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HUMANS X TOOLS

Megan Zeien & Kellie Walters

The use of objects as instruments to construct, cultivate, and protect accredits the very existence of our complex societies today. The development of our society depends on humans ability to create using tools and objects to weld, drill, and create. Humans and tools have a co-dependency for their advancement.

These objects that one uses, that one depends on, become a part of an identity of self, of one's body. The brain senses what is used in human hands as an extension of our body, allowing the body to function as an internal-external mechanism. Studies have shown that tools form a part of an image aura that directly connects the tool to the arm, allowing the brain to sense it as an extension to the human hand or body.

Relating the body to tools reveals a complex relationship between the corporal perception and objects of use and advancement. This relationship goes beyond ideas of making and of using. This extension of the body to include that of an object is a very unique phenomenon, one that reveals the depth of our bodily perception. It must be considered the aspect of sex, of gender, into these phenomena. There is a parallel study within objectification theory among not so much object perception, but self-perception. Specifically, a study discussing women's greater disparity of self-objectification to actuality. When one sex, at the very corporal foundation, perceives her body so differently, how does she assimilate tools differently into her body's visual aura? How might this change the usage of instruments? For Women to be liberated as creators, providers, and cultivators through tools, it must be adapted through their usage of objects along with their bodily perception.

For women to perceive tools comfortably as an extension of self, their perception of self must first be found. Personalization and perceptive responses with objects affect the way we can understand the presence of ones' sense of self and the sense of one's own body.



As designers, we know and work with the experience of the visual. When one is dissociated with the visceral sense of aptitude, it can lead to lower sense of adequacy, which can be connected to an inability to envision oneself fitting into the culture associated with the discipline (Bandura, 1982).

It is apparent in both architecture and industrial design that gender inequality is prevalent and expounded upon when it comes to traditionally male-typed tasks, such as building.

Within the field of industrial design, we discuss ergonomics in hand held objects and are often given the example of tools. We contemplate how we can implement accommodations for safety and ergonomics, but when the topic of gender comes up we look to examples of gendered tool kits. Instead of semantically communicating in the same way as “regular” tools, these sets have undulating curves, pink accents, and are entirely smaller in size (Apollo Tools). These tools have been modified for accommodations better fitting female physiology, but are inadequate in size, function, and semantic inclusion.

When we looked at women holding and using tools in our shop, We noticed that women were approaching builds undistinguished from their male counterparts. Hand position, stature, and mannerisms while maneuvering the tools were indifferent regardless of anthropometric differences. This showed that in light of initial apprehension to shop practice and although the culture and social systems around working in shop may still promote a gendered stereotype, the actual process of making is alike regardless of gender.

We work to rid the social structure of gender stereotypes, but seldom look to the semantics, accommodations, and sources of validation as origin of change. This needs further examination into the minute pieces coming together to form gender inequalities and stereotypes in our disciplines. We need to start looking at what practices, systems, tools, and justifications of expertise are innately keeping women from pursuing our disciplines, or we essentially are contributing to the gender disparities we experience.

1. An approach to ergonomics evaluation of hand tools (Kadefors, Areskoug, Dahlman, Kilbom, Sperling, Wikstrom, Oster, 1993)
2. Body Conscious? Interoceptive Awareness, Measured by Heartbeat Perception, Is Negatively Correlated with Self-Objectification. (Ainley, Tsakiris 2013)
3. Grip strength and endurance: influences of anthropometric variation, hand dominance, and gender (Nicolay, 2005)
4. Hand strength: the influence of grip span and grip type (Fransson, Winkel, 1990)
5. No Universal Constraints (Ambrose, Lazaurus, Nair, 1997)
6. Rapid Assimilation of External Objects Into the Body Schema (Carlson, Alvarez, Daw-An Wu, Verstraten, 2010)
7. Self-efficacy Mechanism in Human Agency (Bandura, 1982)
8. Self-efficacy: Toward a Unifying Theory of Behavioral Change (Bandura, 1984)
9. Tools and means of implementing participatory ergonomics (Kuorinka, 1997)
10. Women Engineering Students' Self Efficacy – A Longitudinal Multi-Institution Study (Marra, Bogue, 2006)
11. You Are What You Touch: How Tool Use Changes the Brain's Representations of the Body (Haggard, Longo, 2017)