

DESIGNING NATURE AND  
HUMANITY-CENTERED FUTURES

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# *Craft*<sup>3.0</sup>; Positioning Craft and Design Practice(s) within 'Reduction' & Nature-Based Design

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Extractive industries and excessive production are furthering ecological collapse. In the age of the planetary climate crisis, impactful new approaches to ecological practices are imperative. Designers and creatives are not only accountable for innovative solutions, but their work is also intertwined with environmental collapse. By evading ecological implications, designers are complicit in (potential) created problems, requiring a deeper comprehension of their decisions, actions, and their 'craft'. Our next paradigm (around design) must be nature-based 'design for planet'. As the world considers this impact, we examine the designer's role (as a practice of their craft) considering the earth and non-human species. It is within this expanded notion that we see 'nature-based design' and Ecological Citizenship as a timely planetary-scale, multi-species contemporary craft.

Authors characterise *Craft*<sup>3.0</sup> as reducing ecological impacts, positioning it as a discourse of: reduction, considerate to its surroundings, contexts, beyond human species, supporting skills to contextualise within environments for positive benefit. *Craft*<sup>3.0</sup> seeks to differentiate tactics to prioritise ecosystem(s), intent on mitigating against negative consequences. The *Craft*<sup>3.0</sup> position is mapped through; interviews and insights from contemporary literature, creating a contemporary approach to craft and tacit skills. *Craft*<sup>3.0</sup> establishes trans-disciplinary skills nurturing knowledge of materials, their cultivation, application and growth/regeneration. In turn this impacts: usability, ecological issue(s) and 'craft practices', working contextually within environments for ecological remediation.

**KEYWORDS** | Sustainability, Climate, Nature Based, Steward.

## 1. Research Objective

*Craft*<sup>3.0</sup> is a practice intent on achieving ongoing reductions in [environmental] impact(s), and takes account of contextual ecological consideration(s). It seeks to unite trans-disciplinary skills nurturing knowledge of materials, their cultivation, application, growth, and ecological issue(s).

## 2. Introduction

Human civilization is presently overshooting critical planetary boundaries, facing a multidimensional crisis of ecological breakdown, dangerous climate change, ocean acidification, deforestation, and biodiversity collapse [1]. We have become detached from the environment, materials we consume and the ‘craft’ we practise due to; urbanisation, the neoliberal economy, our working roles, and distance from materiality, repair, or waste we produce. Our e-waste, fast fashion, and waste exportation through colonialist retro-extractivist approaches (amongst others) contribute to this breakdown [2]. Safeguarding the planet provides biodiversity, sustaining all life [3]. Despite an increased awareness of the need to safeguard the environment, our disconnection from nature, and seasonal material dependencies, are becoming corrosive to our contemporary lives. Authors: position *Craft*<sup>3.0</sup>, the natural world’s value within it, summarising peer interview analysis, results, and transferable principles. A position/discourse paper framing: skill sets for ecological consideration and working practices within environment(s).

### - 2.1 Designers’ Role

As designers, our outputs are intrinsically interlinked with the materials of the world. We need a deep contextual understanding of designing within different human/non-human settings; being critically informed, beyond our own perspective, and in consideration of caring for places and notions of ‘othering’. Material complexities encompass: application, overuse, and subsequently preservation. Traditionally, our comprehension of the natural world has leveraged: material selection, procurement, and ever-deepening extractive agendas. Creative contemporaries are positively prioritising responses to the burgeoning climate emergency. Practitioners are learning carbon-footprint reduction methods, building progressive platforms to provide ethical sourcing of materials, e.g., their extraction, provenance, by whom, and its conditions.

Authors advocate for employing ‘designed-in’ means to facilitate environmental remediation and see this transition as a skill, a tacit knowledge... as a ‘craft’. We are in times of transition to more ecologically centred approaches. Transition Design believes that “while many have called for design-led societal change, few have articulated how to undertake and catalyse such change, nor have they identified the areas of knowledge and investigation required to do so” [4]. Transition Design should be based upon a deep understanding of the social history of technologies. In this context, we position a design perspective of ‘reduction’ and coin *Craft*<sup>3.0</sup>.

