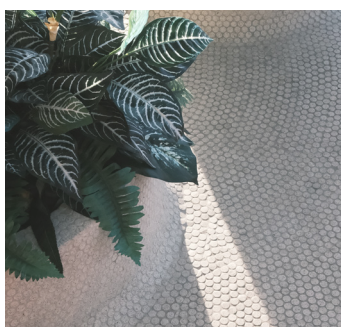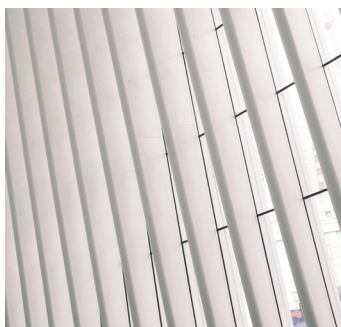# ARCHITECTURAL CRAFTSMANSHIP IN THE CITY

A way of work, design and practice in the Homo Faber & Great Repair

Kurt Chan | Research Plan | Msc3 Crossovers 2023

Figure 1 - material catalog of moments in craftsmanship and architecture observed by author

FASCINATION

Keywords: craftsmanship, tacit, creative process, making, work, design, practice, material, quality, digital, fabrication, tools, homo faber, repair, actor-networks, agency

The inspiration behind this research stems from the curiosity towards the crafts and its traditional tangible methods of making. When viewing historical buildings, moments of convergence between architecture and craft become clear. From the ornamentation of Gothic architecture by guild masters to the interior finishings of the Aarhus Rådhus by furniture designer Arne Jacobsen. In the phenomenological experiences of such spaces, one can see and feel beyond the immediate tangible aspects of a building and notice subconsciously the innate qualities expressed by the maker (figure 1). Why has such Architecture become increasingly rare? The institutionalization of the architectural practice has consequently caused mass standardization and optimization that focuses on efficiency and product. Inturn breeding mediocre architecture that often lacks qualities of craft. Has the historical development of technologies, socio-economic trends and political narratives behind the marginalization of craftsmanship become irreparable in contemporary times? Why is craftsmanship still relevant in the digital age?

INTRODUCTION

Assumptions of Craft (a practice in stasis)

The discussion of craftsmanship is often associated with ancient methods of working to create artifacts connected to history and tradition. The connotation of crafts suggests a practice bound by the past, and is subservient to current technological methods of work. This is further perpetuated by the perception of traditional crafts to be banal or amateurish in its product. Even in its admired form of architectural ornamentation, it can seem superfluous and redundant as argued by modernist thinking like "Ornament and Crime" (Loos 2019). These interpretations often view artifacts as static objects and disregard them as things of flow embedded with material culture and rituals (Ingold 2012). Moreover, ignoring the immense value in the creative process of craftsmanship that generates such meaning. It is precisely this unique practice of craftsmanship, in the process of both design and working in which this research hopes to extract and reinterpret in the digital age.

Process of Craftsmanship (making and working towards quality)

What makes the process of craftsmanship so special? As described by Richard Sennett, the meticulous pursuit of quality by a craftsman during the process of work enables a continuous cycle of problem finding and problem solving. During craft, the craftsman enters a rhythm of the **tacit**, explicit and back to tacit, where he continuously builds on top of the knowledge gained previously. Likened to the process of learning vibrato in a Cello by Sennett, where the very same technique in coloring a note can be applied differently from a "Schumann cello concerto… [to] the opening of the Dvorak cello concerto" simply by the expression through the wrist or the elbow (Richard 2016). This process seeks quality over product, that is purposeful rather than the routine in habit. This humble methodology of craftsmanship, seeks a different way of working through slow and repetitive play. Before capitalism and the efficiency of industrial machines, the process of craftsmanship was able to thrive in the workshops of monasteries and guilds. A unique system enabling such aforementioned principles and concepts of craftsmanship to be sustained and upheld .

Tacit knowledge - refers to the internalized understanding of how to perform tasks without conscious thought (Instincts). It's a level of expertise where a skilled worker doesn't just follow a set of instructions but also intuitively understands the nuances of their craft.

History of Craft (monasteries & guilds)

This ancient process of craftsmanship began without industry, in which "everything was craft" (McCullough 1996). This slowly evolved into monasteries during medieval times, providing a spiritual haven for craftsmen. This underlines the interplay of religion and craftsmanship, that served the role of authority. This monastic equilibrium was degraded during the transition to urban life in the 12th and 13th centuries, where **guild** masters likened to abbots maintained the previous order maintained in workshops. Similarly the guild generated a space for hands-on learning with open problem solving and adaptability. This autonomous pursuit of quality was balanced with authority and standards, maintained by masters asserting principles of religion, rituals and community. The workshop served as an essential space for the transmission of knowledge and production of creativity. Guilds were held in high regard to the state, for their service of knowledge and production of material. Guilds formed a network intertwined within the local context, regulated quality and services within local life. This network further expanded regionally, offering apprentices the flexibility of mobility, that further fostered creativity and production (Sennett 2008). The entanglement of crafts and the urban context both allowed crafts to thrive, but also began to deteriorate its principles. Craftsmanship became increasingly institutionalized and revealed proto-industrialized intentions, degrading the essence of quality in the creative process.

Guild - emerged for sustainability through the transmission of knowledge across generations, that accumulated "knowledge capital" as a source of economic power. A hierarchical system of master, journeymen and apprentice formed the basis of a productive bond of honor and trust.

