to sustainability, local sourcing, and continuous experimentation, their work embodies a novel approach to ceramics.

Basic Bio Treviso, Italy, Female + Female, Age 25–34

Design Mission Lea Studios, founded by Ionela Bellato and Valentina Cojocaru, operates at the intersection of digital fabrication and ceramic craftsmanship. Their mission is to bridge the gap between tradition and innovation by developing sculptural, biomorphic ceramics that provoke curiosity and connection.

Design Proceess Their process blends digital and manual techniques. Starting from references and moodboards, they develop both wheel-thrown and 3D-printed pieces. While Valentina focuses on hand-built forms and carving, Ionela uses algorithmic design to control digital fabrication. Testing, sampling, and glazing culminate in hybrid artefacts shaped by both code and hand.

Material Culture Deeply rooted in the clay culture of Veneto, they collaborate with local clay extractors like Cibas and draw inspiration from the nearby city of Venice. They remain active in a small but close-knit community of potters while maintaining a balance between tradition and contemporary aesthetics.

Emerging Tech Technology plays a central role, from 3D modelling and clay printing to kiln programming and inventory software. They even integrate AI into form development. However, they maintain a critical view of tech accessibility and ensure that every digital element retains a strong tactile dimension.

Materials Sustainability guides their material sourcing and process control. They use locally sourced clays and develop their own tools and glazes when needed, combining ecological responsibility with innovation.

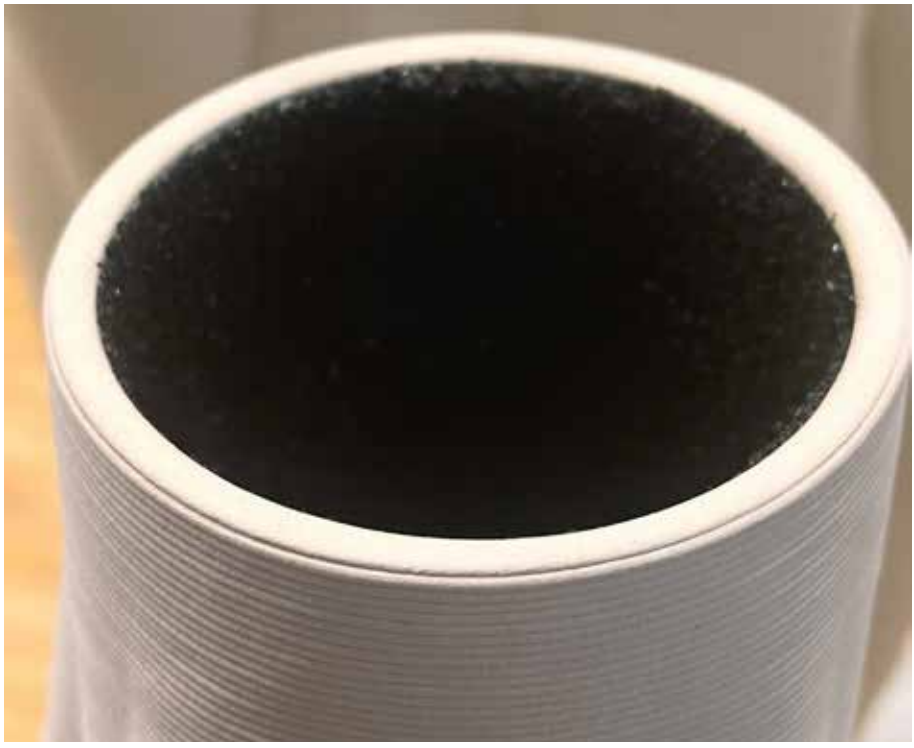
PAUSE

PROJECTS

Danzia/ Echo Vases

The Collection is characterized by its intricate folding patterns. The pattern adds a layer of creases in different depths, giving the objects a fabric-like appearance.
The algorithm was developed to influence the design and control the printer path, making sure that every Grazia vase has its unique shape and characteristics automatically generated based on physic parameters set in the 3d modeling software. A perfect example of computational design and digital fabrication on a small-scale. Finished with an agent coloured glazes to give that handmade artisanal final touch to the piece.

LIMOGES PORCELAIN
BLACK LAND POURED
ITE EARTHENWARE
ACK LAND POURED



Lebanto Design

Rooted in the heart of Italy's furniture-making tradition, Lebanto is a studio focused on sustainable elegance. Their hybrid approach fuses market-savvy design thinking with artisanal production, preserving the soul of Italian woodcraft in contemporary contexts. With collections like Bloom, they reinterpret tradition through a lens of minimalism, locality, and eco-consciousness—crafting not just furniture, but culture.

Basic Bio Cantù, Italy, Male, Age 25–34

Design Mission Lebanto blends Italian design elegance with sustainability, emphasising minimal waste and conscious consumerism. The studio revitalises traditional woodcraft from Cantù—an area renowned for woodworking—with a contemporary twist. Their motto: "buy less, waste less."

Design Proceess The design process begins with market research and competitive analysis, followed by concept development (form, price, purpose), technical study, and prototyping. Production is small-scale and deeply collaborative with local artisans working wood, metal, glass, and marble by hand.

Material Culture Lebanto's identity is inseparable from Cantù's woodworking legacy. By collaborating with regional workshops that eschew robotics and industrial automation, they preserve craftsmanship through practice and reinterpret it in a modern aesthetic.

Emerging Tech Technology is used strategically. Augmented reality helps customers visualise designs, but Lebanto emphasises in-person relationships and manual processes. Their tech philosophy supports—not replaces—human touch.

Materials

Sustainability is foundational. Materials are sourced locally when possible, and all products are made with durability and longevity in mind. Ethics in production and material use are as important as aesthetics.

PROJECTS

Bloom Collection

Bloom Collection. A collection of handmade furniture inspired by the colors of nature that symbolize the diversity, beauty, lightness and delicacy of our planet. A selection of tables born from the research of natural and precious materials chosen with care. Natural oak, glass, metals and marble. Sustainable and ethical materials and processes by nature. The production of these tables is made in small workshops in Lombardy with passion and know-how.

MARC ROMAN PAGE

Berlin-based designer Marc Roman Page explores the intersection of geology, craft, and computation. With a practice grounded in material experimentation, he transforms overlooked substances like volcanic scoria into expressive design elements. Through Scoria, he expands the boundaries of glazing and form-making while proposing sustainable alternatives to industrial finishes. His work challenges how we define material value—less about polish, more about story, origin, and potential.

Basic Bio Berlin, Germany, Male, Age 25–34

Design Mission Marc Roman Page is driven by a fascination with the interface between matter and manufacturing. His practice centres on sustainable material innovation, experimental craft, and critical questioning of conventional processes.

Design Proceess His workflow begins with a research-driven inquiry ("why this material, why now?"), followed by sourcing local or site-specific materials, experimentation, prototyping, and iterative definition of the final outcome. His process balances conceptual rigor with material play.

Material Culture While not always engaged with tradition, Marc responds to project context. He sometimes draws from traditional methods but often uses them as a point of friction—challenging norms to discover new craft languages.

Emerging Tech Technology is a tool, not a master. Parametric design software supports experimentation and testing but never overtakes the material's agency. He uses it to model, simulate, and manipulate forms in dialogue with their physical constraints.

Materials Sustainability is integral. He prioritises materials sourced through fieldwork or local suppliers and is particularly focused on the lifecycle and transformation potential of underexplored materials.

PROJECTS

SCORIA

The material study scoria is exploring new application methods within stone glazing of ceramics by working among the unique features of volcanic scoria. Unlike traditional stone glazing, the low melting point of scoria allows the use of solid rock pieces instead of crushed material bound in liquid. The resulting glaze layer is significantly thicker than usual, forming another kind of matter on top of the ceramic carrier. Those unique material features offer a whole new range of possible application methods between the two materials. In order to investigate the possible applications of the volcanic scoria in a variety of ways, the project is divided into three research parts: glazes - solid - raw.

| glazes

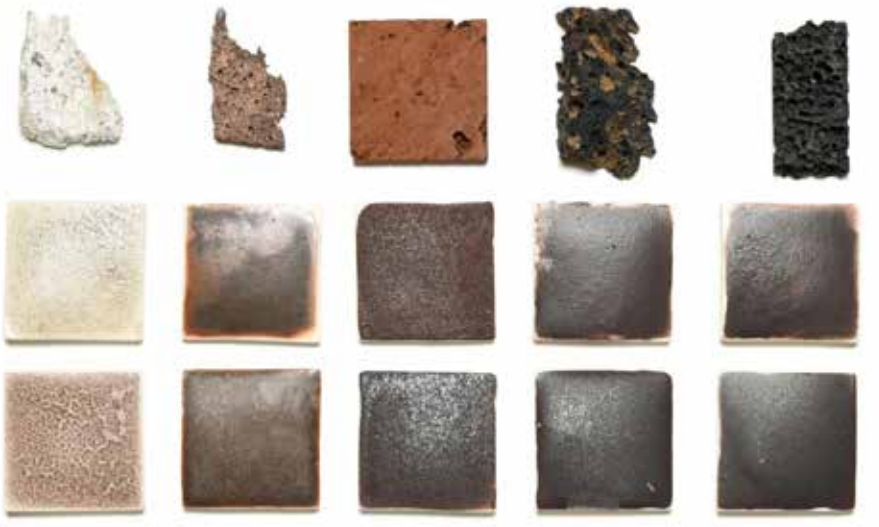
The technique of traditional stone glazing provides a method how to work with those raw naturally given recipes. The color and pigment range variates slightly depending on the origin of the stones and always provide those glazes a `raw` tone.

|| solids

Volcanic scoria differs significantly from most solid rocks. Its structure is porous and sharp, a light rock with a low melting temperature. The behavior of solid scoria rock pieces during firing makes it unique and ideal for exploring new possible applications between rock and ceramic. In order to provide a maximum of material stages for the study, the rock pieces were prepared using a tile saw for formatting the solid pieces. The creation of this stone is reversed in the process of firing, transforming the brittle sandy stone into a solid fused body. Instead of becoming porous and brittle, it fuses evenly with the ceramic carrier. The glaze becomes the body. Raw, natural and unique describes the character of the resulting surfaces in structure and colorfulness most accurately.

||| raw

The ongoing approach deals only with volcanic scoria as material. The special properties and characteristics that make the rock moldable during firing will be further researched and other possible areas of application investigated. Objects are to be created whose shape can hardly be achieved with conventional stone processing. Through a mold, the material is forced into the desired shape in which it fuses. This approach creates a new application for this particular material state and takes the project in a new direction of research.



MARKOS GEORGIOU

Markos Georgiou is a designer focusing on Responsible Design to create meaningful, sustainable solutions. By combining traditional crafts with advanced technologies like 3D printing and CNC machining, he develops innovative products that address environmental and societal challenges, collaborating with artisans, integrating regenerative materials, and redefining waste.