## - 2.2 Background

Morris defined craft as “skill or ability in something... proficiency; expertness... indicates work, art, or practice of, for example, woodcraft, stagecraft” [5]. The *Crafts Council* (UK craft charity), “believe craft skills and knowledge enrich and uplift us as individuals” [6]. There is no mention of ‘pragmatism or just problem solving’ but the elevation of craft to “magic in handling materials with thought and care, an ideal all of us can understand, appreciate, and pursue” [7]. Historically, craftsmanship is skilled work, “a desire to do a job well for its own sake” [8]. In contemporary terms, craft has been positioned as a process which “explore[s] and challenge[s] technology, to question and develop cultural and social practices, and to interrogate philosophical and human values” [9]. Crafts practices are pervasive in; unexpected places [10], counteracting obsolescence [11] and providing “social, cultural, political and ecological resistance” [12].

We identify three evolutions, *Craft*<sup>1.0</sup>, *Craft*<sup>2.0</sup>, and *Craft*<sup>3.0</sup>. We characterise a practice based on skills, cultural heritage, and use of local materials as *Craft*<sup>1.0</sup>. An evolution of this approach, from the 1980s, within the creative industries, pushing boundaries of contemporary technologies using global supplies include the works of: *Tom Dixon*, *Iris Van Herpen*, and others. In this evolution, craft was placed in gallery contexts, or in one-off articulations, focusing on high conceptual and technical scope achieving specific aesthetics. This interpretation of craft embraced the capital project and its intrinsic valuation-speculation dichotomy characterised as *Craft*<sup>2.0</sup>.

We see *Craft*<sup>3.0</sup> as a skill set for the climate emergency reliant on circularity, afterlife(s), and impact reduction. Building-off prior connections, crafts practice and trades include (not exclusively): thatchers and/or bricklayers. These work in unison with surrounding environment(s) and non-human species [13]. Thatching “uses straw or grasses as a building material” in roofing [14]. The ‘craft’ requires wetland conservation, reed agriculture, harvesting, and more. Because of this, straw/reed became despised as roofing for poor rural areas [15]. Thatching processes require high ‘craft’, from material cultivation (controlling waterways), cutting, transportation, placement, custom toolmaking and more.

In bricklaying terms, a crinkle-crankle wall “undulates in a series of serpentine curves” and is a perfect *Craft*<sup>3.0</sup> example [16]. It uses fewer bricks, does not require extensive foundations, but requires high craft skills. *Craft*<sup>3.0</sup> shares many social ambitions of the *Arts & Crafts Movement*. It echoes Ruskin’s ‘truth’ – utilising honest displays of materials, creating outputs that respect culture(s) they have been developed from. *Craft*<sup>3.0</sup> operates on behalf of the planet. Our environmental safeguarding requires attributes of: skills, knowledge, frameworks, experience, economies, but also, policies in place. Recent *Right to Repair legislation* works for “consumers’ legal rights to repair and modify products, pushing for the free availability of spare parts and manuals” [17]. Our material goods are shifting from ownership to custody models, the next step is natural-world impact mitigation.

