

Redefining craft in an information society

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abbreviations used: Three Dimensional (3D), Three Dimensional Printing (3DP)

INTRODUCTION

The convergence of technology and the internet have led to the information age. Knowledge, opinions and ideas can be shared on a global scale. This resulted in the individual and humanity becoming more – self- aware of their position in the world and universe. The shift from a hierarchical structure - centralized, top-down – to a lateral structure –networks, cooperation- is fundamental to this change. The concept of a lateral structure in this context is synonymous with that of a semi lattice. The semi lattice forms the counterpart to a hierarchical tree structure.¹ A shift of this magnitude is described by Harvey as fluid interpretation of dynamic oppositions in a matrix of internal relations without a fixed configuration seeking a balance between centralization and decentralization.²

In today's society concepts such as sustainability, customization, personalization, sharing and open-source reflect this change and are starting to take leading role in all forms of design, from art to architecture. Craft has always been a vehicle of knowledge and information. However now that the methods of information sharing have changed and the tools of production no longer depend on tacit knowledge and expertise what can craft offer for the future of design? The urgency to redefine craft during this shift is underlined by Press who states that "Craft is fighting for its survival in a climate of education cuts and persuasive arguments that design education must focus on the needs of industry and commerce".³ Craft holds great cultural and economic value which is under communicated in the information age.

Through a combination of praxeological and phenomenological research a redefinition of craft will be established in context of a larger network along with the consequences this could have on current design methodology.

¹ Christopher Alexander, "A City Is Not a Tree," 1965 (1964): 2.

² David Harvey, *The Condition of Postmodernity*, vol. 14 (Blackwell Oxford, 1989), 339.

³ M Press, "What Has Craft Given Us?," *Crafts Magazine*, no. 227 (2010): 104,06.

DEFINING CRAFT

There is a common notion that craft is associated with tradition, expertise and the old-fashioned. To ask for a definition of craft in today's society is a tall order. Craft is currently being redefined in the eyes of the larger public. To put this into imagery, craft is being redefined; from the carpenter in his woodshed working hours on end to perfect his final product, into phrases like: personalization, customization, and genuine.⁴ Both of these concepts are valid in the shroud that is the definition of craft. Sennett looks at craft from a larger sociologic perspective and names it in his renowned quote as "*an enduring, basic human impulse, the desire to do a job well for its own sake*"⁵. Here Sennett touches upon the value that craft has offered for human progression.

Craft has a close relation to the Arts and Crafts movement that peaked in Europe and North America in the period of 1880 to 1910.⁶ The origins of this movement trace back to John Ruskin who stated that machines and factory work limited happiness.⁷ This concept was further developed by William Morris who considered the machine as a threat to the foundation of civilized life.⁸ These concepts found firm footing with the social advantaged due to, as Levine states it: "a discomfort with excessive materialism and the shoddiness of mass production"⁹

The concept of craft is directly associated with the phrase craftsman. A craftsman is a more accessible definition because its concept is more stable throughout time. It's the person executing the craft. Core principles of craft reflect back into this definition and give it purpose. The craftsman becomes an expert in his field, expressing his knowledge through his tools.

History has given craft an association with manual labor, the so called tacit knowledge. This is being amended in the information age. A physical product is not necessary in order for something to be deemed a craft; this has been accelerated by the introduction of the digital realm. The progression of the

⁴ Colin Campbell, "The Craft Consumer Culture, Craft and Consumption in a Postmodern Society," *Journal of consumer culture* 5, no. 1 (2005): 23.

⁵ Richard Sennett, *The Craftsman* (Yale University Press, 2008), 9.

⁶ Oscar Lovell Triggs, *Chapters in the History of the Arts and Crafts Movement* (Bohemia Guild of the Industrial Art League, 1902), 1,5.

⁷ Ruth Ellen Levine, "The Influence of the Arts-and-Crafts Movement on the Professional Status of Occupational Therapy," *American Journal of Occupational Therapy* 41, no. 4 (1987): 248.