Basic Bio Limassol, Greece, Male, Age 25-34

Design Mission Markos focuses on "Responsible Design," solving problems with meaningful, beautiful solutions that consider social and environmental impact. His work embraces functionality, emotional resonance, and sustainability, combining these principles to reimagine systems and materials for contemporary needs.

Design Process Markos employs a dynamic process integrating research, making, and critical evaluation. His design pillars include impact, problem-solving, emotional resonance, and aesthetics, with considerations for material lifecycle, circularity, and regeneration. The process adapts per project, using rational and creative approaches to uncover innovative solutions.

Material Culture Markos is deeply committed to preserving and revitalizing local crafts. He collaborates with Cypriot artisans in co-design sessions to adapt traditional techniques for modern functionality, ensuring cultural heritage thrives in contemporary contexts.

Emerging Tech Markos integrates advanced tools like 3D printing, CNC machining, and laser cutting into his workflow to combine traditional craftsmanship with innovative approaches.

Materials Sustainability is central to Markos's practice. He prioritizes regenerative materials like oyster shells and reclaimed wood while addressing waste through projects like Ostra. He considers the lifecycle of materials/process to minimize environmental harm.

PROJECTS

Bio Gun

The Biogun is a distributed, open-source tool—a handheld extruder that redefines how we work with biomaterials. By reclaiming waste as a medium, Biogun disrupts the waste stream through personal, intuitive, and expressive making. It democratises production, stripping away the need for centralised manufacturing by hacking the function of existing drills, repurposing standard, universal materials, and integrating digital fabrication tools. Bringing the power of industrial machines into the hands of the maker, Biogun unlocks a new language of self-expression and material exploration.

In the world of biomaterials—where most waste-based designs are confined to flat sheets—Biogun pioneers a new way of shaping, sculpting, and working with biomaterials through a handheld, craft-driven approach.

MATTEO DE LUCA

Matteo De Luca is a designer working at the intersection of emotional intelligence, sustainability, and furniture design. His process is deeply user-driven and often engages local craft practices while maintaining a modern, critical edge. Through his projects, he envisions a future in which objects don't just serve human needs—they coexist with nature in ways that are functional, poetic, and regenerative. His work is emblematic of a new design ethic that is politically quiet but materially radical.

Basic Bio Milan, Italy, Male, Age 25–34.

Design Mission Matteo De Luca's mission is to design meaningful experiences and interactions between people, objects, and their environments. His approach is rooted in a human-centered philosophy that blends functionality with emotional resonance, while subtly critiquing norms through form, material, and process.

Design Proceess Matteo's design process is methodical and collaborative. It begins with user research and environmental analysis, followed by benchmarking, material investigation, and sketching. Design ideas are refined through conversations with material and manufacturing experts, then developed into 3D models and prototypes. His process seeks to identify not only functional needs, but also latent symbolic dimensions.

Material Culture Though his regional background lacks a distinct craft identity, Matteo draws from its artisanal spirit and nature-oriented ethos. He collaborates with local craftspeople when relevant and values craftsmanship as an attitude rather than a style.

Emerging Tech He uses technology critically. While he has successfully integrated 3D printing into a past project, he acknowledges its limitations—particularly when it comes to prototyping costs and persuasiveness in client conversations. Thus, he applies tech only when budget and context allow.

Materials Sustainability is fundamental. Matteo prioritises eco materials and consults material experts to ensure his designs remain environmentally responsible and culturally sensitive.

isola
MONKE

PROJECTS

/ yerva

A furniture-lighting hybrid powered by plant microbial fuel cells (P-MFCs), Yerva harnesses the bioelectrical energy generated by healthy plant-root systems. Designed as a reading lamp for homes and offices, it features an OLED arc, self-watering system, and portable wireless charging. Yerva doesn't harm its host plants and proposes a scalable, symbiotic furniture system that questions energy consumption and imagines new mutualistic relationships between humans and nature.

MAXIMILIAN BECK

Maximilian Beck is furniture designer exploring craftsmanship and geological storytelling. With over a decade of hands-on experience in woodwork and more recent explorations in glass, Beck has developed a practice that is both materially poetic and structurally rigorous.

Basic Bio Cologne, Germany, Male, Age 25–34

Design Mission Maximilian Beck's mission is rooted in the sustainable use of resources and the pursuit of meaningful aesthetics. His design principles are driven by a desire to reconcile beauty and function through slow, intentional processes.

Design Proceess His process typically unfolds in three interconnected phases: Exploration, where he conducts deep material and contextual research and draws inspiration from natural phenomena and geological formations; Focus, where he refines concepts through sketching, modeling, and conversations with craftspeople; and Realisation, where digital tools and traditional methods converge to produce the final piece.

Material Culture Beck is based in Cologne but works within a broader German context of applied arts and material heritage. He frequently engages with local craftspeople and aims to preserve traditional making practices, particularly in wood and glass.

Emerging Tech Emerging technologies, particularly 3D modeling and CNC machining, play a foundational role in Beck's work. These tools allow him to design and manufacture complex casting moulds that would be difficult to achieve by hand alone.

Materials Sustainability is at the heart of Beck's design approach. He sources materials locally when possible and is attentive to the environmental footprint of both his inputs and production methods. For him, sustainability is not only about responsible material use but also about creating objects that last—physically, emotionally, and symbolically. His emphasis on long-term value challenges the fast pace and disposability of much contemporary design.

PROJECT

/ kies

KIES by Maximilian Beck reminds of interrelations that take more time than we humans have on earth. The Collection embodies Becks idea that durable and sustainable design must work on an emotional level by telling stories and evoke individual associations.

Over years, sediments from mountain ranges are transported through glaciers and rivers until they reach the ocean – a process that slowly erodes the rough surface of the stones until a smooth and evenly shaped pebble is left. The Metaphor of Genesis of pebbles embodies a meaningful narrative and creates a direct contrast to the fast-paced world of today and gives the concept of „slow furniture“ a new dimension.

MICHELA PANIZZA

Michela Panizza is a designer whose work bridges the domains of speculative design and sustainability. With a preference for low-tech, local, and recycled materials, she creates artefacts that resonate on both functional and emotional levels. Her design philosophy centres on giving voice to under-addressed issues—whether social, environmental, or cultural—through artefacts that provoke reflection and engagement. Rather than contributing to a saturated design market of chairs and lamps, Panizza uses design to create platforms for dialogue.

Basic Bio Milan, Italy, Female, Age 25–34.

Design Mission Michela Panizza's design mission is rooted in sustainability and social justice. Her work foregrounds purpose-driven conceptual design, often framed by a strong narrative. She believes that design should respond to pressing environmental and social issues, and her projects aim to transmit meaningful messages rather than produce aesthetic commodities.

Design Proceess Her process is deeply contextual and empathic. It begins with understanding a social or environmental issue through research and direct conversations with people affected by it. She then investigates sustainable materials and traditional processes, developing prototypes that embody both functional and symbolic dimensions.

Material Culture Panizza is committed to upholding and evolving local craft traditions. She sees traditional techniques not only as tools for production but as carriers of deep, often overlooked knowledge.

Emerging Tech While she occasionally uses 3D printing, Panizza is cautious about advanced technologies due to their cost and accessibility. Her focus is more on accessible, low-tech processes and local solutions. Innovation, for her, lies in reinterpreting the old with purpose—not necessarily in adopting the new.

Materials Sustainability is the foundation of her design ethos. She frequently sources materials from local waste streams or discarded industry surplus, repurposing them into new materials. This approach reflects her belief that sustainable design must emerge from what is already available.

PROJECT

/
peso

PESO is a project that wants to be a message before an object. A recycling technique that wants to be a stimulus not only for me, but for all those who will have the opportunity to be able to lend a hand to the environment. I wanted to pause on making people aware of the weight (="peso") that we are leaving to our world due to the pandemic. And like a real gym weight, each object affects not its weight but the actual masks that I used to make it.

1.550 BILLION
is the number of disposable face masks we have used in ONLY one year. They are made from 95% polypropilene, a thermoplastic platics. Therefore the surgical mask is almost totally recyclable. The world begins to weigh more than before with all our wrong daily actions. The scope is to sensitise each of us and to try to improve through small changes (such as recycling).

They are **made from 95% polypropilene**, a thermoplastic plastic

MIDA LAB

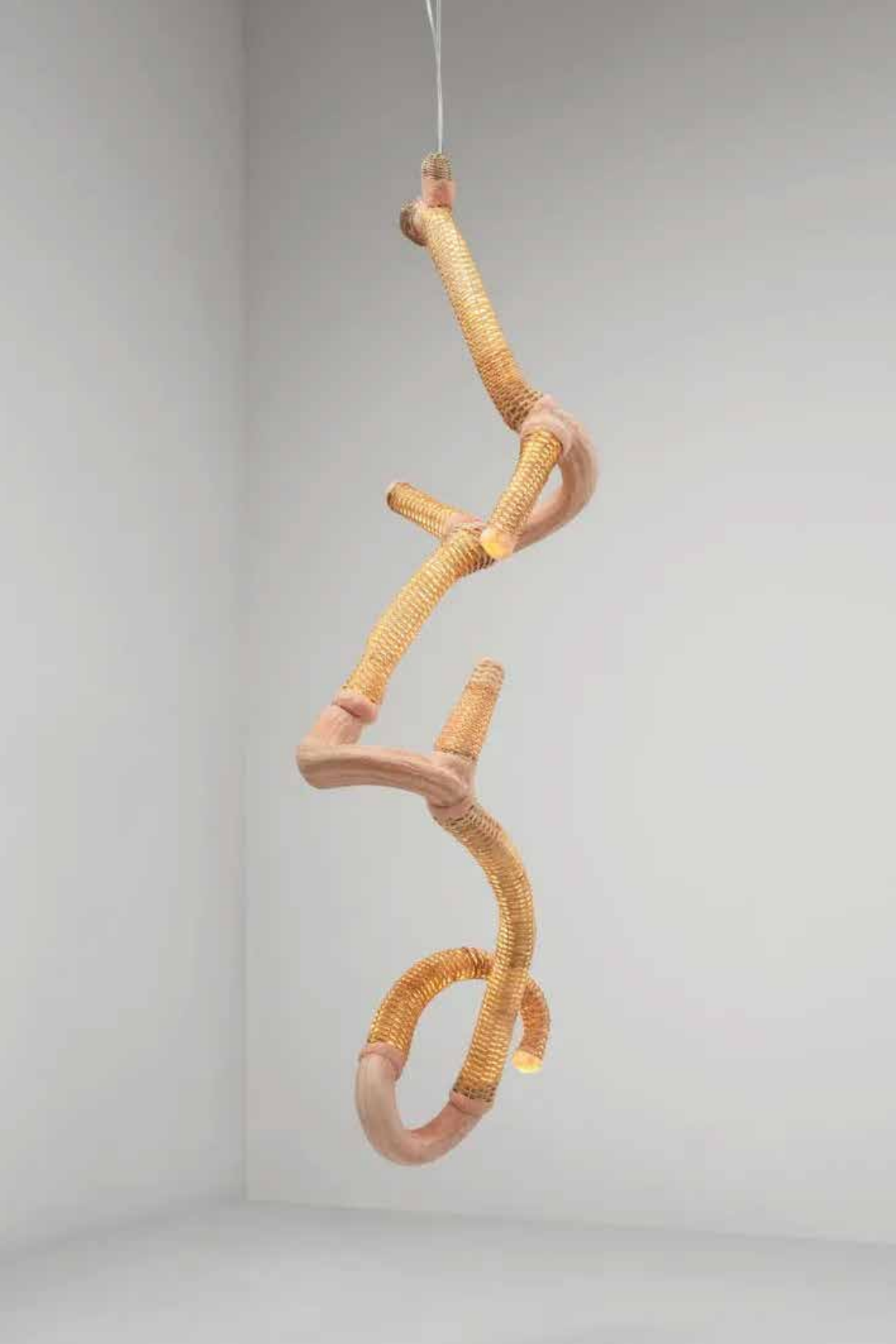
Mida Lab, based in Eindhoven, Netherlands, explores the intersection of traditional crafts and modern technologies. The studio creates tactile messages by blending materials like ceramics, rattan, and biomaterials, with influences spanning Mediterranean and Nordic cultures. Sustainability is central, with biomaterials and workshops driving innovation through 3D printing.