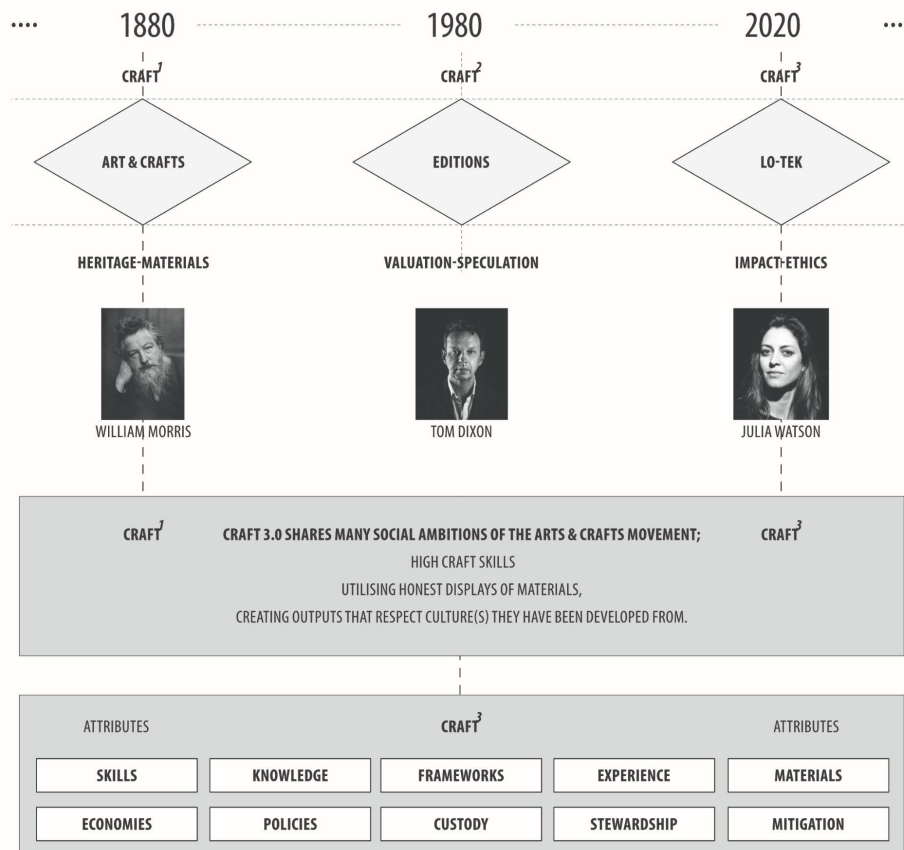


Figure 1. From heritage to impact; framing the evolution of craft's main paradigms.

### 3. Methodology

Authors curated a public roundtable entitled: *'The Cost of Change: new trajectories of production and consumption'*. With an emphasis on design's responsibility in the climate crisis. Authors invited: *Prof. Tony Fry* (defuturing), *Timothee Parrique* (economics and politics of degrowth) and the *Crafts Council's* Head of Research, *Julia Bennett* (social challenges and sustainable craft). Leading peers were also interviewed, and responses thematically analysed. They identified contemporary *Craft<sup>3.0</sup>* examples across art, design, and crafts practices, consolidating fresh trajectories. Interviewed peers contributed to frame *Craft<sup>3.0</sup>* by identifying boundaries, material relationships, methods, principles, and value(s). These elements challenge modern orthodoxies in which artefacts, systems and services are uncoupled from the environmental crisis. The authors approach this evolution of craft from a position of 'guardianship' rather than financial optimisation. We aim to build a framework in which new economies with ecological visions can be grown through 'material reductionism through design'.

#### 3. 1 Data collection

To frame the intended outcome, a progressive and systematic integrative review was conducted. It was decided to use this approach to insert flexibility into the cataloguing of the cases. The search criteria were articulated based on their relevance to the subject. This sourcing approach was preferred to papers, due to their immediacy and relevance. Papers (often) showcase a specific method,

technique, or process, whereas a specialist blog offers a full view of cases in almost real-time. We also included reports from institutions to complement and expand data collection to provide a broader, more inclusive, and representative perspective. The criterion for inclusion was the relevance to the practice of regenerative design. The selection was conditioned by our searches; therefore, it was somewhat arbitrary. The cases collected in this paper represent a sample of data. In effect, we were interested in documenting a sample of data in real-time to extract high patterns of knowledge to build “knowledge for future actions” [19].

#### **4. Data analysis**

We collected (38) cases, which we used as a foundation to build a set of categories and subcategories (gradients) to provide a preliminary understanding of the field and practises around regeneration. Here, we are not conducting research on archives or museums or collections. In using elicitation, we aim to capture cases as soon as the phenomenon occurs, to record examples of subtractive design as soon as they are found in the digital landscape. In following *Nigel Cross*, as design researchers we are concerned with extracting and identifying patterns of activity emerging from the collected experience of the material culture, and the collected body of experience, skill and understanding embodied in the arts of planning, inventing, making, and doing in the artificial world, to infer knowledge for future actions in the context of appropriateness.