⁸ Daniel T Rodgers, *The Work Ethic in Industrial America 1850-1920* (University of Chicago Press, 2014), 77.

⁹ Levine, "The Influence of the Arts-and-Crafts Movement on the Professional Status of Occupational Therapy," 248.

intellectual craftsman can be seen throughout society, an indicator that the concept of craft is subject to change as time progresses, however the core values remain. Mills states this beautifully:

*“Be a good craftsman: Avoid any rigid set of procedures. Above all, seek to develop and to use the sociological imagination. Avoid the fetishism of method and technique. Urge the rehabilitation of the unpretentious intellectual craftsman, and try to become such a craftsman yourself. Let every man be his own methodologist; let every man be his own theorist; let theory and method again become part of the practice of a craft.”*¹⁰

To define craft both history and future need to be contemplated. Smith identifies three paradigm shifts in relation to craft. The first shift describes the time when anything was considered a craft and everything was done by hand. The second shift starts at the rise of the renaissance and illustrates an intellectual separation between craft and fine art. The third shift occurs during the industrial revolution where craft was separated from machine production.¹¹ Woolley amends this and states that the fourth shift during the twentieth-century established a distinction between machine manufacturing and hand finishing.¹² The fifth shift is the shift we are currently engaged in is described as technology creating novel form through new materials using new production processes.¹³ According to many the industrialization of society marked the end of craft, but it was craft and the knowledge of craftsmen that made the conception of any modern day industrial process possible. Craft holds value by balancing out industrialization through cyclical iterations of progress. Woolley states that “Craft that industry and craft exist in parallel contexts and that as a result, technological progress is non-linear; the pervasive potential of the crafts is fluid.”¹⁴

Santomi envisions the redefining of craft through a craft revolution and states that progress is something that often seems to stand between production and craft.¹⁵ This reinforces the concept of balance between craft and industrialization. Manson directly associates DIY (Do It Yourself), with craft and classifies it as a home-based craft, a clear example of the balance shift in society.¹⁶ This shift

¹⁰ C Wright Mills, *The Sociological Imagination* (Oxford University Press, 2000), 224.

¹¹ Edward Lucie-Smith, *The Story of Craft: The Craftsman's Role in Society* (New York: Van Nostrand Reinhold, 1984, 1981), 11.

¹² Martin Woolley, "Beyond Control: Rethinking Industry and Craft Dynamics," *Craft Research* 2, no. 1 (2011): 12.

¹³ H Aldersey-Williams, "A Perfect Fit? Does Craft Need Technology?," *CRAFTS-LONDON*- 204(2007): 36-41.

¹⁴ Woolley, "Beyond Control: Rethinking Industry and Craft Dynamics," 21.

¹⁵ Mika Satomi and Hannah Perner-Wilson, "Future Master Craftsmanship: Where We Want Electronic Textile Crafts to Go," (2011): 3.

¹⁶ Rachel Mason, "The Meaning and Value of Home-Based Craft," *International Journal of Art & Design Education* 24, no. 3 (2005): 7.

indicates a period of change, a period where the public urges for progression from the established norm that industrialization provides.

Reviewing one of the main motivators for this new industrial revolution - computing and the internet - a threshold is about to be reached. We are nearing the end of our capabilities on the computing front. Moore's law doesn't hold ground due to quantum tunneling¹⁷ and so will this revolution as we currently know it, end and a new era will begin. Perhaps at the end of this era the concept of craft will finally take a – although be it temporary on a larger scale - stable form.

FUTURE CRAFT

Projecting craft into the future requires an analysis of the interaction between industrialization and craft. A large portion of the old crafts have become obsolete because of industrialization, however Form states that industrialization may have created as many new skills as that it made obsolete.¹⁸ Bonnani illustrates the balance between industrialization by stating that industrialization is a response to a demand and isolates consumers from designers.¹⁹ The balance suggests innovation on a large scale. To create new skills is the pinnacle of innovation and the point where new crafts are invented. Here the concept of craft is applied to any field of work. This puts the craftsman at the center as an expert; it is in this definition that craft becomes a drive for progression and innovation.