Basic Bio	Eindhoven, The Netherlands, Female, Age 25-34
Design Mission	Mida Lab focuses on creating dialogues between dissimilar materials like ceramics, rattan, glass, and biomaterials. Projects are deeply rooted in cultural cross-pollination, combining Mediterranean and Nordic influences, with sustainability as a guiding principle.
Design Proceess	Mida Lab begins with intuitive exploration and meditative material preparation, followed by assembling and refining. The process incorporates traditional crafts and contemporary techniques to create tangible messages through tactile forms.
Material Culture	Mida Lab embraces the adaptability of roots, experimenting with local crafts like rattan weaving. The studio blends modular ceramic techniques with cultural and environmental awareness.
Emerging Tech	Technology enhances Mida Lab's process through 3D printing, 3D scanning, and animations for communication. The studio has started exploring AI to augment its creative practice.
Materials	Sustainability is vital but approached pragmatically. The studio prioritizes biomaterials while acknowledging challenges in entirely avoiding non-eco-friendly options like silicone. Regular workshops keep practices updated with innovations in bioplastics and biotextiles.

PROJECTS

Roots

This collection is the result of research that develops through experimentation. It consists of multiple series of lamps for the habitat. The chandeliers are handmade, one of a kind objects made with ceramics extrusions, silicone modeling, plastics recycling, raffia weaving, metal casting and led light connections.
At the heart of the artwork lies a bronze rope, crafted through the intricate process of lost wax casting. Bronze, known for its durability and resilience, is a noble material with a rich history that speaks to its ability to withstand the test of time. Around the rope a twisting root unfolds encircling a series of ceramic and rattan segments that pulsate with dynamic energy and luminous light. Clay is one of the most malleable substances on the planet. Rattan is a living and sinuous plant material that allows to generate/to wave alternative surfaces, almost like a skin. The electrical components determine the functionality of the products in a logic of sustainability.



MILLIM STUDIO

Millim Studio is a duo operating to uncover the aesthetic and cultural value of discarded materials—primarily marble and metal—sourced from Italy's artisanal and industrial landscape. Their hybrid process combines traditional lapidary techniques with CNC machining, driven not by novelty, but by reverence for the story each material holds. Rather than impose design on matter, Millim lets material remnants guide their forms.

Basic Bio Rome, Italy, Female + Male, Age 25–34.

Design Mission Committed to narrating cultural and territorial heritage through the use of raw and scrap materials. Their philosophy centres around the idea that material leftovers are not waste, but fragments full of new potential. Their work celebrates the expressive value of organic shapes and irregularities.

Design Proceess Each project begins with a deep material inquiry—tracing the material's origin, history, and inherent character. This phase shapes their conceptual direction. They often let the nature of the material itself inform the aesthetics and function of the design. The process merges hands-on craftsmanship with contemporary design thinking, integrating digital tools when needed but staying rooted in the value of hand-making.

Material Culture Their relationship with local crafts is intimate and multi-layered. Millim works closely with artisans and material suppliers across the Italian territory, valuing inherited expertise as much as raw material access.

Emerging Tech While grounded in craft, they integrate CNC machining at select points to refine or prototype ideas. However, technologies serve their exploration of form more than mass production

Materials Sustainability is a central tenet. Their projects are constructed entirely from scraps or leftovers—materials that would otherwise be discarded. They see this as an act of valorisation rather than reuse, as waste is a starting point for new meaning.

PROJECTS

/ miscellaneous

Miscellaneous explores the concept of variety through a collection of marble fragments salvaged from sculpture workshops. Each piece, with its unique form and history, dictates the shape of the final design, resulting in objects that are unrepeatable and emotionally resonant.

/ cutout

Cutout investigates offcuts from metalwork. The design arises from the irregular and accidental geometries created in previous projects. These 'abandoned' forms are given new function and identity, shifting the perception of waste toward one of latent potential. Cutout is an aesthetic research on metal shapes that have been "cut out" from other projects. Every waste of matter is part of a story. The variable and free geometries, due to the previous processes, give the sign to each new piece.
Abandoned forms, rejects of other projects, come back to show themselves in a new life. No more matter in excess but form and essence.

Cutout Tables: Collection of n. 4 coffee and side tables in 4 mm sheet metal. Free and irregular shapes make the pieces the protagonists of the living room. Each side shows and reveals different shapes and details of the products.

MONOSTUDIO ASSOCIATI

Monostudio Associati is a Milan-based interior and material design studio led by a duo of experienced designers with a deep commitment to sustainability and cultural heritage. Their work is shaped by the desire to radically challenge extractive design models and elevate local, and waste materials into high-quality interiors surfaces.

Basic Bio Milan, Italy, Female + Male, Age 45–54.

Design Mission Monostudio Associati operates at the intersection of sustainability, material culture, and social impact, aiming to enhance wellbeing through ecologically responsible interior design. Their work reimagines waste as a valuable resource and seeks to reconnect material production with nature.

Design Proceess Their process begins with foraging for pre-consumer waste and natural materials—particularly from local contexts. Research into ancient and primitive techniques plays a central role, followed by iterative design and public communication. Each step of the process is culturally grounded and informed by the studio's interest in reconnecting with non-extractive systems of production.

Material Culture Rooted in Italy's deep craft heritage, the studio views local traditions and techniques as foundational rather than decorative. They actively engage with local industries, materials, and artisans, and often showcase their work in national and international design fairs. Their hybrid approach blends design rigour with hands-on making and strong community ties.

Emerging Tech Technology currently plays a minor role in their process, as their focus is predominantly on low-tech, sustainable, and nature-based methods. Their use of materials favors ecological regeneration over innovation for its own sake.

Materials Sustainability is a core pillar. Their approach critiques the extractive logic of the design industry and instead proposes circularity through direct material foraging and partnerships with local industries. Their goal is to create scalable yet radically sustainable material palettes for interior design.

PROJECTS

Semplice-mente Circolare

Semplicemente Circolare is a palette of interior floor tiles made of eggshells, spent coffee, demolition waste and more waste materials that were before destined to become just garbage. The project was born as an experimental research of the MONOFERMENTS innovation hub to trace new paths in sustainable interior design. The study led to the creation of biophilic materials for interior design products as in the BRUTTI MA BUONI series, TERRA tiles, based on up-cycling demolition waste and valuable materials from construction sites; the clay body is made of soil from excavation, bricks and processed concrete from debris, the decoration is inspired by Bauhaus and realised by alternating matte and glazed parts with a mixture of transparent glaze and wild clay.

SANT'ANGELO
PRATO VERNARA

MYCEEN

Myceen is a pioneering Estonian design and biofabrication studio working at the intersection of environmental responsibility, technology, and mycology. Their work transforms by-products and organic waste into carbon-negative, biodegradable materials—an ambitious and timely intervention in a world flooded with synthetic and non-renewable matter.

Basic Bio Harjumaa, Estonia, Male, Age 25–34

Design Mission Myceen is committed to sustainability through by-product valorisation, aiming to replace harmful materials with compostable, carbon-negative alternatives. Their work focuses on leveraging biotechnology and waste-stream circularity.

Design Proceess Their process is highly iterative and tech-driven: beginning with ideation, it continues through stages of prototyping, testing, adjustment, and finalisation. Each phase involves data collection and functional evaluation to optimise the properties of their living materials.

Material Culture Rather than engaging with traditional craft, Myceen's approach is grounded in biological innovation. Their use of the natural environment—such as locally sourced industrial by-products—acts as a contextual grounding for sustainability.

Emerging Tech Technology is central. Myceen experiments with the most recent developments in biotechnology, environmental engineering, and fabrication. Their material experiments involve biofabrication and controlled growth of mycelium structures.

Materials Sustainability is the studio's raison d'être. Their projects are driven by a clear climate mission—using carbon-negative processes and compostable outputs while lobbying for systemic change in industry and policy. Materials are sourced through partnerships with other industries, making use of agricultural and organic waste.

PROJECTS

Pendant lamp B-Wise

A lamp made from mushroom mycelium and organic byproducts. The mushroom material does not contain any chemicals or other synthetic additives which makes it perfectly compostable. The growth of mycelium is stopped and the lamp is completely safe for humans and buildings.The production of novel mushroom materials is a perfect example of circular manufacturing and can potentially replace plastics and problematic composites. While using other industries' leftovers and combining them with mushroom mycelium (the root system of mushrooms) it is possible to grow carbon-negative and compostable materials.

Lo Blox

A solid piece of mushroom material that offsets several kilograms of carbon: it can be used as a seat or a side table. Every piece comes with a unique surface pattern, carefully arranged by the mycelium.

OODD STUDIOS

OODD Studios is a Leipzig-based interdisciplinary duo operating at the confluence of conceptual design, textile craft, and the cultural implications of digitalisation. Rooted in lace-making yet consciously subverting expectations, their work questions the spatial and societal role of contemporary objects. Their approach is both tactile and cerebral, engaging tradition not as a fixed set of rules but as a system to be questioned, stretched, and redefined.

Basic Bio	Leipzig, Germany, Female + Female, Age 35–44
Design Mission	Founded in 2021, OODD Studios is an interdisciplinary cooperative exploring the tension and dialogue between traditional craft and the digitalised society. Their mission revolves around contemporary craft, conceptual depth, and textiles reinterpretation through collaboration and experimentation.
Design Proceess	Their process is rooted in dialogue, beginning with material samples from their archive. These tactile triggers lead to sketches, sample models, and iterative refinement. Once the object is finalised, a comprehensive visual storytelling phase follows, including photography, digital editing, and media communication to share the narrative and methodology.
Material Culture	OODD values their cultural environment as a source of inspiration but actively seeks to expand beyond it, fusing traditional techniques like lace-making with speculative methods. Their practice operates as a reflective lens on craft, culture, and material hybridity.
Emerging Tech	Rather than specific tools, OODD explores construction logic and physical forces (e.g. pressure and temperature) to develop hybrid textile materials. Their innovations lie in material behaviour, not in digital fabrication per se.
Materials	Sustainability is approached through material mindfulness and the reuse of archived resources. They regularly research unconventional materials, aiming to reduce waste and embrace complexity in their aesthetic and structural language.

