Tool-things:
the Making of an Apprentice

by
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A thesis exhibition presented to OCAD University
in partial fulfillment of the requirements of the degree of

Master of Fine Arts
in
Interdisciplinary Art, Media, and Design

Ignite Gallery, 165 Augusta Ave. March 20th to 30th
Toronto, Ontario, Canada, April 2018

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Interdisciplinary Art, Media and Design
2018

Abstract

Tool-things: The Making of an Apprentice represents the beginning of an apprentice's toolkit, one that can be read as evolving in parallel to the knowledge gained through its making. This work taps into the human connection to tools by focusing on some of the most familiar ones: the hammer, screwdriver, clamp, and handsaw. Most of these tool-things have been meticulously made from metal and wood to be almost indistinguishable from the everyday, readymade objects they sit alongside, and both are seen in an unexpected light. Paused during a process of metamorphosis, somewhere between the familiar and alien, they encourage us to question what comes first: the knowledge, or the tool? Potentially sparking frustration in their apparent uselessness, *Tool-things* ask us to look a little longer–it could just be that we don't yet recognize their use.

Acknowledgments

Thank you to my advisors, Ian Carr-Harris, and Kathy Kiloh. I have valued your time, conversation, and support and I feel honoured by the generosity with which you offered it.

Thank you to my committee members, Roula Partheniou and Gord Peteran for your time and consideration in engaging with my work and pushing it forward.

Thank you to IAMD Graduate Program Director, Dr. Barbara Rauch and acting Director Dr. Martha Ladly. I am grateful for the confidence you have placed in me, and the incredible opportunities that it has provided.

Thank you to Jessica Wyman, and the Writing and Learning Centre. Your enthusiasm and understanding have been integral in helping me to finally formalize the scattered thoughts within these pages.

Thank you to Claire Brunette, Peter Bowyer, and Stan Krzyzanowski for welcoming me into your workshops and sharing your knowledge and time.

Thank you to the OCAD University graduate staff, not only for your help but also for simply putting up with crazy people like me year after year.

Thank you to my incredible graduate cohort you gave so much and I am proud to be your friend and peer.

Thank you to my friends, notably Mitchell F Chan and Remi Theriault. You were always there when I needed a break.

Thank you to my parents, Mike, and Anita Simon, the Vogls, and the Scherers for the unconditional love and support you have given me in this and all my pursuits - however offbeat they may seem.

Thank you, most of all to Rhiannon Vogl. You inspire and amaze me with your unparalleled drive and perseverance and unwavering love. I don’t think I will ever understand your unshakable confidence in me but it carries me through everyday. I love you forever.

Dedication

To Rhiannon

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“What’s he building in there? What the hell is he building in there?... We have a right to know”

Tom Waits. “What’s He Building In There?”
Mule Variations. 1999. Anti-Records.

Chapter 1: Introduction

I grew up surrounded by people who made and fixed things - mainly practical, utilitarian things. Some of my earliest memories are of shadowing my father around the garage that was attached to our suburban bungalow, or going with him to the auto body shop where he worked for years as a painter and body man.

I vividly remember the shop, the smells – bondo, lacquers, enamels, thinners, and other solvents - toxins I’m sure no child should be familiar with, let alone have a fondness for. I recall the sounds - the rhythmic scraping of rasps and sand paper, the commanding, shrill bursts of an impact wrench, or the cringe-inducing shriek of a grinder. I remember the lighting, especially the ominously shadowless paint booth - its continuous rows of fluorescent tubes mounted on the ceiling and also the walls, right down to the floor, their cold, uniform brightness only partially softened by months of fine, multi-coloured overspray. I might be the only child who saw the futuristic spaceship interiors depicted in *Star Wars, Alien, Space Odyssey* – whatever – and thought, “paint booth.”

And of course, I remember the towering tool cabinets, usually red, one for each tradesman, each filled with exciting, usually dangerous, dirty tools that I didn't yet understand and was told repeatedly not to touch. So I would just look and imagine, and I guess I still do. These things began making me who I am before I ever laid hands on them. In a way my undertaking of this work began as an attempt to revisit this fond memory and dive deeper into the things and spaces that were responsible for it. The goal was to regain and subsequently share some of the wonder I remember experiencing then.

In doing so I’ve come to realize that one’s personal and social understanding of, and relationship to tools is as dynamic and evolving as the concept of the tool itself. The more one uses any particular tool, the greater potential it has to become an extension of the self, and the more influence it exerts on one’s perception of, and relation to the world. This ontological integration of tools happens naturally, almost unwittingly, as it is the process that allows for repetitive daily tasks to be done efficiently and effectively without the need for devoted attention.

Routine, however, can result in taking anything for granted and tools are no exception. This is especially the case for the most basic, unsuspecting tools - and inevitably they end up being relied upon for only their most obvious, conservative, or cursory applications.

But how does one's perception of a thing compare to someone else's? Take the master craftsperson's awareness of their tools for example. For that matter, what is the tool's perception of a material, or the user that it's brought into dialogue with through the act of making? To a hammer does everything really look like a nail? How can one ever know? What could one learn from lingering on such silly questions?