To connect this concept to the future of craft, progression and innovation have to be outlined. Progression indicates developing particular knowledge and innovation seeks to expand that knowledge. In the information society knowledge is quickly exchanged and the tools are designed to be universal and easy to access. This indicates a further separation between manual labor, tacit knowledge and the core values of craft as outlined in the first chapter. Manual labor can be viewed as working hours on end behind the computer and tacit knowledge might be reinterpreted as the intimate knowledge of a digital creation tool, both take steps away from traditional definitions. The future of craft is explored by expanding the role of the craftsman from expert to innovator. The craftsman could stand at the center for innovation as long as he seeks to expand his knowledge. At the core of expanding knowledge in a

¹⁷ Charles C Mann, "The End of Moores Law," *Technology Review* 103, no. 3 (2000): 6.

¹⁸ William Form, "On the Degradation of Skills," *Annual Review of Sociology* (1987): 29.

¹⁹ Leonardo Bonanni, Amanda Parkes, and Hiroshi Ishii, "Future Craft: How Digital Media Is Transforming Product Design" (paper presented at the CHI'08 Extended Abstracts on Human Factors in Computing Systems, 2008), 2555.

significant matter, stands an intimate understanding of existing knowledge. To make connections between existing concepts and new concepts, a deep understanding of all facets of that existing concept must be present. A lack of understanding will result in a severe limitation to make new connections and to expand knowledge significantly beyond previously understood boundaries.

Innovation is found through new fields and combining different fields of work. Many pioneers in architecture, computer sciences, and medicine learn and draw inspiration from other fields to progress their own fields or to eventually invent new fields of work. This is where the craftsman seeking to expand his knowledge plays a main role in innovation the future of craft. Niedderer supports this concept by arguing that “New technologies provide an opportunity to the crafts rather than a threat if the crafts are understood as experimental and not as subsidiary to either fine art or design.”²⁰ By combining the expertise of modern master craftsmen, both progression and innovation can take place. The excellent definition of future craft as provided by Leonardo Bonanni, Amanda Parkes and Hiroshi Ishii as envisioned by the future craft curriculum of the MIT Media Lab illustrates this redefinition;

“Future craft is a new design methodology that considers how the processes of design and production can be used to reflect new social values and to change dominant cultural processes.”²¹

Closing of the gap between design and production is reflective of the lateral reorganization of information. Sharing and open source represent these new social values and are already being adopted by artists, educational institutions and business. It is possible to transfer physical skills and resources establishing virtual guilds building upon open access to specialized knowledge and technology thereby contributing to knowledge positioned outside the boundaries of established fields of knowledge.²² One of the tools that show the most potential for closing the gap between design and production is the 3D printer.

²⁰ K Niedderer, "Sustainability of Craft as a Discipline," *Making Futures* 1, no. 1 (2009): 165-74.

²¹ Bonanni, Parkes, and Ishii, "Future Craft: How Digital Media Is Transforming Product Design," 2554.

²² Leonardo Bonanni and Amanda Parkes, "Virtual Guilds: Collective Intelligence and the Future of Craft," *The Journal of Modern Craft* 3, no. 2 (2010): 170-90.

3D-PRINTING

3DP (three dimensional printing) is a production method that uses additive manufacturing and it has been around since the 1980's. 3D printing has become the generic term for additive manufacturing and spans a large space of production methods.²³ Mastering the field of 3DP is to master the process that translates the digital into the physical realm. The tool that is used is the 3DP. The expression of the 3DP takes many forms, and is often associated the stereotypical line printer known from desktop printers. This is the result of commercialization of the 3DP and connects with a future where humanity is able to print anything of need and is able to customize this need to individual desires. The core and innovation of 3DP is not found in this expression and scale level.