The Death of Crafts (artistry & industrialization)

The Machine age and the automation of labor brought about a significant shift in the process of work emphasizing speed, efficiency and fixed products. This was further exacerbated by the 19th century, which favored **artistic expression**, originality and an inward-focused approach to creativity. These bourgeois ideas of making art and its commercialization began an epistemic break valuing innovation— a break away from the established practice and traditions (McCullough 1996). In this manner Craftsmanship contrasts greatly as an additive skill, that builds upon what is known. From a sociological dimension, the craftsman's process values the collective activity of disseminating knowledge, rather than individualistic innovators. This individualism was evident within the Modern Movement, which seeked new architectural forms disconnected from the past, driven by technological innovations. The diminishing value of work in craftsmanship towards a capitalist industrial society, ultimately led to its decline, marginalization and stasis.

Art & Expression - began with the emergence of the renaissance artist, a transition from medieval craftsmen. Shift from quality to originality, had socio-economic and political consequences, as artists relied on patrons for recognition and financial support.

The Digital Age (contemporary patterns of mediocrity in work & making)

The socio-economic and technological trends of the industrial age continue to persist into the digital age. A focus on productive activity, innovation and fixed products, that generates things lacking in quality. This was outlined by Sennet's lecture describing the closed system of Microsoft programmers working within an intense timeline to produce mediocre products that relied on user feedback (Richard 2016). Similarly advancements in the construction industry have enabled more efficient methods of building, with institutionalized codes, standardized components, prefabrication and the automation of labor (Carpo 2023). This is supplemented by the **digital tools** in architectural design that have enabled more efficient and complex coordination of actors within the built environment. Although this has enhanced the overall standards of architecture, it has consequently created architecture lacking in originality and character. The specialization of tools has also further fragmented the actors in the built environment, creating a schism between material sensibility, labor and design, that was once anchored by the practice of craftsmanship (Figure 2). While technological tools have diminished the relevancy of architectural craftsmanship, emerging forms of digital crafts suggest potential in its resurgence.

Digital tools - the development of computer software, in which we no longer draft with our hands and paper but rather CAD. Or the invention of 3D Modeling and rendering software that has undermined the value of physical scale models. This highlights the loss of tactile experience and intimate knowledge gained from traditional physical methods.

Homo Faber - "Man, the Maker", the idea that human beings are inherently creative and productive, capable of shaping the built environment through work and craftsmanship. And the fundamental human agency in creating, building, and shaping the world around them.

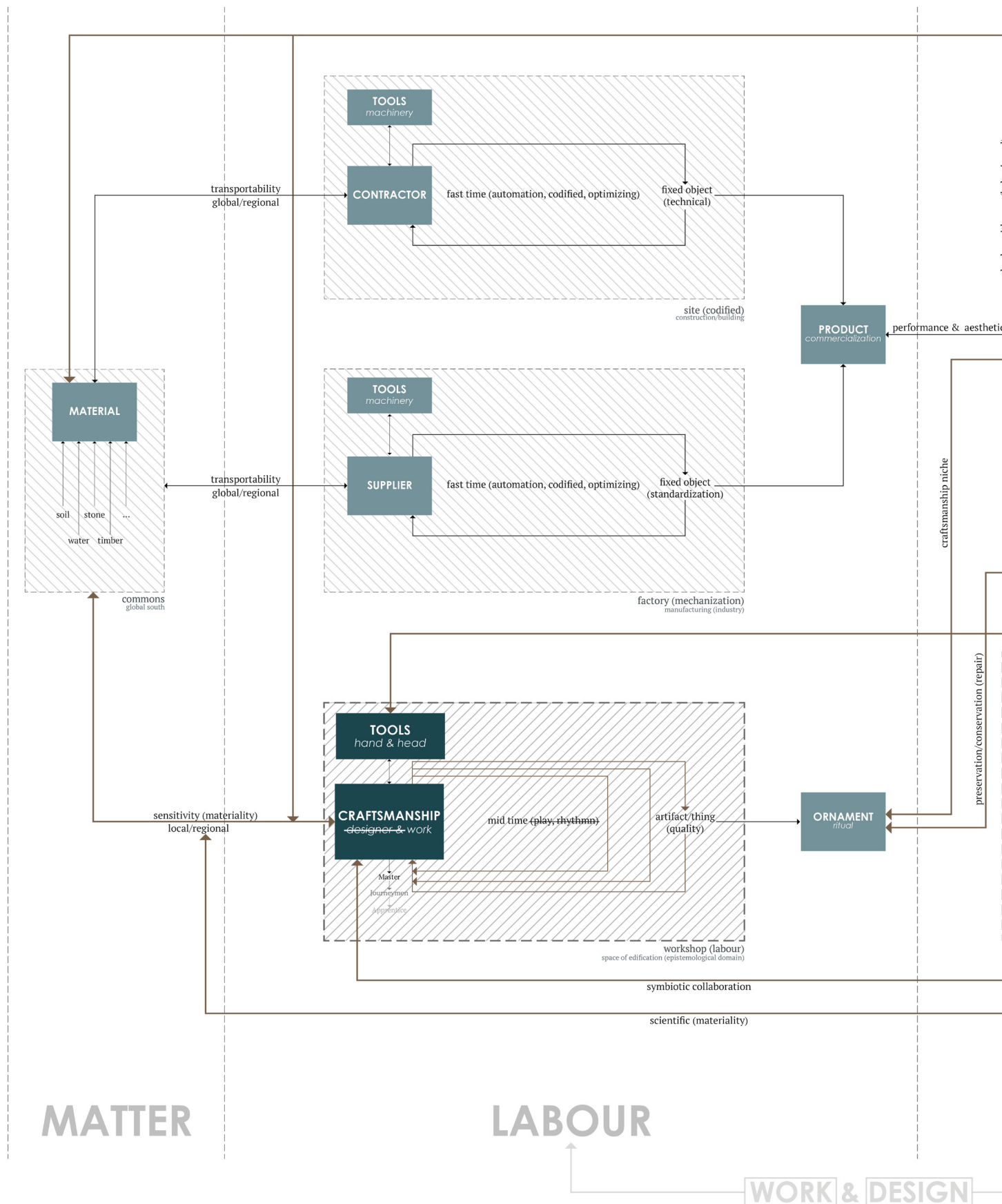### The Reemergence of Architectural Craftsmanship in the City