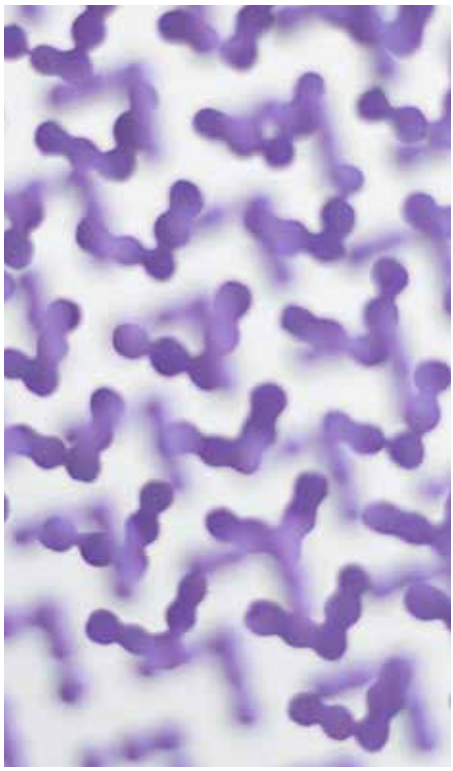
PROJECTS

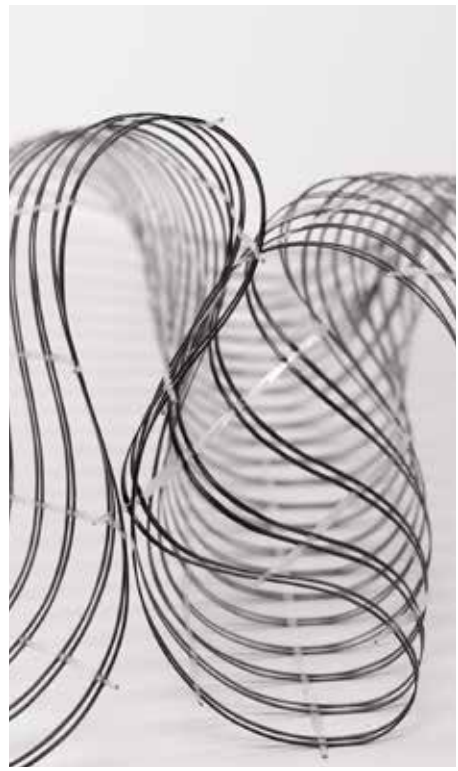
LAND-MARK.

The LANDMARK series is a new development of three-dimensional textile objects that can but do not have to, fulfil the functional aspects of a vessel. Inspired by milestones of contemporary architecture, they take up formal elements of significant architectural works and translate them into filigree objects of art in exquisite material and colour combinations. Made of transparent silk organza, the objects are then perforated, chiselled and embellished by hand using a variety of techniques, resulting in a multitude of textures and surfaces.

INTER_ SPACE.

It is a new material development based on the interplay between traditional crafts and increasing digitalisation using contemporary lace as an example. While touching the multi-sensory materials, unrestricted access to tactile experiences is enabled and the ability to learn and remember is strengthened.





ORI ORISUN MERHAV

Ori Orisun Merhav is a Brussels-based designer working at the intersection of material research, biomaterial activism, and speculative craft. She transforms shellac—a material secreted by the Kerria Lacca insect—into a vehicle for ecological storytelling and material innovation. Bridging her field research in Thailand with European fabrication techniques, she merges traditional craft (like glassblowing) with emerging technologies (such as 3D printing) to explore the structural and expressive capacity of insect-derived polymers.

Basic Bio Brussels, Belgium, Female, Age 25–34

Design Mission Ori Merhav advocates for a future that is bio-inclusive and eco-centric, with a strong focus on material-driven research that blends experimentation, sustainability, and storytelling.

Design Proceess Her method starts with intuitive, hands-on experimentation, followed by an archival and analytical phase. Drawing from existing knowledge and collaborations with scientists, engineers, and craftspeople, she develops new material languages, which she then communicates through installations and collectable design pieces.

Material Culture Her material research is deeply site-specific: though based in Europe, she maintains close ties with a community in Thailand, where her exploration of lac polymer began. This translocal connection is a recurring narrative element in her work, which often references origin and exchange.

Emerging Tech Merhav operates on the threshold of craft and innovation, particularly through 3D printing with natural polymers like shellac. She sees technology as a means to expand material expressiveness while staying grounded in sustainability and ecological storytelling.

Materials Sustainability is central. Her main material, lac polymer, is harvested from natural insect secretion and remains biodegradable and non-toxic. She sources directly from her original field site, ensuring traceability and circular value.

PROJECTS

Made by Insects

It is an ongoing research into the natural polymer shellac, aiming to push the material beyond its conventional use. By unveiling new innovative techniques to use the material, and working in collaboration with craftsmen, scientists and engineers, the research is showcasing a new future for lac polymer and it is promoting a future where many biomaterials will shape our landscape. The research began on a field trip to Thailand, in order to study the insects that produce the natural polymer 'Kerria Lacca': the insects use the material to build their shelters on tree branches, so there is a chance to explore the possibility of forming structures with it.

PAULA CAMINA EIRAS

Paula Camina Eiras is a London-based Galician designer who champions regenerative design rooted in place, ecology, and heritage. With a strong foundation in basket weaving, her work seeks to revitalize endangered craft traditions by replacing resource-intensive materials with locally-sourced biomaterials. From seashells to algae, her projects propose bio-inclusive design strategies that actively heal the environment while sustaining communities. In Co-Obradoiro Galego and Arousa's Algae Weaving, Paula merges traditional weaving techniques with contemporary biomaterial development, offering a collaborative and ecologically attuned design practice that positions craft as a medium for environmental and cultural restoration.

Basic Bio London, United Kingdom, Female, Age 25–34

Design Mission Paula works at the intersection of regenerative design, biodesign, and cultural preservation, exploring how basketry and local traditions can restore both ecosystems and heritage.

Design Proceess Her process includes: defining strategic objectives, researching ecological and cultural contexts, developing biomaterials, and then creating designs that combine traditional basketry techniques with new material innovation.

Material Culture Her work is deeply embedded in Galician heritage, particularly the region's basket weaving practices and local forest ecosystems. She engages with local crafts, visual language, and cultural memory, bridging traditional split-wood basketry with contemporary bio-based materials.

Emerging Tech She balances innovation with craft: while digital tools like parametric modelling and material development are key to her biomaterial research, she remains grounded in collaboration with artisans and community-led production.

Materials Sustainability is a foundational pillar of her practice. She sources materials from regenerative and local ecosystems, including seashell and algae waste, and works to decrease the environmental impact of traditional harvesting.

PROJECTS

Co-Obradoiro Galego.

It aims to revive Galician heritage by connecting a forest, a fishing community, and a group of basket weavers in Spain. Taking a place-based approach, the project addresses ecological challenges by linking local deforestation, negative impacts on the economy, and traditional basket weaving. With Galicia's rich coastal resources and deteriorating forests, the project explores using a biodesign approach to develop a flexible and biodegradable biomaterial from seashell waste. This new material source reduces the need for wood harvesting, benefiting local basket makers. The weaving design collection not only offers a sustainable alternative but also shares the stories and traditions of Galician culture.

Arousa's Algae Weaving project.

The overgrowth of algae in the estuary of Galicia has detrimental effects on the local ecosystem and economy. Sea lettuce, a specific type of algae, leads to significant shellfish mortality. In the Galician forest, the cultivation of non-native pyrophytic species endangers native flora used for basketry craft. The algae proliferation is caused by excess nutrients from spills and deforestation. To combat this problem, a biodesign approach is proposed, utilising macroalgae to extract natural-based chemical derivatives for a new biomaterial that can be used by basket makers. The project aims to prevent further algae growth and minimise its impact on the ecosystem through innovative measures.

PEPIJN DE GREEF

Pepijn De Greef is a young Belgian designer whose work centres around emotionally resonant, form-driven experimentation. Though not grounded in traditional craft, he draws from industrial production methods and his direct relationship with local workshops to explore material reuse, particularly in rotational moulding and metal-working. His projects carry emotional depth while maintaining a clear commitment to sustainability. In KAVOVA, he transforms everyday objects and post-consumer materials into a light fixture that speaks to collective rituals, geopolitical empathy, and quiet reflection. Pepijn's practice shows how personal narrative, recognisable form, and responsible making can converge in impactful and accessible ways.

Basic Bio Ghent, Belgium, Male, Age 18–24

Design Mission Pepijn explores memory, familiarity, and conversation through design. His aim is to create sustainable furniture and objects that evoke recognition while giving new meaning to forms.

Design Proceess His process is intuitively driven, often sparked by a visual or emotional trigger linked to a memory. From sketching to hands-on prototyping, Pepijn's workflow is fluid, iterative, and deeply intertwined with production methods he carries out himself. Feedback is integrated throughout.

Material Culture While not focused on traditional crafts, he finds inspiration in local small-scale industrial workshops (metal, plastic, lacquer, woodworking), seeing them as important collaborators in his practice. His localism is more functional and practical than heritage-based.

Emerging Tech Pepijn is interested in rotational moulding, an underused industrial technique he considers a "forgotten big brother" of injection moulding. He's committed to experimenting with it and expanding its potential. Most of his technology use aligns with maker culture tools.

Materials Sustainability is a key priority in his work. He uses recycled plastics (either sourced from industrial waste streams or post-use products) and metals processed locally, opting for longevity through surface treatments and modular joints.