As we have stated, we have documented subtractive practices as they are evolving. In this scenario, we have selected the cases from the point of view of design practice. Accounting for (38) cases in total, these interventions are a record of places, dates, embodiments and strategies and the proposed categorical structure operates as a type of framework system, which we have enabled by articulating a graphic organisational matrix. The classification of the interventions into categories emerged during the process of collecting. The classification process was executed in the moment, therefore was influenced by contextual elements and personal interpretations and judgements. Once we classified the cases and extracted and organised their main elements into categories, we could implement categorical analysis to underpin and subcategories in specific categories. This process presents a design-led, graphical, and visual alternative or complement to pure statistical models.

#### **5. Results**

##### **- 5.1 Nature’s Value Within Craft <sup>3.0</sup>**

Our nature connectedness, dependence upon it, and the responsibility we have for its health, is critical for ecological futures. Positive natural world interactions include: Nature’s Health Service [20], community benefits, understanding of risk and wellbeing, connectedness [21], economics [22], play [23], emotional connection [24] and mental health [25], among others. The Natural Childhood depicts nature’s effects: reduction in ADHD, and increased nature engagements could “sav[e] the health service £2.1 billion per annum” [26]. Natural England’s medical advisor comments, “the outdoors is a great outpatient department, whose therapeutic value is not fully realised” [27]. The Office for National Statistics estimated the UK’s ‘nature capital’ at “over £1.5 trillion” with rural

tourism alone, “annually yielding £14 billion, with 17% of UK tourism involving wildlife watching” [28]. Presented literature demonstrates the value, complexity of locations to inhabitants and visitors alike. To comprehend future intervention points of material ‘reductionism’, we reviewed contextual and embedded knowledge domains. To unpick the concept of materially ‘crafted’ relationships aiming to embed environmental knowledge with positive interactions for its surrounding(s), we must deploy crafted interconnectedness of environmental ‘causes/effects’, when ‘materials, food, and health’ are seasonally reliant.

We summarise the natural world’s importance, for human life on earth, as intertwined and co-dependent. We see these factors as fundamental. Human civilization is presently overshooting critical planetary boundaries, facing a multidimensional crisis of ecological breakdown, dangerous climate change, ocean acidification, deforestation, and biodiversity collapse. We have become detached from the environment, and materials we consume – potentially due to growing urbanisation, the neoliberal economy, our working roles, and our distance from materials, manufacture, in the context of repair and/or the waste we produce. Our culture “must transform from single use interventions to consequential mitigation in the first instance providing health back to the planet under regenerative design frameworks” [29].

The importance of safeguarding the planet is the provision of life, our ecosystem and biodiversity that sustains all life. Indigenous communities [30], bushcraft practices [31] and Inuit societies [32], mainly, consider their environment, material use, resource overuse and seasonality of ecosystems to reduce impactful consequences. Our connection with nature and its seasonal material dependencies, is becoming lost in our current everyday lives. The authors advocate for ‘designed-in’ accessible means to environmental agency and see this transition and understanding as a skill for enabling *Craft*<sup>3.0</sup>. In the past three decades, multiyear ice, the thickest /oldest “type that supports the Arctic marine ecosystem, has declined by 95 percent” [33]. The “Inuit continue to be the human barometer of climate change; they have been saying to the international community for years that climate change is happening at a rapid pace” [34]. For example, in Canada shipping companies leverage local knowledge to inform haulier routes, i.e., the Arctic Corridors and Northern Voices (ACNV) project responded to this knowledge gap about local areas [35]. More recently Sami reindeer herders (protected by Norwegian law) are raising lawsuits against green energy turbines, “It’s a paradox, really, you are squeezed between the impact of climate change and green energy, which is the answer to climate change” [34]. Some call ecological disappearance “solastalgia” coined by Albrecht addressing feelings of shock in Australia, after open-cut coal mining transformed the valley [34]. We must deploy interconnectedness of environment(s) causes and effects, especially when ‘materials, food, and health’ are seasonally reliant.