The making of things, much like writing, is a means of understanding and a form of communication. Unlike writing, however, making of material things is not restricted to a dialogue between humans – tools extend this reach much farther, allowing one to meet the material world on its own terms. Through them, one may begin to trace the edges of knowledge, at least metaphorically – according to Ian Bogost – of what it's like to be some other 'thing', be it a plank of kiln-dried hard maple, a master carpenter, or a cross-cut handsaw they have chosen in order to trim the board to length. Using tools allows one to gain knowledge that it is impossible to gain in any other way.

As Ian Bogost also notes, "Making things is hard…simply getting something to work at the most basic level is nearly impossible" (Bogost 2012, 92). The tools-things in this exhibition acknowledge this and speak to the emergent, often frustrating quality of making - be it a body of sculpture, a space arm, a cake, or a thesis paper. No idea comes out fully formed. Making is a process that leads to the slow and steady evolution of all its component parts. Knowing, like making, takes time, it is an evolutionary process; this may be the hardest thing for the apprentice to learn, and to trust. This work and this paper represent more of a coming-to-know.

This process was conducted through practice-led research as determined by the application and adaptation of a combination of Charles and Janet Keller's anthropological apprenticeship and Ian Bogost's *Alien Phenomenology* as a working methodology. The observations within this study concentrate on the conceptual insights and formal potential that can arise when one is asked to shift their perceptions of mundane, simple, or benign tools, through the acquisition, evolution, or creation of knowledge vis-à-vis making.

The body of work created for this thesis exhibition represents the beginnings of an apprentice's toolkit. It features a set of hand tool-like things that appear simultaneously familiar and alien. Despite having been carefully crafted from wood, metal and re-imagined readymade objects, the expected normative function of these tools has been stripped away, subverted, or never included at all. These tool-things, as they will henceforth be referred to, attempt to 'un-

conceal' a conversation that can challenge what is thought to be understood of the concept of the tool. Like a set of tools I consider the installation complete only when all of its parts are present. However it can only begin to be understood by considering its component parts, many of which will be reflected upon soon enough through a series of narratives relating their making. The following section intends to hold us over until then by providing a brief description of the thesis installation as a whole.

Is it a Workbench or a Plinth?