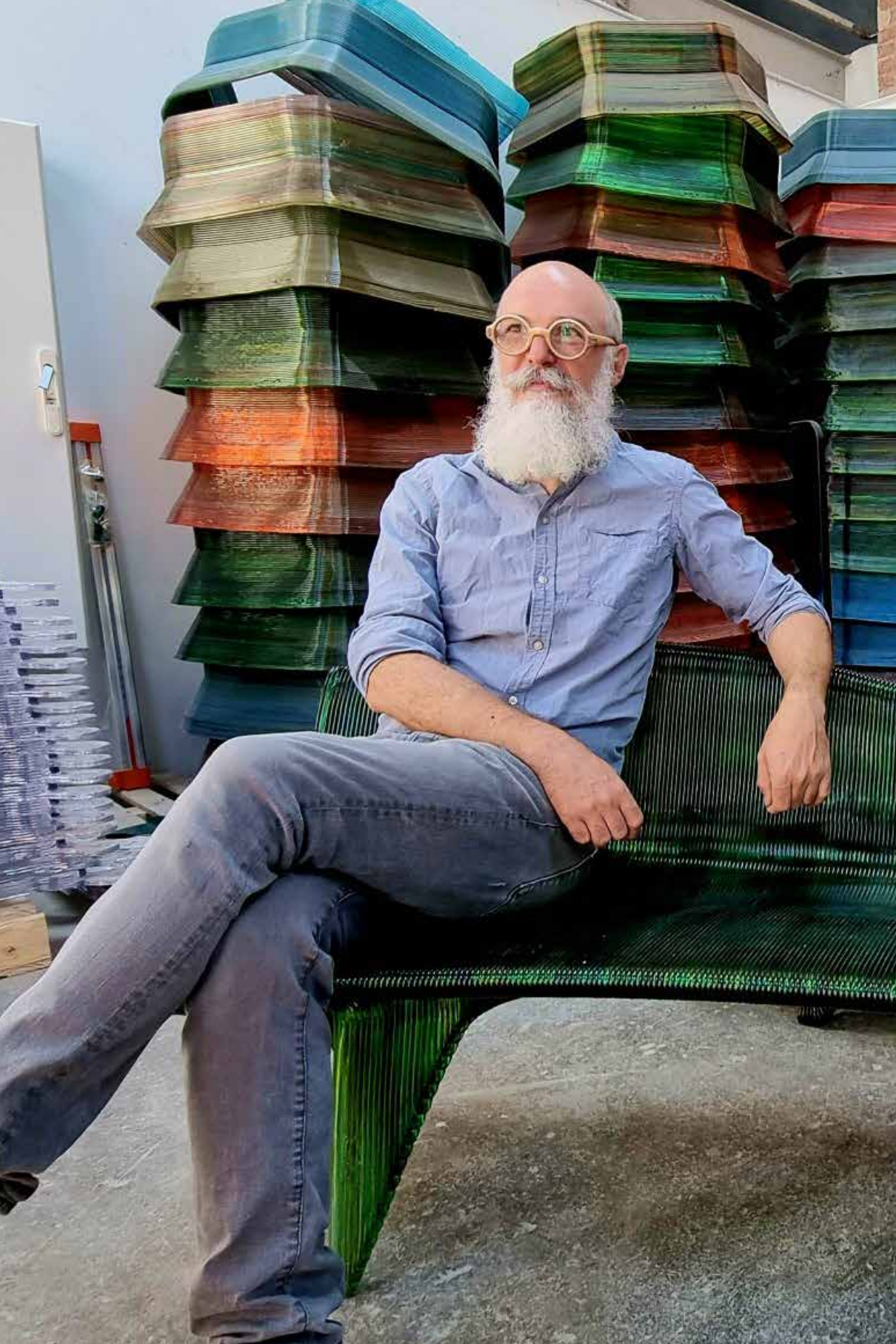
PROJECTS

KAVOVA KAVOVA is a lamp made from recycled plastic and aluminium coffee filters used as rotomoulding forms. Inspired by a personal experience in Ukraine, it represents moments of pause and shared humanity through coffee. The design merges emotional storytelling, sustainable production, and a rotomoulding experiment, blending memory with material practice.

POST-INDUSTRIAL CRAFT (PIC)

Post-Industrial Craft (PIC) is a radical design cooperative located in Saint-Étienne and Beirut, pioneering an approach they term Digital Mingei—a fusion of digital fabrication with the humility, slowness, and integrity of traditional crafts. The studio critiques mass industrial production and repositions the designer as a homo faber—a mindful maker embedded in local material and technological ecosystems. Their practice centers around robotic 3D printing, circular material sourcing, and reconfigurable design, with projects like The Labyrinth of Châteaugiron exemplifying their ability to reclaim historic space through digitally-fabricated public architecture. PIC's work offers not just objects or installations, but frameworks for sustainable, iterative, and poetic interventions in the built environment.

Basic Bio	Saint-Étienne, France / Beirut, Lebanon, Age 45–54
Design Mission	PIC reclaims the role of the designer-artisan through a philosophy of Digital Mingei, merging local digital production, recycled materials, and minimalist craft. The goal is to develop functional, sculptural, and mono-material objects as an alternative to industrial overproduction.
Design Proceess	Their process blends digital design and robotic prototyping with a focus on material truthfulness and emergent object aesthetics. All products are made on-demand, locally, and follow a typological, anti-consumerist model.
Material Culture	Deeply rooted in local material cycles, PIC uses traditional woodworking principles in dialogue with robotic fabrication, emphasizing regional supply chains and hand-digital mix
Emerging Tech	PIC extensively uses large-format robotic 3D printing, digital design software, and modular construction systems to fabricate unique, large-scale structures from 100% recycled polycarbonate.
Materials	Radically sustainable. Their entire approach critiques industrial scale production and proposes recyclable, circular, on-demand alternatives through advanced digital craft. Materials are locally sourced post-consumer waste.



PROJECTS

The Wood Slab Series

Designed and crafted in collaboration with Guillaume Credoz, Architect and founder of Post
Industrial Crafts, The Wood Slab is a series of unique pieces built with 100% recycled
plastics by large-scale robotic 3D printing.
Designer and Founder Guillaume Credoz took a fictional starting point as a constraint that
projects him into a possible design field that is not usually associated 3D printing or digital
manufacturing, but more traditional woodworking.
Taking as a starting point a conceptual found wood slab with its ready-made characteristics,
Guillaume Crédoz designed - within the Wabi-Sabi approach of wood grain, growth and
breaking patterns – a very unique sculptural forms that seemingly merge comfort, robotic
fabrication constraints and the crooked elegance of aged wood.
The collection includes several unique pieces: Ottoman Day Bed, Bench, Low Table, Floor
Lamp, Wall Frame and Secretary Table and Chair
Every piece of the series while clearly evoking aged tree trunks, has its own twists and
turns. These developments of voluptuous forms of mono-material sculptural designs
animate the monolithic block of highly durable recycled polycarbonate, magnified by the
richness of hand-composed colors.
The series expresses the design angle coined as “Digital Mingei” which permeates the entire
Post Industrial Crafts philosophy and craft practice.

QUINN VAN ETTEN

Quinn Van Etten is a Rotterdam-based designer whose work is deeply rooted in the natural environment. Her craft-oriented practice begins with immersive, intuitive exploration of local materials, which she then transforms into expressive, tactile textiles through knitting. Focused on stimulating material awareness and fostering an emotional connection with nature, Her process, while primarily analogue, champions sustainability by sourcing directly from nature and hints at the potential for integrating traditional techniques with future technological innovations.

Basic Bio Rotterdam, The Netherlands, Female, Age 25–34

Design Mission Quinn Van Etten is dedicated to stimulating material awareness by creating tactile, experiential artifacts that are intimately connected to the natural landscape. Her mission is to instill a sense of wonder and contemplation in everyday objects while upholding the value of craftsmanship. She seeks to create a world where beauty and nature intertwine—a world that invites people to dream and wander.

Design Proceess Quinn's design process is highly organic and intuitive. It starts with extensive, nature-based exploration—taking leisurely walks to discover potential materials in their natural habitats. Once a material catches her attention, she harvests it and conducts in-depth research and experimentation in her atelier. Decisions are made in situ by "listening" to the material's inherent qualities.

Material Culture Quinn's practice is strongly tied to her immediate environment. She gathers materials directly from nature, emphasising the use of natural, often foraged resources. Her current focus is on establishing a dialogue with nature by letting the material's own story drive the design.

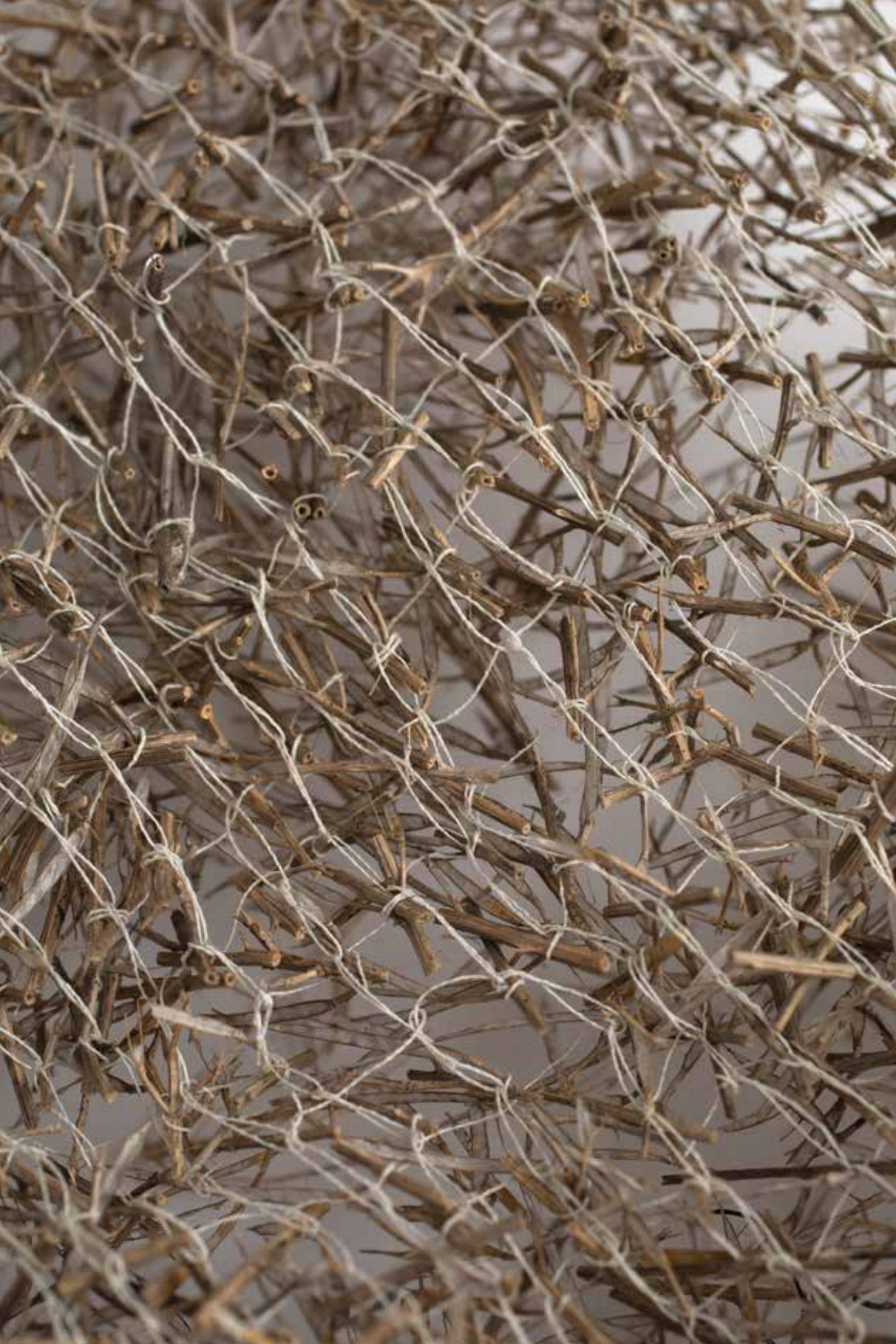
Emerging Tech At present, technology plays a minor role in her process, however, she remains open to future integration of digital tools if they can enhance her capacity to express the natural qualities of her materials.