As elicited by Carpo, increasing accessibility to mass customization and fabrication have empowered architects to design and construct unique site specific structures, while orchestrating complex manufacturing processes (Carpo 2023). These technological potentials are further given agency in the revival of the **Homo Faber** as described in "Imminent Commons" that give rise to a makers movement in the "Fourth Industrial Revolution" (Zaera-Polo 2022). This is reflected in the Machi Koba of Japan, which have seen a reemergence in status and developed into a strong network of craftspeople (Wang, 2021). On the other spectrum, "The Great Repair" speculates a repair-society that preserves and retrofits the existing, instead of creating more waste and feeding into a capitalistic world of production and consumption (Hiller 2023). The repair-society emphasizes the empowerment of existing actors of maintenance, such as the craftsman, and to recolonize the epistemological domain to discover alternatives in architectural expression. These emerging conditions of making and repairing serves as a backdrop in the exploration of digital crafts in architecture.
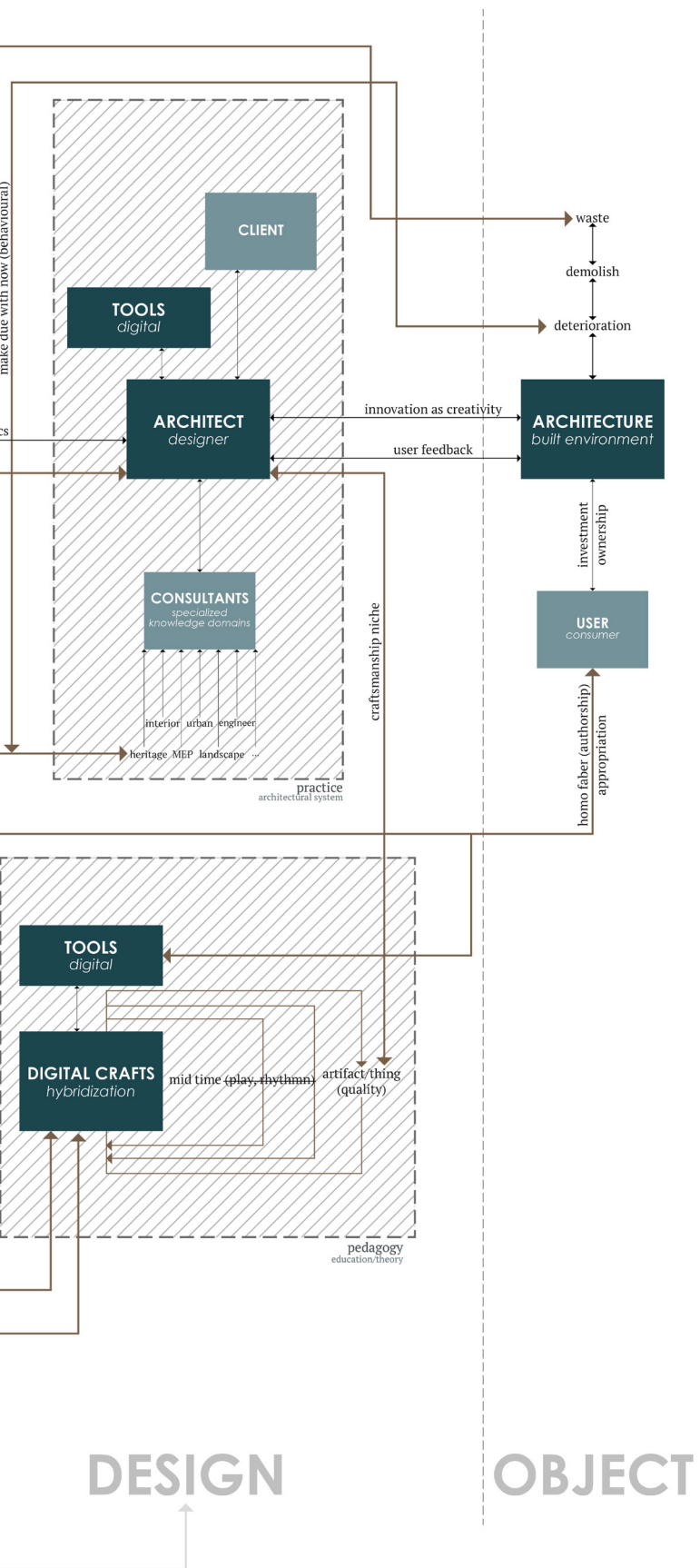
Machi Koba - small, factories in Japan usually operated by families or a handful of craftspeople (Wang, 2021).

Homo Faber - "A reparative approach...would not seek to tear down and rebuild more "efficiently," but rather to convert and build on existing structures. To work with what is already there, respecting both the materials and actors involved". (Hiller 2023).

ACTOR-NETWORK DIAGRAM
contemporary architectural practice

TOOLS
machinery

CONTRACTOR

fast time (automation, codified, optimizing)

fixed object
(technical)

transportability
global/regional

site (codified)
construction/building

PRODUCT
commercialization

performance & aesthetic

MATERIAL

TOOLS
machinery

SUPPLIER

fast time (automation, codified, optimizing)

fixed object
(standardization)

transportability
global/regional

soil   stone   ...

water   timber

commons
global south

factory (mechanization)
manufacturing (industry)

craftsmanship niche

preservation/conservation (repair)

TOOLS
hand & head

CRAFTSMANSHIP
~~designer~~ & work

mid time (play, rhythmn)

artifact/thing
(quality)

ORNAMENT
ritual

Master
↓
Journeymen
↓
Apprentice

sensitivity (materiality)
local/regional

workshop (labour)
space of edification (epistemological domain)

symbiotic collaboration

scientific (materiality)

MATTER

LABOUR

WORK & DESIGN

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Figure 2 - actor-network diagram of in the contemporary practice of architecture. Revealing the fragmentation of matter, labor, design, object and tools.