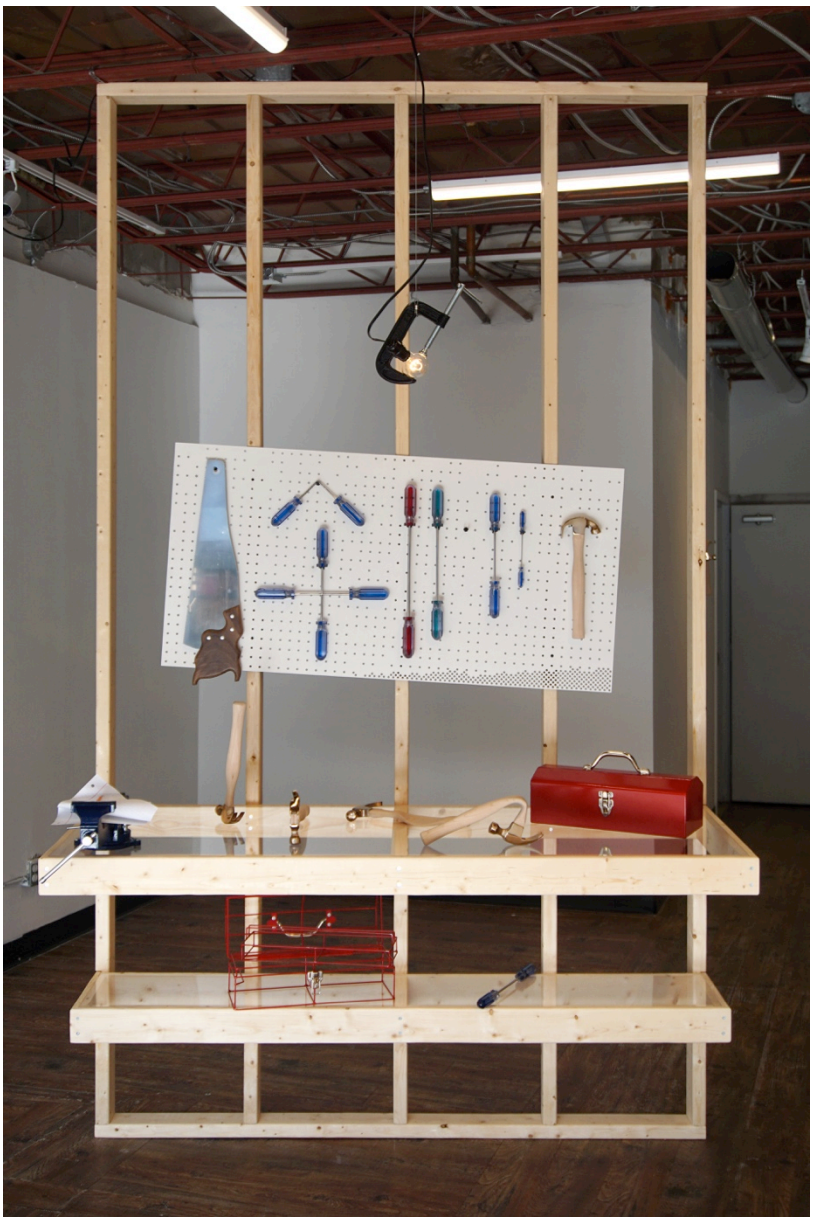

Figure 1. An apprentice's workbench

With exception of the obligatory black didactic text by the front door, the white walls of the long narrow gallery are bare and unlit. The only other thing in this main room, about two thirds of the way in, is a six-foot wide section of stud wall wedged between the floor and the open truss ceiling. The plane defined by its construction-grade, SPF (spruce, pine, fir) 2x4's stands slightly askew to the otherwise rectilinear room - making it appear as though it was recently pinched from some unremarkable, unfinished basement, and for whatever reason, temporarily stashed here.

Projecting off its open studs, and as wide as the wall itself are two shelves. Although they are robustly framed with the same lumber, they support two sheets of crystal clear, anything-but-robust, acrylic. The upper one is of typical counter height and depth the lower one sits at about knee height and about half as deep. Their tops being transparent one can look down through both for an almost unimpeded view of the dull floor. If it were not for this seemingly odd material choice, and if it were not installed in an art gallery, one may be inclined to call this thing a workbench. This sense is reinforced judging by the things laid out on it – which I will return to in a moment.

Above the top shelf/workbench, is a pegboard made from the standard quarter inch thick Masonite most traditional pegboard is made from. It also has the typical pattern of holes, drilled on a grid of one-inch centres, except of course, where some have come loose and fallen to the bottom, causing the panel to hang a little crooked.

Figure 2. Shelf in the storage room

On the bench and hanging on the peg boards is the apprentice's nascent collection of tool-things, currently including six confused hammers, one toolbox that can't open, and one that has no inside or outside, one narcissistic hand saw, and another that is too long for its own good, a bench vice with writer's block, and a complete set of manipulative (or collaborative –depending on which end one finds themself on) screwdrivers. Hanging above these misfits is a C-clamp, demonstrating its delicate touch by grasping a clear incandescent a-lamp, the light from which illuminates the entire installation like the idea above one's head.

There is also a storage room through the back of this one stockpiled with old jigs, templates, and failed experiments, each waiting for a return to the workbench.

WARNING: How to Safely Use this Thesis-thing

Before proceeding, I feel it is my responsibility to provide the following disclaimer on the use of this thesis-thing, its scope and limitations and why it looks a little funny.

Consider the thoughts in this document – like the sculptures in the exhibition – as the beginnings of a toolset being amassed and organized by a novice apprentice. New implements have been acquired, customized, or fabricated from scratch as each new challenge has presented

itself. As a result, this toolbox, as an ever-growing collection may still appear somewhat haphazard, not quite fully worked in, maybe even lacking some tools the master may assume essential. But all things have to start somewhere.

Tools are typically seen as implements employed as the means to some other end. It is easy to forget that tools too, with very few exceptions, require other tools in their own making. Multiple hand held and stationary machines including TIG and MIG welders, drill presses, belt, disc, and spindle sanders, table and band saws etc. were employed in making almost all of the work in the exhibition, as were a number of computer aided devices including a laser cutter, water jet, CNC mill, especially in some of the previous work. This of course only speaks to the objects I had a hand in, the manufacturing of the readymade objects would have no doubt involved much more complex industrial assemblages. These machines however, are not formally represented in the work; instead the selection is restricted to traditional "dumb" hand tools. This absence should not be interpreted as some kind of rejection of technological progression. It is also not an attempt to stake a position on whether such machines or devices can, or should, be considered tools at all – that has been taken up at length by David Pye (Pye 1968, 9), at least as far as machines are concerned, and a similar conversation around electronic devices should be reserved for another discussion. Beginning here with common, "dumb" hand tools like the claw hammer, hand saw, screwdriver, clamp, and toolbox - selected for their all but universal familiarity – establishes a foundation that can later be built upon to include more complex assemblages. The functional aesthetics of these basic tools, and the visibility of their minimal parts also speak to the fundamental ways humans continue to use tools in the making – and passing on – of knowledge.

In December of 2014 the doors of the new Cooper Hewitt, Smithsonian Design Museum were opened. Its inaugural exhibition was titled *Tools: Extending Our Reach*. The first line of the introductory essay written by co-curators Cara McCarty and Matilda McQuade reads:

> "Tools form our world and enable us to access and grasp it- sometimes literally. The word 'tool' describes virtually anything that aids us in accomplishing a task… Some are seemingly simple, beautiful poetic gestures; others save time and alleviate the toils of daily life; still others are game changers that have allowed us to achieve amazing feats that propel us as humans" (McCarty and McQuaid 2014, 13).

This is a fairly standard description of some of the most influential tools in human history that have both reflected and changed how humans have come to think about the world. In other words, an otherwise incredible exhibition seems to have missed the point that with these tools we

don’t just change the world - we change ourselves. Paying these things their due is where I feel the fields of anthropology, phenomenology, and of course, the practice of art and making can come together to add a new dimension. In the following chapter I will outline how I combined these fields into a unique methodology - or “tool-kit” - that will allow me to test the claim further. I have used this kit both to make and reflect upon the sculptural things in this exhibition. Now, feel free to rummage around, rearrange, or spill these tools on your own workbench as you please.