Materials Sustainability is central to Quinn's ethos. She prioritises the use of materials sourced directly from her living envionment, favouring natural over synthetic resources.

PROJECTS

The Present Is A Gift

A series of knit surfaces made out of locally sourced plant materials. The textiles carry out the transient beauty of a continuously changing landscape, emphasizing cycles of growth and decay that are inherent in nature. Through closely listening to the streams of the natural environment, the collection of vegetal skins has come to life. Each piece represents the discovering point of its raw material, revealing the plant's identity and showing the weather circumstances of the period wherein the plant grew and was harvested. By placing the raw materials on a statue to admire, the project aims to stimulate a closer bond between human being and nature. The tactile expressions are knitted on a domestic knitting machine. While knitting, the plant materials are carefully inserted in the structure of loops. Since each plant is unique, the process of knitting is never the same.



SAMEO

Sameo is a young Paris-based studio formed by two designers committed to transforming salvage into sensibility. Grounded in the craft of tapestry and trained in multiple disciplines, they create furniture and interior artifacts that blend found materials, intuitive experimentation, and hybrid aesthetics. Their work doesn't preach but invites us to reconsider what beauty can emerge from the discarded.

Basic Bio Paris, France, Mixed (M+F), Age 18–24

Design Mission Sameo seeks to develop new kinds of objects and furniture by exploring the potential of reclaimed materials. Their mission is rooted in ecological awareness and sustainability, focusing on making beautiful, useful things from discarded or overlooked sources. Their approach is playful, resourceful, and rooted in circular thinking.

Design Proceess Their creative process is iterative and hands-on, often sparked by material finds. It involves a back-and-forth between sketching, collecting materials, and physical experimentation. Rather than linear, the process is reactive—responding to the form, texture, and story of available materials.

Material Culture They engage actively with their immediate surroundings by sourcing from material banks, street finds, and leftovers from past projects. While not explicitly tied to traditional craft, their use of local resources, including reclaimed tapestry techniques, shows a respectful but contemporary interpretation of material culture.

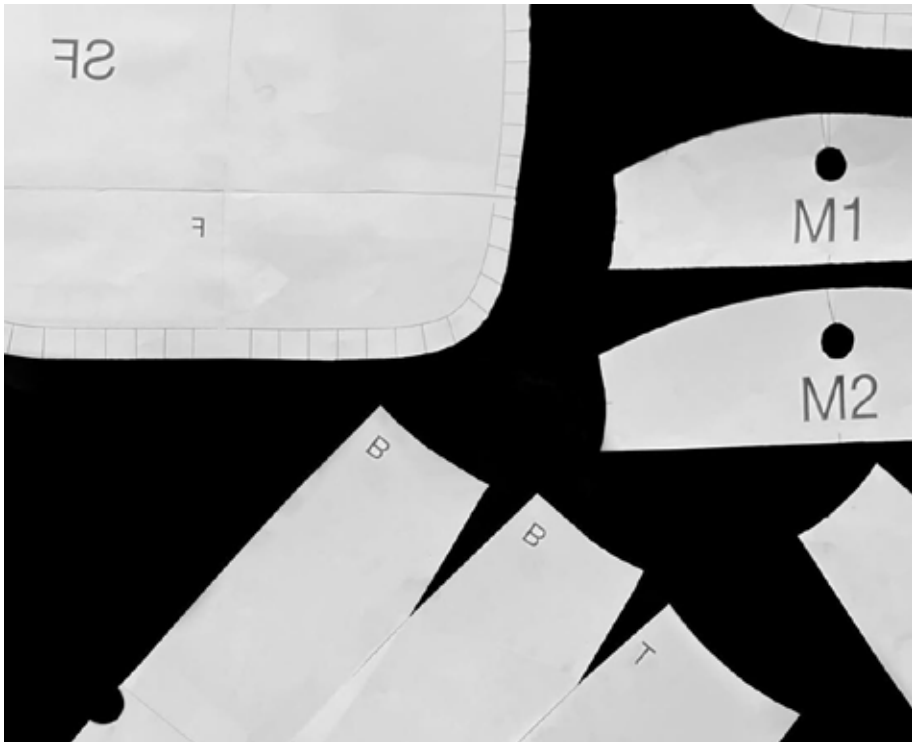
Emerging Tech Technology plays a functional, supportive role—used primarily for prototyping or ideation (Rhino, Adobe Suite). They've also experimented with 3D printing, though their emphasis remains on tactile, manual, and low-tech methods that foreground material over process.

Materials Sustainability is central to their identity. They are committed to circular practices, sourcing from waste streams and crafting with ecological intent. However, they acknowledge the limits of using only scraps, sometimes supplementing with purchased materials to complete their designs.

PROJECTS

Doucette Collection

This series began with a chair rescued from the street. Using leftover wool from previous projects, they reupholstered the chair with a new “skin” that responded organically to its form. The result was a one-of-a-kind piece with a companion rug made from the same pattern—a layered, textile-based tribute to reuse and reinvention.


M1
M2

SANDRA JUNELE

Sandra Junele is a Dundee-based interior and material designer focused on transforming textile waste into high-quality wall panels. Her process combines shredded yarn scraps and organic glue to create a material that can be moulded, dried, and even reused infinitely by simply dissolving it in water. Sandra's work challenges the definition of waste and emphasises a circular approach to making. With strong ties to local manufacturers and a commitment to zero-waste production, her practice exemplifies how sustainability and visual beauty can coexist without compromise.

Basic Bio Dundee, United Kingdom, Female, Age 25–34

Design Mission Sandra's work is grounded in the mission of Sustainable Design, aiming to elevate waste materials into desirable, beautiful products. She believes in the transformative potential of upcycling and challenges the perception of what constitutes waste. A key design principle is concealment through beauty: she wants people to be surprised when they learn her works were made from discarded materials.

Design Proceess Sandra's process is systematic, material-led, and iterative. It starts with waste collection, primarily from local textile manufacturers and fashion designers. She then proceeds to separate by color, shred the material into fine fibers, and cook plant-based glue for binding. The resulting mix is moulded and dried into desired forms. The final material can be dissolved in water and remade, allowing infinite reuse and promoting a zero-waste design philosophy.

Material Culture While not rooted in traditional crafts, Sandra's work does engage with local material flows. She has established connections with local manufacturers and designers, who either provide textile waste or request her to repurpose it.

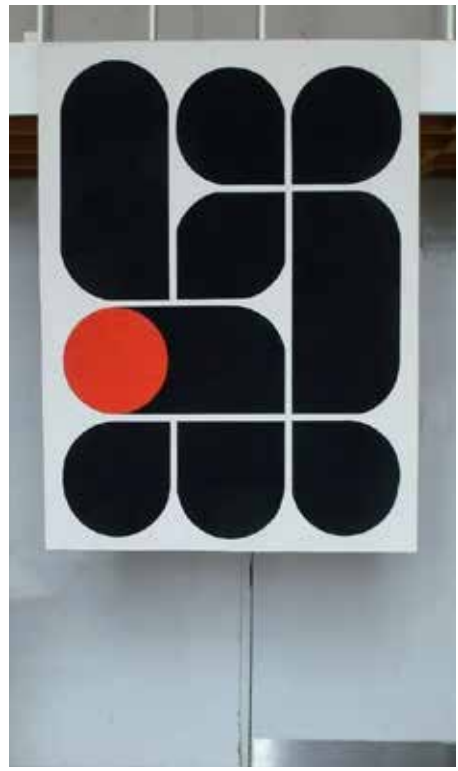
Emerging Tech Her practice uses just a textile shredding machine and exemplifies how low-tech, purpose-driven technologies can support sustainable innovation.

Materials Sustainability is core to Sandra's practice. She sources all materials from waste streams, primarily from textile workshops. She uses only plant-based, organic glue, ensuring that the material is biodegradable and infinitely reusable.

PROJECTS

Junele Textile

When should a material be classified as waste? As a future focused designer, I am dedicated to developing sustainable practices. It is crucial that we take responsibility for the life-cycle of the things we design and make. This starts with our materials. I have collected and analysed the waste produced in the knitted textile workshops within DJCAD and used this as the raw material for my designs. The collected yarn scraps required colour separation and shredding, a labour-intensive process, to make ready for experimentation using various textile techniques. The key process I developed involved mixing the shredded yarn with glue which could then be formed and moulded into various shapes. As circularity is a fundamental part of this project, I used an organic homemade glue. This allows the final material to be broken back down, by placing it in water, and reused potentially endless times. The material is lightweight, dries firm and has many possible applications. Driven by a strong interest in interior design I have used the material to create bold wall panels exploring colour and form and celebrating the surface texture created by the yarn fibres.



SELENIA MARINELLI

Selenia Marinelli is a Rome-based material designer and postdoctoral researcher whose work bridges biofabrication, environmental ethics, and speculative design. Informed by posthumanism and material feminism, Marinelli questions anthropocentric design and reimagines material culture through hands-on experimentation. By reclaiming food waste like eggshells and combining them with biopolymers, she produces materials that are not only sustainable but rich in narrative and symbolic resonance. Her work is both educational and activist—run through workshops, online content, and conceptual installations.

Basic Bio Rome, Italy, Female, Age 25–34

Design Mission Selenia's mission is to redefine architecture and design as ecosystems of co-existence between humans and non-humans. Her values are grounded in posthumanism, material feminism, and environmental justice. She promotes material activism through research and biofabrication.

Design Proceess Her process is bottom-up and experimental. It begins with hands-on trials of open-source biofabrication recipes. Through iterative refinement—adjusting infill types, additives, and proportions—she tailors materials for desired aesthetic or functional outcomes.

Material Culture Although her material sources aren't traditional, Selenia's environmental consciousness is deeply shaped by her hometown of Taranto, Apulia—a region with rich agricultural and craft heritage shadowed by industrial pollution.

Emerging Tech Selenia combines low-tech biofabrication (e.g., stove-top cooking and dehydration techniques) with digital tools like 3D modeling, 3D printing, and laser cutting. These technologies are used to create molds or engraved textures, adding precision and expression to otherwise organic processes.

Materials Sustainability is vital. Her materials are primarily organic waste from her own consumption (e.g., eggshells, walnut shells), making her practice both accessible and ecologically responsive. She is committed to raising awareness about the environmental impact of conventional materials and advocates for a shift in design mindsets through research.

PROJECTS

Not ordinary concrete

Eggshells are composed for more of 90% by calcium carbonate, which is the main chemical component of cement-based materials. Therefore, they can be used as substitutes in building materials or design applications. This process would reduce extractions, fostering the reconfiguration of the relationship between design and nature in an eco-syntonic way. The addition of activated charcoal allows to obtain a material that can efficiently filter impurities and toxins and therefore potentially reduce air pollution;

Shells-based bio-tiles

What if we adopted a new point of view in the production of materials, an alternative way based on our habits as food consumers? The production of bio-tiles from food waste (e.g. egg shells, which are rich in calcium carbonate, or walnut shells, which are reach in lignin) aims to open a debate on the possibilities for this future scenario to be put in place;

Uterine Architectural Spaces

Bacterial cellulose samples grown from a SCOBY (symbiotic culture of bacteria and yeasts) are used to visualise visceral architectural spaces which seem to pulsate, enabling the human to go through an intra-uterine experience where the space is strictly linked to the cycles of life and death of the living matter.