While existing networks of craftsmanship (brown arrows) provide potential spaces for synergy and reconfiguration.

■ key actors

■ secondary actors

▨ productive spaces of craftsmanship

▨ other productive spaces of architectural practice

→ key networks of craftsmanship

→ secondary networks

PROBLEM STATEMENT

The current digital age has caused fragmentation in the material, work and design processes of the built environment and is in turn reflected in the uniform expression of architecture. An epistemic break from the expressive and creative process of craftsmanship, which has been marginalized into a practice of the past. The growing sentiments towards the disappointment in mediocre contemporary architecture and potentials of the past, are reflected in emerging conditions that empower new forms of hybrid craftsmanship. In the context of a maker and repair society, Madrid serves as a perfect laboratory in the revival and mutation of architectural craftsmanship in the city. The rich guild history during the 15th to 16 century serve as backbone in craftsmanship, which still persist within the urban fabric today. In contemporary times organizations such as: INTBAU, Mad'in Europe and **Red de Maestros** have understood the value in preserving, protecting and providing a stage for traditional building craftsmen. Highlighting an existing network of traditional building masters within Madrid that continue to practice and evolve certain building techniques, such as stucco, tiling, sgraffito, plastering, forging, masonry, carpentry and more. Additionally, new forms of digital crafting have emerged, such as Fab de Fab, **Factum Arte** and JetClay that employ both computational design and craftsmanship in practice.

This research hopes to explore alternative ways of architectural design and work, through the niche of craftsmanship. Specifically employing such potentials within an urban context to empower and synergize traditional and new actors of building craftsmanship. This alternative system is not revolutionary, but symbiotic and evolutionary. An experiment that seeks to uncover the potentials, challenges and implications of such shifts in architectural practice. With that being said, the question arises:

How can the creative processes of work in craftsmanship be practiced in architectural design through hand-digital tools to generate new hybrid forms of architecture in the emerging Homo Faber and Repair Society?

- *Who are the existing actors of traditional and alternative crafts, and how can they be synergized to generate agency in architectural craftsmanship in the city?*

- *Why is craftsmanship relevant in the digital age of mass customization, fabrication and automation?*

- *Where are the potential ecological sites and commons of Madrid to reconfigure material flows and culture into a self sustaining system of architectural craftsmanship?*

- *What are the socio-spatial implications of reintroducing the work and design of craftsmanship in architecture practice?*
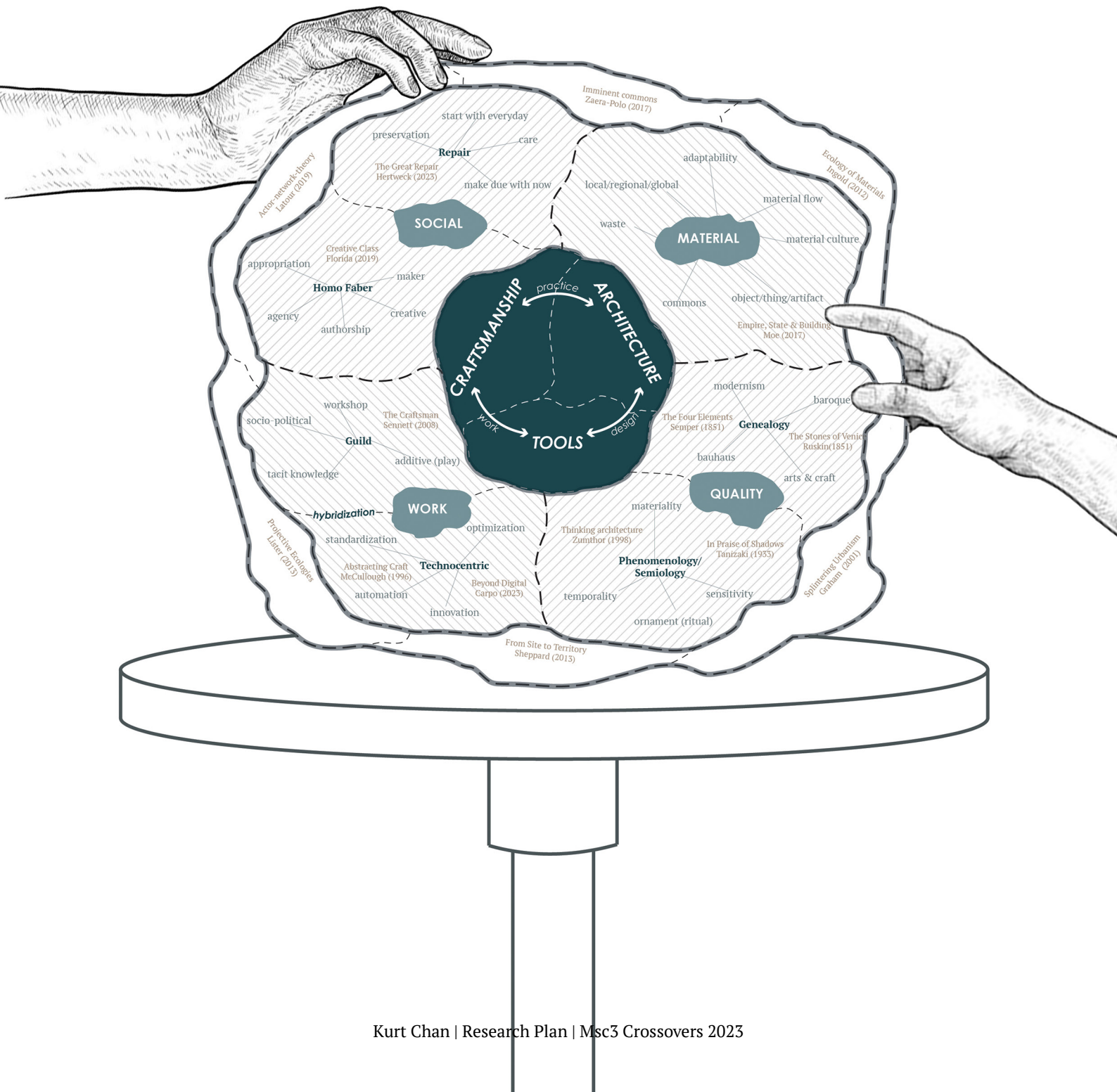
Red Española de Maestros de la Construcción Tradicional - A national directory of good practices in the fields of traditional construction and its restoration in Spain. To preserve, enhance, cultivate and recover traditional practices. (Red 2023).