## **5.2 *Craft*<sup>3.0</sup> Contextual examples**

Contextual examples were highlighted and framed by interviewees and are unpacked. An industrial *Craft*<sup>3.0</sup> example includes lobster pots, reliant on material, and environment(s) knowledge that they operate within. Inkwell withy (lobster) pots are made from foraged willow sticks, becoming a symbol of their

localities' distinctive maritime culture and identity. The craft historically was passed down from captain to crew. In the 20<sup>th</sup> Century their use declined, replaced by modern non-biodegradable fishing tools. The "U.K.'s *Heritage and Craft Association* lists Willow withy pots as 'critically endangered' believing just 11 withy pot makers remain" [36]. The pots vary regionally, and "only those with direct knowledge know the dialect, rationales for form variations and ways the pots are made" [37]. A second industrial *Craft*<sup>3.0</sup> is beekeeping. Beekeepers are stockholders of a completely wild and undomesticated creature, the honeybee. Bees can visit 1500 flowers, and fly up to 500 miles, during their lifetime. Their work equates to a large percentage of pollination for our food chain: "without bees, McDonald's would only have the buns to sell" [38]. Prior to *Langstroth Hives* (patented in 1852), beekeepers weaved 'straw skep hives' [39]. Skep hives were crafted: for local climates, catering to differing volumes, and built from contextual material knowledge. These longstanding design examples are situated within ecologies, systems, care, and materiality, i.e., embedded 'craft'.

Within architecture practices, low-tech (akin to *Craft*<sup>3.0</sup>) seeks to re-balance the relationship between buildings and technologies. It concerns "leanness, fewer components, preferring natural, low-embodied carbon materials, reducing reliance on technology and mechanical servicing, robustness and flexibility" [40]. *Craft*<sup>3.0</sup> 'noun' is defined as design-led practices and approaches beyond immediate requirements, considering systemic interventions including the exit and termination of proposals. This approach is academically supported by authors of *Conceptualizing Sustainable Craft*: who communicate the "[c]oncept of sustainable craft is a multidisciplinary global phenomenon, applied as policies and practices, markets and economy, materials and life cycle in intertwined contexts of use, aiming to reconcile and revive traditions" [41]. In 2023 *the Crafts Council* hosted discussions on how traditional craft practices can help repair our ecosystems, i.e., craft and futures can be strategic collaborators [42]. Scholar *David Pye* defines craft as: "Workmanship using any kind of technique or apparatus, in which the quality of the result is not predetermined, but depends on the judgement, dexterity, and care which the maker exercises as [they] work" [43]. Authors align this to a designer's role by being an Ecological Citizen [44], benefiting each other, wider communities and the planet we rely on for all life.

Our last example of *Craft*<sup>3.0</sup> considers legacy/sustainable practice is the "dying art of hedge laying" [45]. Hedgerows have an aesthetic value in the landscape; whilst supporting conservation, providing corridors of shelter and food for birds and small mammals. Hedge laying (Figure.1) is recognised as a heritage craft, with a history of 2,000 years. It embodies a direct link combining: knowledge of material environment, context, designing for decades (not trends), and is considerate towards its impacts, legacies, and construction. The UK Government attempts to cultivate this, paying farmers £9.40 a metre [46]. That cost barely meets the workers' minimum wage of £9.50 per hour, as of April 2022 [47]. This skill, when considered alongside the payment rate, indicates the lack of value it holds to the UK Government. The craft of hedge laying (Figure 2) encompasses contextual understanding of: habituating species, accurate knowledge of land boundaries, live material knowledge, ecological value, seasonality (e.g., not harming nesting species) etc., tacit knowledge, tool knowledge and experience. A hedge expresses a 'long tail', as it stands for generations, and nurtures species and serves as a

corridor. The created hedge is an ecosystem informed by all its constituents, i.e., a product with co-dependent relationships. These approaches are transferable to: designing outputs, questioning legacies and deconstruction.



Figure 1. Hedge Laying Process. Images care of *Richard Lewis Hedge laying*.