3D printing is a society changing vision, a revolution indicating a change in the industrial process. The shift to a lateral structure could eventually lead to an economic revolution. Restructuring of patent law in line with larger emphasis on the freedom of information as well as diminishing of centralized distribution points and returning to local production are examples of such a vision which supports the balance shift outlined in previous chapters. However 3DP has to be explored at a molecular and macro level for this to be achieved. Mastery is still required on all scale levels in materiality as well as print method. This is not a one dimensional field; it requires knowledge about computer programming, robotics, molecular biology, chemistry, electronics and materials.²⁴ It is a field that will advance our society into the next phase of industrialization and it can be advanced by combining these and many more fields of knowledge. The point where the future of 3DP connects with values from craft is through the duality of its product. The craftsman produces the input for the printer. In essence that is the product. Translating that product from the digital to the physical informs the original design process but also changes the product itself. Both phases are linked to each other both in quality as design. This speaks toward an interaction between material properties and design.

²³ Peter Walters and Katie Davies, "3d Printing for Artists: Research and Creative Practice," *Rapport: Journal of the Norwegian Print Association* 1(2010): 1.

²⁴ Jeroen Junte, "Op Zolder Een Huis Bouwen," *De groene Amsterdammer* (2015).

DESIGN AND MATERIALITY

After being introduced over half a century ago the computer has taken up a central role in the production and representation of design. The introduction was subject to the conceptual separation of design and product that has been present since the Renaissance. With 3DP closing the gap between digital and physical production, a re-assessment between the digital and the physical in architecture is required.

Menges states that material culture is the physical product and expression of a culture in its artefacts and architecture.²⁵ Materiality in architecture can be viewed as a snapshot of that time representing dominant and explorative modes of production. In its whole it can be viewed as an ongoing discussion on the nature and expression of our build reality. Currently 3DP is stepping towards the well-known mass customization and a new material culture. Further exploration in materiality will inform a move away from instruction based making towards behavior based making.²⁶ Instruction based making is based on a hierarchical construct. The user decides what the design will be and the making is executed. Materialization is not considered as a possible generator for the creative process. Behavior based making is based on a lateral construct where the processes of construction inform the design. 3DP currently is still a 1:1 representation where the materiality has a limited influence on the design itself, it is still instruction based. What is required is, as De Landa states poetically:²⁷

“An exploration into matter and its own tendencies and capacities engaged in its own divergent open-ended evolution animated from within by immanent patterns of being and becoming.”

This allows materiality not to be viewed through an Aristotelian perspective nor a Newtonian perspective but through its own perspective, establishing a balance between design and product that can be viewed as ‘natural’. This line of thought will put concepts about space, form and tectonics up for debate fading the line between production and design by expressing the beauty of the materiality and information.

²⁵ Achim Menges, "Fusing the Computational and the Physical: Towards a Novel Material Culture," *Architectural Design* 85, no. 5 (2015): 9.

²⁶ "The New Cyber-Physical Making in Architecture: Computational Construction," *Architectural Design* 85, no. 5 (2015): 28.

²⁷ Manuel DeLanda, "The New Materiality," *ibid.*: 16.

CONCLUSION

The redefinition of craft in the information society makes visible the link that design and production have with social-economic values and cultural processes. To global shift to a lateral structure reinforces this concept in every facet of life. A critical reflection on the dynamics between craft and industry show the importance of craft in relation to design. The merger of design and manufacturing could cause a major change in how society operates. This combined with computing becoming commonplace while increasing in power demands that any form of future craft will have a digital component and shows that craft can operate as a drive for progression and innovation.

The 3D printer as a tool – perhaps as one of the final tools of craft – establishes a lateral relation between design and manufacturing. The step to let the materiality define design in a significant manner is a further extrapolation of the effect that lateral reorganization has on design and embodies further closing of the gap between design and manufacturing.

Craft is a fluid notion and one of the major agents of change in design. The paradigm shifts in societal progression reflects the value craft has offered, and can still offer. The importance and interpretation of craft as an agent of change in the current discussion of design is under- and misrepresented.

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