Factum Arte - "Factum's goal is to demonstrate what can happen when technology is developed and applied by creative thinkers and where the line between the digital and the physical no longer exists" (Factum 2023).

Imminent commons
Zaera-Polo (2017)

start with everyday

preservation   care

Repair

The Great Repair
Hertweck (2023)

make due with now

adaptability

local/regional/global   material flow

waste

SOCIAL

MATERIAL   material culture

Ecology of Materials
Ingold (2012)

Actor-network-theory
Latour (2019)

Creative Class
Florida (2019)

appropriation   maker

commons   object/thing/artifact

Homo Faber   creative

agency   authorship

Empire, State & Building
Moe (2017)

practice

CRAFTSMANSHIP   **ARCHITECTURE**

modernism   baroque

work   *design*

TOOLS

workshop

socio-political

The Craftsman
Sennett (2008)

The Four Elements
Semper (1851)   **Genealogy**

The Stones of Venice
Ruskin (1851)

bauhaus

Guild

additive (play)   arts & craft

tacit knowledge

—hybridization—   **WORK**

optimization   **QUALITY**

materiality

standardization

Thinking architecture
Zumthor (1998)

In Praise of Shadows
Tanizaki (1933)

Technocentric

Abstracting Craft
McCullough (1996)

Beyond Digital
Carpo (2023)

**Phenomenology/
Semiology**

automation   temporality   sensitivity

innovation   ornament (ritual)

Projective Ecologies
Lister (2013)

Splintering Urbanism
Graham (2001)

From Site to Territory
Sheppard (2013)

THEORETICAL FRAMEWORK

Core (Architecture–Craftsmanship–Tools)
At the center of the theoretical framework are the knowledge domains of architecture, craftsmanship and tools (hand & digital). The interplay of each actor creates a productive system of work and design that generates agency and creativity towards the practice of architectural craftsmanship in making new hybrid forms of expression. Moreover, the exploration of this architectural niche and its interactions bring clarity towards its relevance and potential within the emerging conditions of Homo Faber and repair society.

Outer Core/Mantle (Work, Quality, Material & Social)

Work (guild & technocentric hybridity)
The concepts within the fluid mantle are underpinned by the outer core, being: material, quality, work and social. Beginning with "Work" that focuses on the head and hand processes of craftsmanship, that make things of quality through a constant cycle of tacit-explicit-tacit (Sennett 2016). Further outlined by Sennett, through the historical understanding of the guild system, that uncover the hidden socio-political mechanism of authority, autonomy, state, religion and more (Sennett 2008). This historical understanding is key to understanding the principles and systems that enabled the productive system and actors to thrive.

Supplementing this historical view is the technocentric analysis in the mutation of architectural crafting towards new digital tools of fabrication. Outlined by Carpo's "Beyond Digital", it highlights the digital turn of architecture, in which mass customization has blurred the lines of Vitruvian traditions in utility and aesthetics. Simultaneously, Carpo contextualizes the digital revolution within a historical context, to navigate the transformative impact of digital technology on the field (Carpo 2023). Similarly, McCullough's "Abstracting Craft" emphasizes the fundamental importance of craftsmanship's creative process and its persistence within new forms of design in the digital age (McCullough 1996). This research hopes to explore the hybrid potential of the seemingly opposites of analogue and digital knowledge within architectural design.

Quality (phenomenology, semiology, genealogy)
A profound quality of architectural craftsmanship is the tacit and human touch, generating spaces of sensitivity, ephemerality and nuance. A craftsman's use of material, hand and tool in design-making generates a sensitivity towards texture, light, sound and materiality. A phenomenological experience that is universal and plays into human perception. These principles are expounded by Zumthor's "Thinking Architecture" that reveal temporal qualities of atmosphere and sensory experiences through a craftsman and tacit philosophy of design. Though Zumthor's advocates for timeless, he also strives for contextual understanding to create a sense of community and preserve cultural memory (Zumthor 2010). These principles expounded from a phenomenological analysis will be crucial when maintaining the essence of **hand in digital** design.

Hand in Digital - calls for a balance between head and hand, and a more participatory approach to technology underscores the social consequences of separating intellectual and manual labor in the design process.

The cultural and ritual meanings embedded within nonhuman things are essential in expressing the collective identity and memory of a city. Architecturally such symbols are expressed through ornamentation and have continuously evolved through history. "The Stones of Venice" by Ruskin similarly accounts for the historical significance of Byzantine and Gothic architecture in Venice, and his belief in the moral and spiritual significance of architecture and craftsmanship (Ruskin 2003). A genealogical and semiological understanding of the ornament

through pivotal movements, will distill essential religious, social and political concepts in architectural expression. These principles of material culture will be reintroduced and mutated in the design intervention.