Chapter 2: Methodology

I came to this research with the feeling that there may be more to tools than they are given credit for, something one innately understands and recognizes as wonder in childhood but grows numb to with the experience of age. In order to recognize and challenge my own preconceived notions of the tool, I thought that a suitable methodology would be one that required me to go back to the start, work extensively with tools and materials, and learn, or re-learn from the experts. But my interest lies not only in human experts who are still once removed; I wanted to learn what I could, however I could, from the tools themselves. As a result, the methodology I've settled on is rather an assemblage of three, which I refer to as an Alien Apprenticeship - for reasons that will become clear momentarily.

The first methodology incorporated is self-reflexive, practice-led research, which aside from prioritizing the making and the made "describes an inquiry process that is directed by personal interests and creative insight, yet is informed by disciplined knowledge and research… [and] open to alternative conceptions and imaginative options" (Sullivan 2010, 110). This definition comes from artist, author, and the Director of the School of Visual Arts at Penn State University, Graeme Sullivan, whose research is devoted to the investigation of thinking processes in visual arts and studio-based research practices. According to Sullivan, "the artist is the key figure in the creation of new insights and awareness that has the potential to change the way we see and think" (Sullivan 2010, 70). Sullivan expertly voices a growing view, one that I share, that art practice qualifies as research if it produces new knowledge, emerging from the act of creating artwork itself.

The second methodology incorporated into this Alien Apprenticeship is, appropriately, apprenticeship, which loosely defined, is a contract entered into by a novice and an expert, or master, where, in exchange for labour the latter imparts their knowledge of their trade. Although I did not take on a formal apprenticeship I audited a number of foundational, hands on, courses at the undergraduate level, which produced a similar learning environment. I approached these opportunities as apprenticeships and they were elemental in imparting knowledge via the teachers, technicians, procedures, materials, and of course, tools unique to each workspace. The courses included: bronze casting, mould making, metal fabrication and woodworking. The list indicates ascending order of previous experience, beginning with none. In all cases starting, or starting over from the beginning afforded me time to become socialized within the idiosyncrasies particular to each shop, and absorb what I could of its functions, organization, peers, and the pedagogy by which their fundamentals were taught.

While apprenticeship finds its roots in these kinds of hands-on practices, it also has a strong pedigree as a viable methodology within anthropology where it is seen as "the logical extension of the participant-observer method long advocated by ethnographers" (Keller and Keller 1996, 3). Anthropologist Charles Keller adopted this particular methodology when he took on a seventeen-year research project, in the craft of artist-blacksmithing, as a way to investigate what tool use could possibly say about human thought. As he sees it, apprenticeship provides the only effective means of "exploring the communication of knowledge from expert to novice… [where] physical and mental aspects of technological activities become habituated and routinized to the point that information about them is difficult to verbalize" (Keller and Keller 1996, 3). He notes that in previous studies of "the relations between knowing and doing… attention to either… to the exclusion of the other has rendered [those] accounts of each component inadequate" (Keller and Keller 1996, 24). Fellow anthropologist Tim Ingold would later describe apprenticeship as a way of "knowing from the inside" (Ingold 2013, 5).

As previously noted it was never my intention to limit my apprenticeship to learning from interaction with other humans, and this is where Ian Bogost's *Alien Phenomenology* comes into play. I have adapted this philosophy here as a methodology. Bogost, a philosopher and video game designer, describes *Alien Phenomenology* as an applied form of the better-known branch of the speculative realist philosophy Object Oriented Ontology. Departing from traditional metaphysics, OOO "puts things at the centre of being," contending that while "we humans are elements, [we are] not the sole elements, of philosophical interest… everything exists equally" (Bogost 2012, 6), as valid fodder for speculative philosophical quandary. *Alien Phenomenology* provides a theoretical armature to my experiment, in which I assume there is as much to learn from the handsaw - about a wood plank, sawing as a verb, or the concept of friction - as there is from the master craftsperson who wields it. There are a number of other theoretical tools and terms attached to *Alien Phenomenology* that I will return to in following chapter.

With this methodology in place I will now turn to some of the literature and art practices that have helped me understand where this Alien Apprenticeship has led me.

Chapter 3: Literature Review

Everything looks more toolbox-like to me everyday, and I can't help but see the books on their shelf before me as just that – as toolboxes on a bench. Of the dozens I've rummaged through, those that made the cut are by thinkers interested in *doing* as much as theorizing. In the previous chapter I introduced facets of Charles and Janet Keller's *Cognition and Tool Use: The Blacksmith At Work*, and Ian Bogost's *Alien Phenomenology, or What It's Like to Be a Thing*, both of which I borrowed from to construct my Alien Apprenticeship methodology. In the following pages I will further unpack ideas from these core texts as well as introduce a few artists – including Roula Partheniou, Theaster Gates, and Los Carpinteros - whose practices have been equally integral in situating my relationship to my practice and how I make and extract written meaning about and from it. These musings are not intended to explain *Tool-things* but simply provide a possible way one may approach it. I will begin here with a closer look at the philosophical work of Ian Bogost and the diverse world of things.