70
60
50
40
30
20
10

SENZA QUADRO

Senzaquadro is a Milan-based interior designer whose work merges sustainability, emotional storytelling, and traditional artistic processes. With a craft-oriented approach rooted in papier-mâché and painting, she creates expressive, handmade objects from waste materials—framing not only physical messages but emotional ones as well. Her designs celebrate imperfection and individuality, pushing against standardized production and design norms. Deeply committed to sustainability, she sources her materials from her own waste and from businesses eager to upcycle.

Basic Bio Milan, Italy, Female, Age 25–34

Design Mission Senzaquadro is grounded in values of imperfection, identity, and emotional storytelling. Her mission is to create one-of-a-kind pieces using recycled materials through intuitive, hands-on processes that defy standard design canons. The resulting works are meant to express personal truths while minimising environmental impact.

Design Proceess Her process begins with a conceptual message or emotional theme, which guides the construction of the object. She works primarily with waste materials (packaging, magazines, newspapers), transforming them using papier-mâché. After shaping and solidifying the object, she paints, waxes, and waterproofs the surface with water-based finishes.

Material Culture While not overtly traditional, her practice has indirect roots in Italian craft, particularly in Venetian papier-mâché traditions. Her process emphasizes artisanal care, but she strives for a universal language that transcends local specifics. She acknowledges that deeper local influences may exist.

Emerging Tech Technology supports branding and communication. She uses digital tools for photography, wallpaper production, and graphic design. However, she intentionally separates this digital layer from her hands-on artistic process.

Materials Sustainability is central to Senzaquadro. She uses only waste materials, including her own daily refuse and discarded resources from companies that support artistic recycling. Her philosophy turns trash into treasure, raising awareness through beautiful artifacts.

PROJECTS

Senza Quadro x Rajapack Italia

A large-scale installation made entirely from post-industrial packaging waste. Rajapack supplied 5 kilograms of packaging materials no longer suitable for sale, which were transformed into a site-specific artwork representative of *Senzaquadro*'s waste-to-value approach. The installation included a large sculptural frame and supporting display elements—such as pedestals—crafted entirely from the same recycled materials. The external surface of the main piece was covered with over 1,000 paper cut-outs of eyes sourced from old magazines, forming a visual motif symbolising global interconnectedness. The collaboration underscored the potential of discarded commercial materials to be reimagined as meaningful and communicative design objects.

in the middle of this waste.

in the middle of this waste

SIMONE MASSINELLI

Simone Massinelli is a Perugia-based designer with a background in interior design and a mission to deliver sustainable luxury through technological precision. Though not deeply rooted in traditional craft, he often works with local artisans to enrich his technically driven approach. His work is guided by digital fabrication—from concept to production—using tools like CNC and MJF 3D printing to eliminate excess and embrace repairability.

Basic Bio Perugia, Italy, Male, Age 25–34

Design Mission To create sustainable, high-end products that embody refined aesthetics and technical precision while reducing material use. Emphasise circularity, disassembly, and the elimination of unnecessary resources or wasteful processes.

Design Proceess The process begins with the development of a strong conceptual framework based on sustainability and usability. From there, he undertakes extensive research into materials and searches for digital manufacturing methods compatible with his vision. He creates 3D models of all components to test form, fit, and assembly logic, ensuring that the final product can be manufactured without glue, screws, or adhesives. The prototyping phase incorporates MJF 3D printing and CNC machining, followed by cost analysis to evaluate feasibility.

Material Culture While his aesthetic is more technologically driven, Simone maintains a collaborative relationship with local artisans and workshops in the Perugia area. He incorporates craft knowledge selectively to balance digital precision with tactility.

Emerging Tech Digital technologies are foundational to Simone's design approach. He uses advanced tools like CAD software, MJF (Multi Jet Fusion) 3D printing, and CNC machining to push the limits of sustainable design. These tools allow him to produce complex, modular forms with millimetric accuracy, reducing material waste and improving assembly efficiency.

Materials Sustainability is a non-negotiable aspect of Simone's practice. He prioritises minimal material consumption, responsible sourcing, and modular construction. He avoids all permanent joining techniques, favoring interlocking parts that can be disassembled, reused, or recycled.

PROJECTS

The TWINKLE LAMP

The TWINKLE LAMP is a modular, modern and linear lamp. It emits a front light with indirect light source. It's composed of a base and a colored front panel with4 lenses set. What makes this lamp interesting is that it's modular: the colored front panels and the lenses can be interchanged (they can be frosted,transparent or fumè) to find the right style suitable for the environment of use. The main target of this project is that it was important to design a sustainable product without the usage of glue, screw, silicon or resin: all parts are matching each others and these, make the lamp repairable or recyclable by simply desassembling it. The body is made of Nylon PA-12 printed with MJF 3D technique and lenses are in PMMA. The light source is a dimmable LED strip (retrocessed and indirect) controlled by a touch switch in the USB alimentation cable. It could be powered also by a simple power bank and this make the lamp portable.

STUDIO POTATO

Studio Potato is a conceptual design practice based in Istanbul and led by a young male designer in the 18–24 age range. Deeply invested in traditional Anatolian rug weaving, the studio explores ways to renew and reframe cultural heritage through sustainable, slow design methods. Their projects blend found materials, natural dyes, and tactile craftsmanship to create work that is emotionally resonant and ecologically conscious.

Basic Bio Istanbul, Türkiye, Female-led studio, Age group: 18–24.

Design Mission Studio Potato is driven by the mission to create work that is both meaningful and evocative — sparking dialogue, spreading ideas, and inspiring more ethical and conscious design choices. Their values revolve around adaptability, emotional storytelling, ecological responsibility, and craft revival.

Design Proceess Their process combines intuitive exploration with structured reflection. It begins with immersive research, often inspired by a particular local tradition, material, or environmental concern. Then follows ideation through sketching, writing, and sampling, with an emphasis on narrative and emotional resonance.

Material Culture Studio Potato has a strong and sustained relationship with local crafts and materials, especially traditional Anatolian rug and kilim weaving. They collaborate with female artisans across Türkiye to co-create pieces that are both functionally and culturally rich. The use of natural dyes derived from vegetables and spices (like onion skins, turmeric, and sumac) reflects a commitment to reactivating knowledge systems embedded in the land.

Emerging Tech Technology is approached as an enabler rather than a driver. The designer stresses the importance of maintaining emotional and tactile depth, often lost in hyper-digital workflows.

Materials Sustainability is one of the core pillars of the studio. Their production model champions circular design — reusing discarded materials, leftovers from past projects, and even street-sourced components. The studio advocates for slow design, where the pace of making honors the rhythm of both nature and craftsmanship.

PROJECTS

Recycled Rugs

This series reinterprets Anatolian rug motifs using discarded materials and natural dyes. Starting with salvaged base textiles, Studio Potato reworks them into unique kilims that tell stories of place, memory, and transformation. One particular piece originated from a rug found in a village market, re-dyed with plant-based pigments and re-woven by a collective of rural women artisans. These rugs not only function as decor but also as narrative artefacts, carrying embedded histories and cultural symbolism.

TIP STUDIO

TIP STUDIO is a young Florence-based duo whose work blends craftsmanship, material storytelling, and cultural heritage into poetic design artifacts. With roots in metalwork and a background rich in hands-on experimentation, they elevate overlooked materials—like metal slag—into sculptural furniture and interior pieces. Their practice reflects a quiet resistance to industrial norms, honoring slowness, locality, and creative autonomy.

Basic Bio Florence, Italy, Male + Female, Age 18–24

Design Mission To reinterpret traditional materials and processes through a contemporary and poetic lens. Their principles revolve around material research, territorial and cultural heritage, and sustainability. They strive for conceptual independence and slow design approaches, emphasising thoughtful resource use and critical engagement with material culture.

Design Proceess Their process is deeply rooted in both physical and contextual research. It begins with historical and territorial investigation, followed by direct material experimentation. Sketching and prototyping emerge through close contact with the material and a respect for its specific traits. The entire approach is hands-on, relying on craftsmanship and material engagement.

Material Culture The duo sees local crafts and materials as foundational. Their practice is influenced by a deep respect for traditional techniques and workshops. They grew up around artisanal contexts and aim to preserve immaterial knowledge by collaborating with craftspeople.

Emerging Tech They maintain an open attitude toward technological integration, especially when it elevates the material or simplifies production. CNC machining is occasionally used, not to replace hand-making but to complement and extend their possibilities. Their methodology is a hybrid one where tradition and innovation co-exist in service of material expressiveness.

Materials Sustainability is integral to their design approach. They prioritise the reuse of materials and local sourcing to minimise environmental impact. Their design philosophy promotes slowness and awareness resulting in unique, long-lasting artefacts made through minimal waste strategies.

PROJECTS

Secondo Fuoco.

Secondo Fuoco is a material research and design project developed in collaboration with Fonderia Artistica Versiliese, an art foundry specialising in sculpture. The project focuses on the reuse of scoria—metal slag produced during the smelting process—by investigating its expressive and formal potential within contemporary object design.

Collected waste materials are catalogued, trimmed, milled, and assembled using wax before undergoing a second casting phase. This “further fire” transforms the assemblages into functional sculptural objects made of bronze and slag. The process combines the irregular, spontaneous textures of scoria with the structural and aesthetic properties of bronze, resulting in a series of limited-edition pieces that include tables, lamps, vases, and mirrors. Each object highlights the contrast between raw imperfection and refined form, creating works that are both tactile and conceptually layered.

The project integrates additional materials such as steel, crystal, and marble, further emphasising material hybridisation. With its brutalist geometries and emphasis on physical interaction, Secondo Fuoco reflects a year-long investigation into the possibilities of transforming metallurgical waste into enduring, poetic design artefacts.

VIKTOR TABIŠ

Viktor Tabiš is a Slovak designer working at the intersection of digital fabrication and ceramics. His practice is craft-oriented but conceptually driven, often questioning traditional design narratives. Though not influenced by local traditions, his work is deeply invested in pushing the boundaries of material and process through hybrid digital-physical systems. In The Original, Tabiš critiques mass production and originality by inviting unpredictability and user participation into a digitally controlled workflow. His practice stands as a philosophical inquiry into authorship, value, and the evolving relationship between maker, machine, and material.

Basic Bio Krčava, Slovakia, Male, Age 25–34

Design Mission Viktor Tabiš explores material culture and craftsmanship as situated within social contexts. His work emphasises the potential of process and form, often questioning conventions of authorship, production, and value. He seeks to challenge the industrial mindset by embracing unpredictability and human intervention.