Material (material ecology/flow/culture)
Ingold's "Toward an Ecology of Materials" serves as a framework to understanding the temporal aspects of material culture and flow. Looking at material not simply as nonhuman or static objects/artifacts, but as things of flow. To follow material as an artisan in production, where every "technical gesture is a question... they are not between one pre-existing entity and another but perpetually on the threshold of emergence" (Ingold 2012). Highlighting the importance of material flows not as discrete steps with clear thresholds but as a gestural dance that reveals a field of forces working within a meshwork. This framework provides a conceptual foundation in the tracing of potential materials in the commons of Madrid to be reenergized within digital crafts.

Social (behavioral & repair)
A crucial aspect to the longevity of architectural craftsmanship is the social agency and empowerment of existing human actors. The "Imminent commons" presents the idea in the revival of Homo Faber as a reaction to industrial standardization, mass production, globalization, automation and materialistic capitalist mindset (Zaera-Polo 2022). In the context of the **Fourth Industrial Revolution** spawns a "makers movement" that empower the "**creative class**" described by Florida, in which creatives with technological proficiency are provided agency towards innovation and economic growth in a city (Florida 2014). An emerging social condition in which new forms of architectural craftsmanship can adapt and thrive.

While the notion of innovation often prioritizes the new, this research also explores the potential within the existing. In an ecological future, "The Great Repair" outlines the value in a behavioral transition rather than one of techno-fixes. Concepts of "Work with the existing" that strive towards reparative and responsible care of the built fabric, which recognize the available material artifacts, ecological value and social contexts (Hertweck 2023). The often invisible and overlooked everyday skilled actors of maintenance and sustainable care are provided agency in their work. This research hopes to empower said actors in the emerging dualities of making and repair in architectural craftsmanship.

Crust (Uncovering Multiplicity)
To unfold the complex interdependencies of the aforementioned principles, two main frameworks will be utilized. Firstly through the "Actor-Network Theory" by Latour to translate the human and non-human actor connections within this productive niche of architecture, craftsmanship and tools (Latour 2007). This network of interdependencies provide a holistic impression of the fluid and dynamic connections between actors, but more importantly the potential sites of construction, deconstruction and reconstruction within the system.

Secondly, Sheppards's "From Site to Territory" approach of both layered and networked territory provides a framework for understanding the vertical stratification and horizontal intersection of systems and boundaries of sites (Sheppard 2013). Through representing the territory, creates a process of de/reterritorialization that enables one to become a spatial programmer that operates, negotiates and script alternative sites of intervention.

Industry 4.0- a technological paradigm shift driven by digital technologies, automation, and data integration, reshaping industries and economies. It amalgamates digital, physical, and biological systems.

Creative Class - group of knowledge workers and professionals who contribute to economic growth through their creativity and innovation. These individuals play a central role in shaping the economic and cultural vitality of cities and regions.

Layered territory - "stratifies its environment into a series of individuated layers and systems... focused primarily on patterns of land use and human settlements" (Sheppard 2013).

Network territory - "conceive of context as the subject and product of multiple intersecting networks of human and natural ecologies...sites as hubs or pieces within much larger territories" (Sheppard 2013).

METHODOLOGICAL FRAMEWORK

The methodological framework is composed of three main scales: global, regional and local. The global scale takes a more literature based approach to understand the overall historical conditions, and theoretical sentiments towards architecture and craftsmanship. An analytical strategy is utilized for smaller scales, to provide a subtle understanding of conditions in reality and reveals local alternatives towards pre-established norms in the practice, design and work. In relation to the theoretical framework the outer-core concepts (work, quality, material and social) will be studied more rigorously through different scales, depending on their pertinence to the specific method. This methodological framework ultimately hopes to (re)construct previously unnoticed actor synergies into a sustainable self-sufficient system within the field of architectural craftsmanship.

Global scale (genealogy, social)
The global scale begins with a genealogical matrix that highlights the interplay of architecture, craftsmanship and tools through key historical movements. This is supported through historical canonical literature that provides thematic knowledge regarding past conditions that enabled architectural craftsmanship to thrive, persist, diminish and evolve. A more projective understanding of emerging trends also aims to speculate new mutations and hybrid possibilities in architectural craftsmanship. These temporal conditions and trends are further translated into a series of actor-network maps (past, present, projective, distorted reality), that provide clarity towards the interdependencies of each respective system. This process enables the understanding of possible anchors, pitfalls and potential synergies.

Regional scale (material, social)
To begin tracing moments of architectural craftsmanship in Madrid, a process of selective mapping based on Sheppard's layered and networked territory. Beginning with mapping various forms of craftsmanship within the urban fabric of Madrid (craftsman workshop, fabrication labs, makerspace, handicrafts, blue collar shops...) and further layered with other immaterial concepts (economic, infrastructural, urban zoning, social, ethnic, age...). This process of selective map can identify potential urban patterns, intensities and boundaries. Next, diagrams will be utilized to further reveal networks of greater systems that de/reterritorialize boundaries (e.g. material flows).