More than a toolbox, Bogost's accessible, compact, and versatile *Alien Phenomenology* serves me as a kind of philosophical Swiss army knife. Its central concepts: ontography and metaphorism, as well as Bogost's proposed method of philosophical carpentry**,** not only build upon the speculative philosophy of object oriented ontology, but proposes a way of *doing* it. These concepts and methods have proven central to my investigation of tools and my own relationship to them. I will start by clarifying two of the key terms at play: object oriented ontology (OOO) and things.

Object Oriented Ontology

The central tenet of OOO, as put by speculative realist philosopher Levi Bryant, is that "the being of objects is an issue distinct from the question of our knowledge of objects" (Bryant 2011, 18). In other words, OOO takes for granted the *being* of all things – human, non-human, physical, conceptual, relational, or otherwise. Object Oriented Ontology drops the long-held Kantian addendum, dubbed "correlationism" by Quentin Meillassoux (Meillassoux 2008, 5), that things only exist for us humans via our perception of them. Object oriented ontologists claim that their refusal of Kantian correlationism results in a more equal relation between the human and the non-human, opening up a relation that Levi Bryant refers to as a "democracy of objects" (Bryant 2011), following Bruno Latour's concept of a "parliament of things" (Latour 1993, 142).

Bryant adopted the term Flat Ontology in reference to this concept of non hierarchical being. Bogost claims that within the two-dimensionality implied by *flat,* there is still too much room for a line to grow bumpy. In turn he commits to the concept fully by compressing it even further into a single, one-dimensional point or a black hole of being, which he calls Tiny Ontology. Bogost goes on to describe his system as a fractal one, where once the thing in question is brought into view, the scale resets to zero no matter how big, small, complex, or simple it may be. Applying Bogost's tiny ontology to my own work, this means that the simple red toolbox is as worthy of investigation as any hammer, screwdriver, saw, or clamp it contains; not to mention the shop that contains it; the sheet metal, red lacquer molecule, or the abstract concept of containment that define it; or the craftsperson, community, or history of making that it serves. As Bogost quips, "anything is thing enough to party" (Bogost 2012, 24). Which leads us into the next thing – 'things'. As misleadingly simple as a word as the "dumb hammer" is as a tool, 'thing' has a rich philosophical history.

Things

As both a word and a concept, "thing" does a lot of heavy lifting in my body of work. My reasons for employing it are rooted in the same philosophical complexities and histories that Bogost cites for abandoning it. Having little use for the abstract or metaphysical baggage of "thing" he attributes to Kant, Heidegger, Lacan, etc., Bogost claims the word must be abandoned to get at what really matters - and instead proposes his own term, "unit," in order to do so (Bogost 2012, 24). Needless to say, unlike Bogost, I'm not ready to give up on such a rich word just yet. Similar to the patina on a well used tool, the philosophical accumulation on "thing" tells us much about how versatile it has been and still is, as a referent to the "abstract and the concrete" (Bogost 2012, 24). Even Bogost reverts back to "things" when speaking to the root of the discussion, doing so, for example, when he asks "how did it come to this, an era in which 'things' means ideas so often, and stuff so seldom?" (Bogost 2012, 3).

In order to provide a definition of 'thing' as I have applied it in my practice I refer also to professor of literature, Bill Brown, whose own Thing Theory builds on Martin Heidegger's distinction between objects and things. To paraphrase Brown, something exists as an *object* when it is performing as expected and as such exists as virtually invisible - when the window is clean, or the computer is computing, for example. An *object* is revealed as a *thing* however, when it becomes unavoidably apparent, most obviously when it breaks or stops performing as expected and it must be confronted – when the window from the previous example gets dirty and obscures

one's view, or the computer freezes and one contemplates throwing it through said dirty window (Brown 2001, 4). Brown zeros in on the vague quality of thing I find so useful in reflecting on my own work and tools in general when he writes "the word [thing] designates the concrete yet ambiguous within the everyday… an amorphous characteristic or a frankly irresolvable enigma: 'There's a thing about that ~~poem~~ [hammer] that I'll never get'" (Brown 2001, 4).

About Brown, the purist OOO crowd might raise their pitchforks and shout, "Hey! What is that correlationist doing here?" (Not of course without first considering what a pitchfork's experience of being raised might even mean). By grounding the conversation in OOO first, I'm applying some much needed grease to scales that have been tipped in favour of human centred perception for so long that they have seized there. Now that a potential for movement has been restored - via peer reviewed literature that dares to question what the experience and knowledge of any thing might be - one can acknowledge that their ability to do so is nevertheless caged, not only in their perception as a human, but specifically in their own, individual, human perception. The value I see in OOO, both with regards to *Tool-things* and in general, is just how much it challenges one to exercise the muscle required to consider the experience of the other, or the alien as Bogost would have it.

I find *thing* and its philosophical history, both correlationist and object oriented, useful for the task set up for myself here. By undermining their normative use function, my tool-things assert their thing-ness. Following Brown's *Thing Theory*, asserting the thing-ness of the humble tool becomes a means of suggesting that perhaps it has never just operated for us, but always with us. Employing Bogost's even less conventional *Alien Phenomenolog*y and its methods then becomes not only a way of pointing out a collaborative nature of tool use, but a playful way of considering what it is the tool experiences so that one may learn from it, as an apprentice.