Design Proceess Viktor's process is iterative and rooted in experimentation. He begins with a concept or question, moves through prototyping and creation using ceramic and digital tools, and concludes with open-ended discussions that reinterpret the work's meaning. Craft and technology are always interwoven.

Material Culture He does not consider local traditions or heritage as influential in his work. His approach is more conceptual and speculative, positioning material and process as primary agents, rather than cultural narratives or traditional forms.

Emerging Tech Technology plays a crucial role. Viktor often works with 3D printing, hydraulic presses, and custom digital workflows to create semi-automated, randomised outcomes that challenge the uniformity of industrial production. His process combines automated generation with intentional disruption.

Materials Sustainability is relatively important to Viktor. Rather than focusing on ecological tradition or resource provenance, he emphasises the efficient reuse and improvisation of available materials, embedding sustainability as a design constraint rather than a fixed goal.

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PROJECTS

The Original

The Original – Author's Technology: This project critiques the notion of originality in an era of mass customisation. Viktor sets up a semi-industrial system in which a 3D printer continuously produces ceramic preforms. These are shaped into moulds using plaster, which are then fractured by hydraulic presses in random patterns. The resulting forms are completed by customers, who help arrange the fragmented elements. The outcome is a porcelain object that is both the result of automation and radical individuation—challenging ideas of authorship, process, and standardisation.

VINCENT DECAT

Vincent Decat is an Eindhoven-based interior designer whose craft-oriented approach blends intuitive form-making with material storytelling. He strives to create objects that feel like enduring companions—beautiful, tactile, and emotionally valuable. His process begins with a concept or emotional narrative and evolves through sketching and prototyping, often using reclaimed materials. He is committed to sustainable practice and opposes over-automation, favoring physical interaction in both making and use. His Tholos shelf series exemplifies his ethos: timeless design, thoughtful reuse, and objects meant to be treasured, not discarded.

Basic Bio Eindhoven, The Netherlands, Male, Age 25–34

Design Mission Vincent Decat designs with the belief that objects should be lifelong companions—durable, emotionally resonant, and materially conscious. He emphasizes storytelling, intuitive form development, and emotional value over transient trends, aiming to craft designs that people form personal bonds with.

Design Proceess Vincent's process is rooted in intuition and emotional resonance. It begins with a conceptual narrative—often tied to memory, monuments, or social issues—which guides visual and material exploration. Prototyping is spontaneous. He values hands-on methods over linear workflows.

Material Culture Although local traditions are not central to his method, Vincent frequently collaborates with local industries, reclaiming discarded materials like metal offcuts or recycled wood. His interaction with material culture is based more on accessibility, reuse, and reinterpretation than heritage techniques.

Emerging Tech While Vincent appreciates parametric tools and digital modeling, he prefers tactile design processes. He's cautious about over-automation, favoring hands-on interaction over touch-sensitive tech. Technology is approached selectively, not as a driver but as a supporting layer when needed.

Materials Sustainability is vital. His projects often use repurposed materials such as wood scraps and industrial leftovers. He actively sources discarded components from local producers, emphasizing resourcefulness, waste reduction, and circular production practices in his functional design pieces.

PROJECTS

Tholos The Tholos shelf is representative of my design approach. First building a story about the ruin of a greek temple and emphasising on the durability of it. I interpreted this monument in a modern way using simplified shapes and a bright modern colour. My making process was essentially making plenty of intuitive flat shapes and assembling them together to build the shelf. I then used the offcuts of the wood I had to create the little brother of that shelf. The object was created using the offcuts of the previous shelf inspired by The Tholos, an ancient Greek temple built during the 4th century. Here, the offcuts from the previous shelf were used to create another functional piece, which is a low sculptural shelf made of wood and brass tubes. The two shelfves are born from a series of shapes that differ according to their angles, curves and proportions.

VIVIAN ERDTSIECK

Vivian Erdtsieck is a Utrecht-based material designer on a mission to revolutionise the relationship between design and sustainability. Her work is driven by the development of closed-loop materials like Vifour, a leather-like textile made from unrecyclable fabric waste that can be recycled indefinitely. Eschewing traditional craftsmanship and local customs, Vivian places her focus on systemic innovation, developing her own technologies to support sustainable goals. She envisions a future where materials like Vifour are as commonplace as cotton, helping make circular design a standard practice rather than an exception.

Basic Bio Utrecht, The Netherlands, Female, Age 25–34

Design Mission Vivian Erdtsieck's design mission is rooted in material sustainability and accessibility. Her work champions the development and dissemination of recyclable materials, striving to shift design culture toward closed-loop systems. She believes sustainable materials should be as accessible as traditional ones like cotton.

Design Proceess Vivian follows a material-first process: she begins by identifying or developing a material and allows the form and function of the design to emerge from its properties. This experimental and responsive approach is paired with in-house technological development to overcome challenges in material circularity.

Material Culture Vivian's work is not influenced by local traditions or traditional craftsmanship. Her focus lies instead on pushing material innovation and systemic sustainability in a forward-thinking, globally relevant direction.

Emerging Tech Technology is vital to her design and fabrication process. Vivian often develops proprietary tools and methods to manufacture her own sustainable materials. Her studio is currently exploring the integration of AI into material experimentation, underlining their commitment to innovation.

Materials Sustainability is at the core of Vivian's practice. She and her team not only use but develop materials from post-consumer textile waste, ensuring they are fully biodegradable and endlessly recyclable. The goal is to create high-quality, circular alternatives to conventional materials.

PROJECTS

Vifour

Vifour is a circular material innovation developed to address the challenges of textile waste and overconsumption in design. Created with the intention of enabling the production of new exhibition pieces without extracting additional resources, the material supports a cradle-to-cradle approach to sustainable fabrication.

Composed of approximately 93% unrecyclable fabric scraps and a natural, vegan, and biodegradable binder, Vifour offers an alternative to conventional materials. It is designed to be endlessly recyclable without compromising quality, promoting a closed-loop system. The material mimics the tactile qualities of leather and is available in various thicknesses, textures, and colours.

Produced in Europe, Vifour is available in both flat sheets and shaped forms, supporting a wide range of applications in sustainable product and material design.

WERONIKA TUROWSKA

Weronika Turowska is a London-based material designer dedicated to regenerative, sustainable, and bio-ethical design practices. Her hybrid process merges craft and research, developing low-impact, circular materials using everyday waste and microbial cultures. In Symbi, she addresses the emotional and environmental dimensions of design by creating a soft, sensory object grown from bacterial cellulose and aquafaba. The project embodies her commitment to material honesty, care-centred design, and the belief that healing and sustainability can begin at the scale of the domestic kitchen.

Basic Bio London, United Kingdom, Female, Age 25–34

Design Mission Regenerative design, material ecology, and sustainability. She is driven by the desire to challenge dominant systems of material extraction and consumption. Her principles include an "honest use of materials"—valuing transparency, accessibility, and ecological responsibility.

Design Proceess Her process follows a research-based approach, particularly guided by the Double Diamond Design Process. Weronika begins with contextual and ethical sourcing research, followed by material experimentation (often bio-based), prototyping, and dissemination. Traditional craft techniques are central throughout.

Material Culture While not focused on traditional aesthetics, Weronika actively engages with local material systems—especially through the sourcing of waste from local businesses and fermentation communities. Her projects foster a symbiotic relationship with regional ecosystems and micro-economies.

Emerging Tech Emerging technologies are not central to her practice but are occasionally integrated. Weronika experiments with 3D printing and laser cutting, though she prioritizes low-tech, regenerative processes, such as fermentation, natural drying, and home-based biofabrication techniques.

Materials Sustainability is crucial to Weronika's work. She designs fully circular and biodegradable materials using kombucha SCOBY, aquafaba, and algae—often sourced from local waste streams. Her materials are vegan, accessible, and developed to reduce overreliance on industrial inputs and toxic manufacturing.

PROJECTS

Symbi

The project Symbi is a calming tactile ball created based on research about chronic pain and the question if we can feel safe and less anxious while constantly feeling and fearing pain was asked. The material to create the design was developed by me using fermentation processes and was grown by a symbiotic culture of bacteria and yeast (SCOBY). The other material was developed from chickpea water - aquafaba and algae. The idea of regenerative futures is something I am extremely interested in and that is why I have tried to implement those principles into my design - I have grown the bacterial cellulose, but there is also a potential to use waste produced by kombucha breweries. The project shows how we can collaborate with microbes, how we are a part of the natural system and that we need to face our systematic challenges for our social, ethical and environmental health. The leather is one step towards creating a regenerative future - through easily accessible material we can learn how to navigate the change and that as a society, we can look differently about perceiving new materials. The new material can be easily replicable and accessible - I have developed it in my kitchen and the process is straightforward and easy.

WOVEN MEMORIES GINA NADAL

Gina Nadal is a PhD-trained textile designer based in Manchester, working under the name Woven Memories. Her hybrid practice weaves together traditional craft, emotional design, and digital coding to produce sustainable, bespoke textiles. Her signature project lets customers embed personal messages into handwoven products, using a custom interface that translates text into pattern via binary code. Each piece is made to order, ensuring no waste or overproduction.

Basic Bio Manchester, United Kingdom, Female, Age 25–34

Design Mission Gina Nadal, through Woven Memories, seeks to create textiles that hold emotional resonance and minimal environmental impact. She emphasizes handweaving, sustainable production, and customer co-creation, aiming to counter mass consumerism with care-based, conscious making. Her values are grounded in meaningful design, ecological responsibility, and emotional durability.

Design Proceess Gina follows a three-phase conceptual approach: “WHAT” (intent and societal relevance), “HOW” (strategies and execution paths), and “WHY” (personal and collective purpose). Her process is both reflective and participatory, involving customers in co-designing their textiles, often embedding personal messages through binary-coded patterns. This creates bespoke pieces imbued with symbolic and emotional value.

Material Culture Gina feels connected to global weaving cultures rather than a singular local tradition. She appreciates weaving as a universal language, practiced across time and geography. While she does not directly draw from British or Catalan motifs, she embraces the shared heritage of the craft.

Emerging Tech Gina fuses traditional handweaving with digital innovation. She uses digital coding to translate customer messages into textile patterns and works with a dobby loom (partially computerised) to automate parts of the weaving process. She also incorporates generative software for pattern development.

Materials Sustainability is integral to Gina’s ethos. She maintains a made-to-order system, reducing overproduction and waste. She sources materials through local suppliers, often using mill leftovers or surplus yarns.

PROJECTS

Woven Memories

Woven memories studio specialises in personalised handwoven homeware and fashion accessories. to personalise these items, the customer plays an active role in the process, becoming a co-designer of the final product. as mentioned earlier, customers can use woven memories' online tool and are encouraged to type a message. this message can be personal, contain the lyrics of their favourite song, or even a poem. while typing, the pattern is generated in real-time by translating the letters into patterns using binary code. once the customer is satisfied with the text, they can further personalise the design by selecting colours, adjusting the pattern repetition, or applying mirroring.

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craft