An arts exemplar of *Craft*<sup>3.0</sup> is *Project for a Rift Valley Crossing*, where the artist *Simon Starling* constructed a canoe out of magnesium extracted from 1,900 litres of lake water (Starling, 2015). The magnesium to create *Starling's* boat was extracted from the waters of the Dead Sea, the world's most concentrated source of magnesium. After exhibiting it, *Starling* returned it to its source, using the vessel to cross from Israel to Jordan. The canoe's material was ethically sourced, leveraged new models of manufacture, and demonstrates a mastery of *Craft*<sup>3.0</sup>. A design-led example of *Craft*<sup>3.0</sup> is Daniel Metcalfe's *Hannafore Project* that centres around a concrete outfall pipe on Hannafore Beach in Cornwall [48]. The project recrafted the pipe's surface, enhancing its ecological function (creating a habitat for marine species), maintaining the walkway, and primary functions as a sewage outfall pipe. A community-led *Craft*<sup>3.0</sup> example, *the Crochet Coral Reef*, offers an expression of coral reef knowledge [49]. The community fostering project unites people to crochet handmade sculptures, embodying millions of stitches on display. The project combines a deep knowledge of coral reefs, with manual skills, utilising biodegradable materials.

*Local Works Studio* (LWS) brings a circular economy approach to design and construction through craft. LWS focuses on the "creative reuse of site-based resources, local manufacture, and processing" [50]. *Heavy Gardening* (made by LWS) was a sculpture trail of artworks in Liverpool. *Something & Son* commissioned LWS to make an artificial reef, from waste oyster shells. The reef was cast with LWS's Shellcrete material, using waste shells from seafood restaurants. The artificial reef sits on the seabed, with anchoring ropes running vertically up to the surface, for mussels, oysters, and sea life to populate. Finally, *Castlemaine* (Australia) is a systems *Craft*<sup>3.0</sup> example. The town's artists launched their own clay currency as an economic experiment called *the Silver Wattle*. \$10,000 worth of the currency was created in two denominations, from locally acquired clay [51]. This approach to material value/local production (that was hard to fraudulently copy) opens new economics of *Craft*<sup>3.0</sup>.





Figure 2. Construction of the ‘Shellcrete’ material created by *Local Works Studio*. Images Courtesy of Local Works Studio 2022.

## 6. Principles of *Craft*<sup>3.0</sup>

*Craft*<sup>3.0</sup> sits in the context of degrowth, considerate craftsmanship, ecological consideration, and material reduction, as its fundamental pillars. The examples demonstrate *Craft*<sup>3.0</sup> attributes, they are envisioned and created by material custodians, seeking to be better ancestors, rather than evolutionary ‘capital-designers’. Contextual knowledge, *Craft*<sup>3.0</sup>, and contemporary design approaches provide new opportunities for design that go well beyond materiality; starting with outputs ‘end-focused’ on cultural, community and environmental contexts. We agree that the breakdown of: material knowledge, expertise, ecologic understanding, tacit knowledge, and locality is critical. As Fry [52] notes, understanding ‘being in the world’ with humans and others, in time, brings with it a reconceptualised responsibility of material ethics of care, for designers. Technology can aid ecological interventions and optimise processes. Boehnert emphasises, in relation to the acute denial of our interdependencies with nature, “humans have not yet learned how to use technology on scale in ecologically benign ways” [53]. *Craft*<sup>3.0</sup> as a discourse sheds light on how technological usages, work with nature and understanding planetary boundaries, may be emphasised and desirable.

### - 6.1 Transferable Principles of *Craft*<sup>3.0</sup>

Current crafts practices are very aware of ‘tool marks’ and legacies they leave within materials/created works. However, there is often a disconnect when considering the ecological impacts of those materials, requiring further investigation. Material provenance, “the history of ownership of valued objects”, and legacy data are already used within craft practice of precious materials [54]. *Craft*<sup>3.0</sup> legacies consider the after effects of projects, initiatives and how they are financially, resource and environment sustaining. Precious metal hallmarking (a common practice) not only supplies provenance but can identify ethical sourcing. In time digital hallmarking could provide transparency, alongside material passports. Traditionally (for example) wheelwrights selected timbers for their role in assembly, with knowledge of sourcing, material seasonality and using appropriate species. Even exporting timber for firewood has ramifications, as

“regulations to protect natural environments and plant-based industries of receiving countries from introductions of harmful organisms” [55]. Considerate material use is evident in thatching, beekeeping, and contemporary practices, and it needs updating for *Craft*<sup>3.0</sup> within a wider forum. These considerations in turn inform how the material(s) and environment(s) are left when practitioners exit. Not just from a material perspective but, assisting individuals/communities and not ‘extracting’ assets. These should be considered at the inception/undertaking of projects.