Ontography, Metaphorism, and Carpentry

My introduction to *Alien Phenomenology* was through the particular "aesthetic set theory" Bogost calls ontography and describes as a method of recording some corner of the fullness of being and letting it overwhelm us, one "in which a particular configuration is celebrated merely on the basis of its existence" (Bogost 2012, 34). The term can lead to some confusion as it has been used differently in multiple fields. Bogost credits physicist Robert F. Kitchener with the definition he finds most purchase with. According to Kitchener "ontology is the theory of the nature of existence, and ontography is its description" (Bogost 2012, 36). In

other words, if ontology is interested in being then ontography is the mapping or cataloguing of the vastness of things that are.

Bogost does not limit the ontograph to a particular form or medium, exemplified by the vast spectrum of specimens he provides, which range from shopping lists to Brazilian bossa nova to video games. One specific example he calls the Latour Litany, named endearingly for Actor Network Theorist Bruno Latour, known for writing exhaustive lists. I have included my own reference to this specific type of ontography in the last section of this paper - one stemming from a personal frustration with words that in this particular case led to the making of a manipulative (or collaborative) screwdriver-thing.

Figure 3. *An Escape Ladder for Alan*

In the context of *Tool-things*, ontography provides an interesting framework for looking at a workshop and its inventory of tools - one perfectly suited to drawing attention to the infinite variation of tool/maker/material relations that I would come to know in the making of the work. A year ago I tried my hand at making, or 'carpentering' to use Bogost's term, my own sculptural ontographs. One of the resultant pieces, *An Escape Ladder For Alan* is included in the storage room component of the exhibition. It joins a series of readymade objects into a kind of emergency rope ladder, while another previous attempt included a combination of miniature, hand-carved and 3d printed objects broken down, or exploded, into their component parts. Both suggest ways that unseen or unnoticed components from one thing interact with another, often through the mediation of yet another. While the ontograph makes us aware of the richness of being in the workshop or the toolbox, another of Bogost's tools, metaphorism, suggests how one might begin to comprehend the experience of those things.

Bogost proposes metaphorism as a method, which, as the name implies, suggests metaphor – scientific, poetic, material, or imaginary – to characterize the phenomenology of things in ways one might better understand. While he raises this as a kind of thought experiment targeted at an ethics of things, I will stick to my own path for now. I deploy metaphorism as a means of thinking about the human/tool relationship as a two-way street of shared knowledge.

I propose that the human relationship to tools is one which is and has always been rooted in such metaphorism, even if it didn't previously have a name. The hand tool is a kind of physical metaphor by which one can come to know a little more about the material world. Since the dawn of the handsaw for example, one can understand a little more about a piece of wood by knowing "how" it exists for the spring steel teeth of the saw. Describing the hardness of a board does not provide the same information as drawing the saw through it.

Figure 4. *Hammer #1*

Bogost notes anthropomorphism as one type of metaphor, which can be used effectively to suggest the possibility of a non-human thing's experience. I employ it to a various degrees in a number of pieces in *Tool-things*, particularly the set of six hammers, whose normative use value has been undermined by what could be interpreted as anthropomorphic, often pathetic, gestures. These tool-things exist as fictitious metaphors suggesting that even as one judges a tool, (taking pity again on the "dumb hammer,") the hammer may pity them right back, for a growing incompetence in their use. Although one can never know what it would even mean for a hammer to experience pity, through the anthropomorphized metaphor I've employed in deflated, tired or

resistant gesticulations, it is at least possible to begin to believe that they can. The act of making objects capable of this kind of work, Bogost calls Carpentry. “The carpenter… must contend with the material resistance of his or her chosen form, making the object itself become the philosophy” (Bogost 2012, 93). In this, Bogost, a writer himself, questions writing as the dominant form of scholarship and suggests there are a myriad material forms it could take. How can one know what knowledge they are missing out on if they are too busy writing ideas down to look up? This question is at play in my own work even if it is a sensitive one at this academic level.

I find Bogost’s adoption of the word 'carpentry' intriguing in itself, and perhaps a little telling of a more general concern at the heart of my project. On one side carpentry alludes to a general cultural connection to woodworking, one that I play to as well in the tools I have chosen to represent, particularly the iconic claw hammer and handsaw. On the other, maybe the appreciation of woodworking is losing at least some of its clout if Bogost feels he can adopt it wholesale without causing too much confusion. He pays metaphor more respect by adding the suffix –ism upon laying claim to it.

Thinking Through Making

In order to further consider the symbiotic relationship between tools and their users, a relationship forged in the act of making, I return now to Charles and Janet Keller’s *Cognition and Tool Use: The Blacksmith At Work*, a study rooted in the field of cognitive anthropology. Roy D’Andrade, widely acknowledged as the founder of this subset of anthropology, describes it as “the study of the relation between human society and human thought” which is concerned with “how people in social groups conceive of and think about the objects and events which make up their world” (D’Andrade 1995, 1). Although the Kellers’ work is the primary focus here, throughout this section I also make reference to another anthropologist, Tim Ingold as his study in their collective field takes a similar tactile strategy.