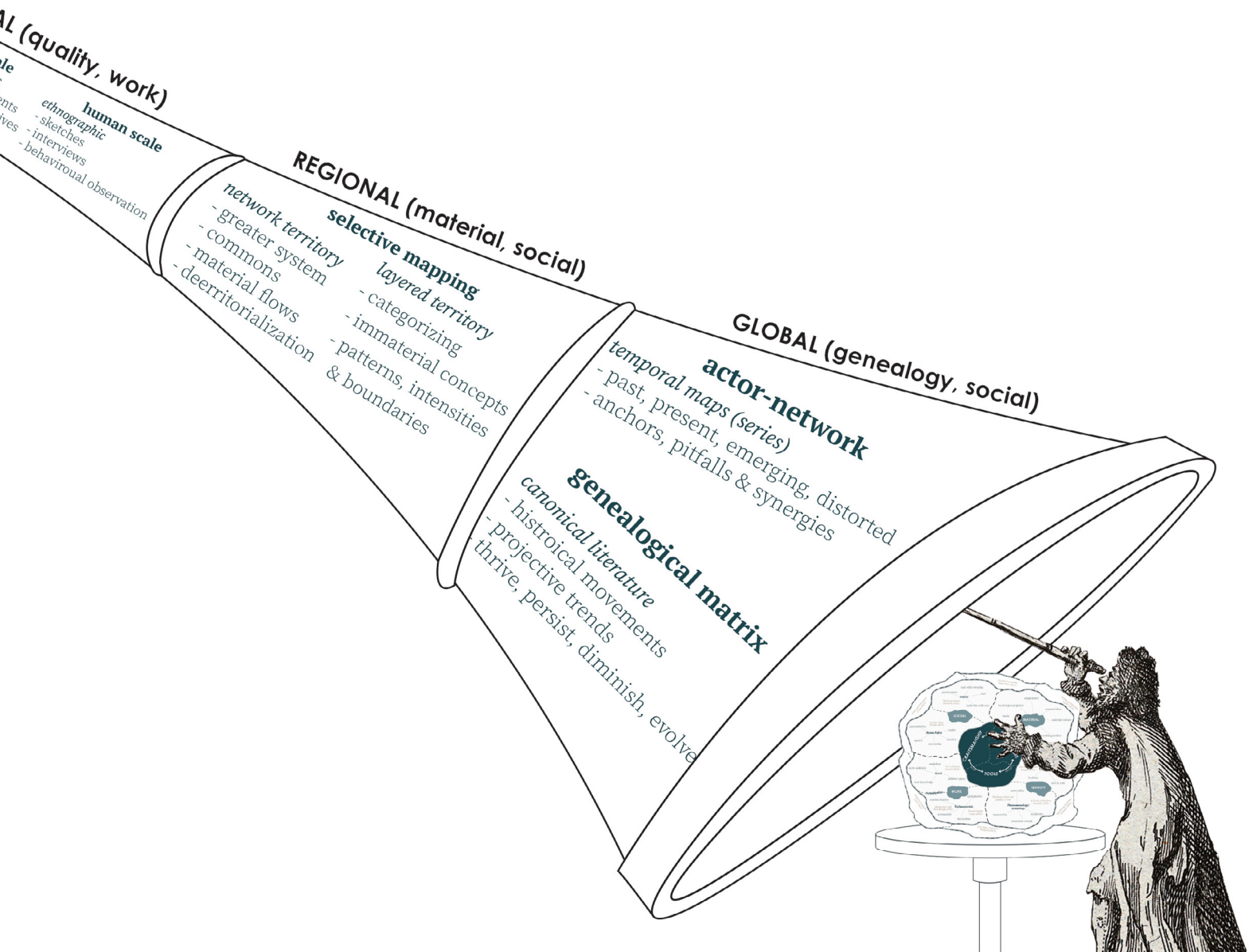### Local Scale
Things Scale (quality)
Drawing from Ingold's understanding of material ecology, objects are not static but things infused with material culture and meanings. By selecting key canonical precedents (baroque, modern, international...) within Madrid's urban fabric to highlight the evolution and mutation of architectural craftsmanship in form and quality. Specifically creating a catalog of architectural elements and their aesthetical, detailed and ornamental expression through photographs, sketches, elevations and detailed sections. In addition, observation and documentation of more banal forms of architectural craftsmanship in the vernacular and moments of appropriation. This collection of formal and informal crafted things, serve as potential pieces towards an architectural assemblage.
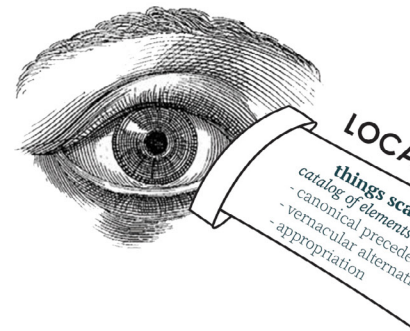
Architectural ethnography- seek to uncover the social, cultural, and psychological dynamics at play within architectural spaces. It involves in-depth fieldwork to gain a deeper understanding of how people engage with and are influenced by their built environment.

Human scale (work)

The human scale is a crucial aspect to this research, as the craftsman is the holder of the epistemological domain while working, designing and practicing craftsmanship. Various actors of traditional (workshop), new (fabrication) and alternative (blue-collar shops) craftsmanship will be studied to provide a contextual reality in the emerging conditions of the Homo Faber and repair society. An **ethnographic** approach to studying each respective actor, through spatial sketches, behavioral observations and interviews (Iseki 2017). This dialogue is essential in deconstructing assumptions within the pre-constructed actor-network mapping, while also providing insight into potential spaces of agency for reconstruction. Though each actor's opinion may be subjective, it can provide clarity to both shared sentiments and divergent overseen forces within the larger system.

FASCINATION ⟶ PROBLEM FIELD ⟶

The inspiration behind this research stems from the curiosity towards the crafts and its traditional tangible methods of making. When viewing historical buildings, moments of convergence between architecture and craft become clear. In the phenomenological experiences of such spaces, one can see and feel beyond the immediate tangible aspects of a building and notice subconsciously the innate qualities expressed by the maker

MATTER   LABOUR   DESIGN

WORK & DESIGN

METHODOLOGICAL FRAMEWO

P2

⟶

DESIGN
INTERVENTION

How can the creative processes of work in craftsmanship be practiced in architectural design through hand-digital tools to generate new hybrid forms of architecture in the emerging Homo Faber and Repair Society?