*Craft*<sup>3.0</sup> should reskill agents with new and future perspectives, rather than reviewing the future with today's tools. We should consider mechanisms to upskill and continually review with contemporary best practice for planetary challenges. *Craft*<sup>3.0</sup> reskilling, aligns makers with steps to make more ecological choices and inform contemporary best practices. The final element (that is often an afterthought) are the connections between materials, practices, their consumption and regeneration. We need to understand that this field is interconnected; practically, culturally, economically, and ecologically. All dependent on their context of operation and application. Designers should work closely with the locality (e.g., communities) and collaborate with ecological / environmental expertise. We have outlined a range of considerations vital for associated ecosystems, skills, and its economic implementation. We demonstrate that one of the core skills is mastering ‘potential impacts’, both environmental and ethically. This demonstrates an overarching concept that communicates the interdependencies of *Craft*<sup>3.0</sup>.

- *Designing for Exit*: At every stage of the design and execution process, including communities, locations and subsequent opportunities for repair.
- *Considerate Material Use*: This is all bound in the context of use, location and purpose. These decisions are often formed too quickly.
- *Contextual Ramifications*: The cultures, communities, and use cases are the most important points. We need to change the rhetoric that unsustainable practices are ‘just bad’, polarised or just ‘cost saving’ and support transitioning to appropriate carefully crafted choices as better custodians.
- *Place Based Knowledge*: Not everything has to ‘scale’, there will be rural, sub-urban and international needs/perspectives that will be totally different.
- *Seasonality*: Materials and the natural world have seasons of regrowth, optimisation, left fallow and deeper understanding is required.
- *Impact Considerate*: Both in project, legacies, communities and construction.
- *Building Contextual Tacit Knowledge*: Outcomes are not predetermined, but depend on the judgement, and care which *Craft*<sup>3.0</sup> makers exercise.
- *Community Craft*: The care and consideration of collaboration, co-creating knowledge and the careful production of assets.

## 7. Conclusion

Building from *Glanville*, we see research in design about creating knowledge for future actions [19]. We depart from traditional notions of value, as associated exclusively with economic value. Instead, we are now understanding that value

can also be social, or environmental, or a combination of these. In positioning *Craft*<sup>3.0</sup> at the intersection of research and practice, or applied research in the context of design, we see its implementation as creating knowledge for future actions, delivering environmental, social, and economical value. This structure changes traditional orthodoxies in which economical value is used to override any other possibility. We need a deep contextual understanding of designing within human/non-human settings; being critically informed, beyond our own perspective, and in consideration of caring for places and notions of othering. In time, legislation around new ecological laws should readdress the breakdown of materials from the onset. We are in times of commodity scarcity, with increasing comprehension of material impact over time and all its traits, i.e., centralised farming generating large (silage piles), soil erosion and acidification.

We should question avenues for these stockpiles of waste, and urban mining potentialities. Our responsibilities are tied to resource use and efficiencies of design, i.e., disposal, reclamation, urban mining (taking thatching and earth building as an example), material growth, skill in material selection, installation, and durability. There are legacies and complexities of materiality in different situations and contexts. Seasonality, not just considering weather, for example, may encompass certain work being scheduled to avoid the nesting season. The challenge is, which complexity ‘element’ do you make a priority? We must consider how design and manufacturing can offer regeneration in situations, so that we are not just working from a capitalist perspective, and in terms of extraction of resources, generating displacement and negative impact. Further considerations include: material end-of-life, comprehension of wear, conditioning, and material degradation over time. Also of importance is the question of designing for repair (whilst maintaining manufacturers warranties) and the interesting interplay between people’s skill, knowledge, and trust. These challenges are intertwined, benefiting each other. It is within this expanded notion that we see ‘nature-based design’ and Ecological Citizenship [43] as a timely planetary-scale, multi-species contemporary craft. The authors have characterised this evolution of craft as *Craft*<sup>3.0</sup>. The question now is, how we as practitioners, designers, and crafts people can evolve our practices to *Craft*<sup>3.0</sup>?

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