In order to answer the questions “[how] does someone make something?” and “what might the use of tools… tell us about the workings of the mind?” (Keller and Keller 1996, 15), Charles Keller subjected himself, over the course of almost two decades, to learning, from scratch, the craft of artist blacksmithing. The resultant in-depth research presented by him and his partner Janet Keller, present tools as a material manifestation of the maker’s knowledge as well as, at least to some degree, what they are capable of, or intend to produce in the future. They also stress the limits of assuming such intentions however, revealing that it is the very nature of both tools and knowledge to evolve over time. This trait, the Kellers refer to as emergence, and

propose that it results from the maker's "ability to conceive, act, assess, and reconceive in the process of making" and allows one to find solutions that mediate between conceptual thinking and material reality (Keller and Keller 1996, 18).

Tim Ingold, also interested in how knowledge is manifested in and shared through making, conducts his own anthropological research by engaging himself in many traditional handcrafts including basket weaving, stone knapping, and winding of rope. In doing so he hopes to encourage traditional anthropology to broaden its scope and consider not only the "life histories and social interactions of the people who use, consume or treasure" artefacts but also "the creativity of the productive processes that bring the artefacts themselves into being" (Ingold 2013, 7). While Ingold praises his teachers for their level of craft and the high quality of the instruction they provide, he is very astute when it comes to drawing attention to the point where language breaks down and becomes ineffective at describing nuances that can only be understood through watching and then doing for oneself. It is this strength in Ingold's writing, which I am drawn to. *Tool-things* proposes a bridge between the traditional anthropology that Ingold describes as caught up in "the people who use… or treasure" artefacts and the anthropology he wants, which focuses on "the creativity of the productive processes" that result in artefacts themselves.

While both the Kellers and Ingold adhere to the written form expected by their peers, it is clear that these scholars, like Bogost, see a problem with the dominance of language in the collection and sharing of knowledge. Each effectively argue that at least some of the knowledge created and shared through the making of things and working with tools, is not accessible through language alone. This is emphasized by Charles Keller when he writes that his own "apprenticeship demonstrated that much information… was conveyed in modalities other than the verbal"(Keller and Keller 1996, 12) going on to say that in fact, their data suggested "thoughts may actually occur... most often in non-linguistic form, especially when... involved in making" (Keller and Keller 1996, 130). *Tool-things* strives to highlight the elusive quality of the knowledge embodied in tools and making rather than making another attempt to pin it down.

Collection of Tools as Practice

We return now to the Kellers' concept of tools as material knowledge in order to look at how they defend the maker's collection of tools as a practice unto itself . In their discussion of the workshop and its inventory of tools as active, material knowledge, Janet and Charles Keller adopt the concept of a "Stock of Knowledge" from phenomenologist Alfred Schutz. Schutz defines this

stock of knowledge as, "the sedimentation of previous experiencing acts together with their generalizations, formalizations and idealizations. It is at hand, actually or potentially, recollected or retained, and as such the ground of all our protentions and anticipations" (Schutz, cited in Keller and Keller 1996, 61). In other words, a maker's tools and their organization, represent not only the knowledge of which they are mentally aware of through their past making, but more interestingly, they contain potential knowledge, not yet realized. The Kellers characterize the maker's knowledge of their tools as being as dynamic as their physical arrangement of them - both of which are "continually subject to growth and transformation" though the practice of making (Keller and Keller 1996, 61). Of the tool-things that make up *Tool-things,* the ones that were not inspired directly by the stock of knowledge I was surrounded by in the metal, wood, and foundry spaces, spawned from the ones that were, and as my collection of physical tool-things grew so did my mental inventory of new tool-things I had yet to realize.

The Kellers go on to describe the collection of tools as a practice in and of itself noting, as the maker "acquires a tool inventory and organizes that inventory… [they build] the environment in which they work. This process constitutes a practice" (Keller and Keller 1996, 60). I hope to emphasize this transformative, environment-making quality of the organization of tools through the way *Tool-things* is displayed in the gallery. The inclusion of the workbench, even this non-normative one, works to re-establish the perception of the art gallery as a vibrant place of making (be it conceptual and/or relationship making), not just the space of passive display and observation.

Emphasizing what any maker already knows, if not innately at least, the Kellers speak directly to the importance of being surrounded by one's tools, stating "visual contact between the smith and [their] suite of implements is as important as the ability to retrieve the tool physically" (Keller and Keller 1996, 77), going on to say "a glance at a tool may trigger an idea for production" (Keller and Keller 1996, 94). As mentioned earlier, as the inventory of *Tool-things* grew, so did my ideas for more tool-things. Simultaneously, as I was in the shop producing these things, my knowledge of the tools I was using grew, as did my familiarity with the others I was surrounded by but had yet to employ.

With that we will now turn to some artists whose practices have influenced my work before moving onto a discussion of the work itself.