Who are the existing actors of traditional and alternative crafts, and how can they be synergized to generate agency in architectural craftsmanship in the city?
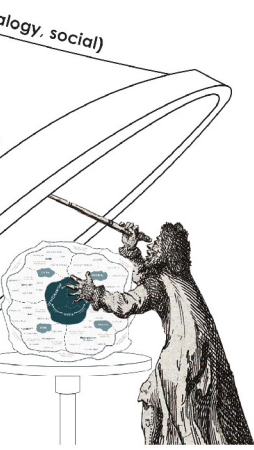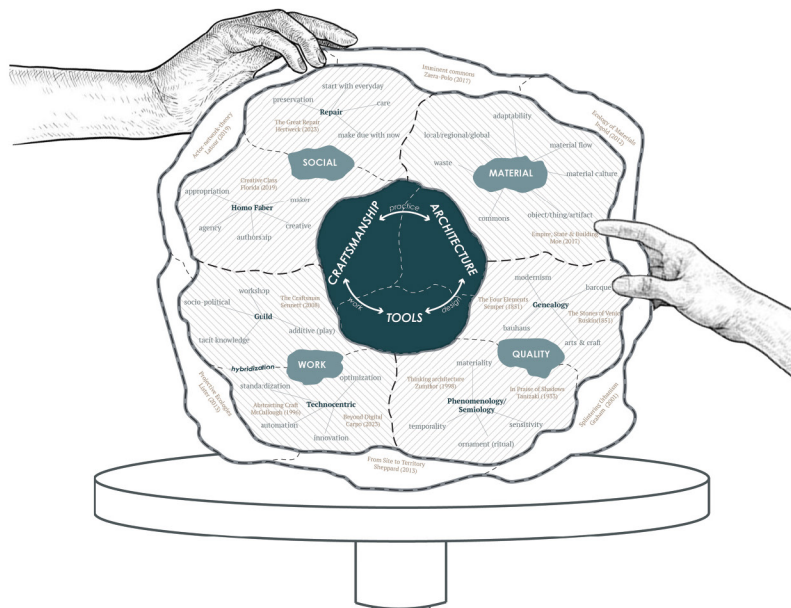
Why is craftsmanship relevant in the digital age of mass customization, fabrication and automation?

Where are the potential ecological sites and commons of Madrid to reconfigure material flows and culture into a self sustaining system of architectural craftsmanship?

What are the socio-spatial implications of reintroducing the work and design of craftsmanship in architecture practice?

OBJECT

RK ← — THEORETICAL FRAMEWORK ←

RELEVANCE

The increasingly capitalistic driven world that values innovation and efficiency has consequently reflected in the institutionalized practice of architecture. The codification of architecture has resulted in globally homogeneous designs that utilize standardized and per-fabricated components that lack contextual material sensitivity. This research hopes to respond to such challenges through craftsmanship in architecture, that generate new creative potentials in work, design and practice. From a historical perspective, each architectural movement is often met with counter theories that advocate for a return to a nostalgic past, exemplified by Ruskin's or Morris. Similarly this research hopes to explore the reintroduction and evolution of this productive epistemological domain of craftsmanship and new digital tools of making. A hybrid approach that preserves and empowers traditional actors of craftsmanship while infusing increasingly accessible tools of mass customization.

While the study of digital crafts has long been explored within the fabrication labs of universities, there is a need to contextualize such activities within the urban fabric of emerging conditions in Homo Faber and Repair Society. This research takes Madrid as a laboratory in testing the conceptual approach of reintroducing architectural craftsmanship in a city. Taking an ecological approach that empowers existing actors, which simultaneously restructures existing networks to create a self-sustaining urban system. Ultimately, the research hopes to provide insight and a possible model in the return of architectural craftsmanship, which could be translated into other cities.

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Material: Homo Faber, makers movement, industry 4.0

Zaera-Polo, Alejandro, and Hyungmin Pai. *Imminent Commons: Urban Questions for the Near Future*. Actar, 2022.

Quality: phenomenology, materiality, temporality, tacit

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Technocentric: digital mediation, applied, creative

Graham, Steve and Simon Marvin. *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition*. Routledge, 2001.

Multiplicity: infrastructure, energy, mobility, systems

Ingold, Tim. Making : Anthropology, Archaeology, Art and Architecture. London: New York, 2013.

Work: making, hand, design, anthropology

Iseki, Kaijima and Laurent Stalder. *Architectural ethnography*. Sternberg Press, 2017.

Social: ethnography, behaviour, instrument, dialogue

Loos, Adolf. *Ornament and Crime: Adolf Loos*. Penguin Group, 2019.

Quality: ornament, industrialization, functionality

Morris, William, and Gillian Naylor. *William Morris by Himself: Designs and Writings*. Barnes & Noble, 2004.

Quality: Genealogy, Arts & Crafts movement

Nieto Sánchez, José Antolín. "*The Return of the Guilds: A View from Early Modern Madrid*." Journal of Social History 50, no. 2 (2016): 247-272. https://doi.org/10.1093/jsh/shw056.

Working: Guild, actor-networks, socio-political conditions

Reed, Chris, and Nina-Marie Lister. *Projective Ecologies*. Harvard Graduate School of Design; Actar, 2020.

Multiplicity: adaptation, open system, synergies

Red Maestros. "Red Española de Maestros de La Construcción Tradicional." Red Maestros. https://redmaestros.com/la-red/.

Repair: national directory, traditional, restoration, cultivate

Ruskin, John. *The Seven Lamps of Architecture*. Createspace Independent, 2016.

Quality: principles, moral, ethics, philosophy

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Work: tacit, additive, slow time, creative process

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Social: machi koba, craftspeople, network, agency

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EXIT