Influential Artist Practices

There are many artists whose work would form an appropriate reference with respect to my own practice, including Hadley and Maxwell, Geoffrey Farmer, and Clint Neufeld, to name even just a few of the Canadians alone. However, the practitioners I've chosen to include here share an affinity for installation, the communicative power of the everyday object, and a questioning of perception, all of which I find they express in excitingly satisfying ways. These include fellow Canadian, Roula Partheniou; Theaster Gates from Chicago, and the Havana-based art collective Los Carpintaros. In each case I have selected one project against which I will position my own. As with the theories I presented earlier, I do not claim to be an expert on their practices, but simply wish to acknowledge the ways they have inspired me in making as well as reflecting on my own work. I will begin with Roula Partheniou.

Roula Partheniou

Figure 5. Roula Partheniou. *House & Home & Garden*. 2015. Installation at Oakville Galleries in Gairloch Gardens, Oakville, ON (images by Roula Partheniou)

In 2015, Partheniou – a sculptor and installation artist renowned for her masterful ability to wrest the double-take from viewers via impeccably crafted, minimalistic replicas of banal everyday objects - was given the opportunity to interact with architecture at the same one to one scale on which those previous works depend. She did so by transforming several rooms of the Oakville Galleries into the site of a renovation, the resultant work is titled *House & Home & Garden*. Not only were the spaces inhabited by many of the small and medium sized objects, like paint cans, rolls of tape, and cardboard boxes typical of her past projects, some of the spaces themselves were also constructed by Partheniou. She used mundane real plywood and wall studs in combination with facsimile construction materials, like the pink rigid insulation, which she silkscreened in perfect detail down to the unforgettable panther logo, effectively "blurring the boundaries between the readymade and the handmade" (Davies 2015, 3).

In his essay introducing this work, curator Jon Davies notes the strength with which Partheniou's work "encourages close critical examination not just of her own creations but of everything around us" (Davies 2015, 3). It is this ability to make one question their perception far beyond the gallery walls that I find particularly exciting and valuable in Partheniou's work. The reason I chose to include this particular project is because of the way it goes beyond questioning the perception of the individual things in the environment to the construction of the environment itself. This is something I attempt in *Tool-things* via the workbench/plinth and temporary unfinished stud wall in the middle of the otherwise whitewashed gallery space.

Central to Partheniou's practice are the replica and the double take it invokes. She relies on the universality of the objects she depicts, choosing those that are "so common and mass produced as to arguably have no original" (Davies 2015, 6). Partheniou's replicas of these everyday objects often see them reduced to the minimal amount of visual information necessary for their identification. According to Davies, this draws one's attention to the way our brains rely on a "kind of visual shorthand rather than really looking." (Davies 2015, 2). I think it is important to note that this kind of lazy perception is not limited to common or simple objects, but to all objects, independent of their complexity. Development of this kind of shorthand is specific to the individual and the things they surround themselves with. But there are some objects that are undeniably more universally recognized than others. For the purpose of the project it is important to begin the conversation with the objects that will resonate with as broad a crowd as possible. Although restricted to the realm of hand tools, I employ this method in my own work.

Partheniou's sculptures make the task of convincing the viewer to question the fundamentals of their perception look easy. It's not. I have attempted this feat in some of my own work, *Red Toolbox Full?* for example. So, when I do manage to bring the viewer around to

"really looking", I like to have a little fun while I'm there and imagine a possible world of things and what they are "really doing" that we're potentially missing out on. While my tool-things do not attempt to be replicas like Partheniou's, they are, like hers, an attempt to call to attention the assumptions that human perceptions rely upon.

Theaster Gates

Figure 6. Theaster Gates. *True Value*. 2016. Installation at the Fondazione Prada, Milan (image by Delfino Sisto Legnani Studio)

Technically trained as a potter, Theaster Gates is nothing if not the quintessential interdisciplinary artist. His practice has expanded in past decades to combine elements of urban planning, social activism, music, performance, film, and installation - not to mention a recent series of 'paintings' produced in roofing tar from the tar kettle he inherited from his father. The project I will focus on here strikes a personal chord as it pays tribute to the humble hardware store and its troubling disappearance from the urban fabric. In the two short years since I moved to Toronto and began work on *Tool-things* I have witnessed the closure of two local stores that were a great source of materials, tools, inspiration, and knowledge.

The installation titled *True Value* was produced in 2016 and was the feature piece in a solo exhibition of the same title. To create it Gates relocated the entire contents of an abandoned hardware store from his own Chicago neighbourhood across the ocean to the prestigious Fondazione Prada, in Milan. There, it was resurrected as a shrine not only to its previous incarnation and its owners, but also to hardware stores and their proprietors facing similar fates in urban centres everywhere. Gates reverently describes these individuals as "the gatekeepers of expertise" and credits them, their shops, and the merchandise with the knowledge to "keep our crumbling world together that little bit longer (Ellis-Petersen 2016). Some may shrug and think, "so it goes, that's progress." But Gates is calling attention to another dark side of urban gentrification, one which hastens our alienation from things by severing access to the few remaining resources one has to make or repair them. "By moving [the inventory] wholesale, Gates [wanted] people to take a moment to consider – and appreciate – the knowledge implicit in all 30,000 objects hanging on those hooks" (Ellis-Petersen 2016). Why are many so quick to give up these libraries of material knowledge, and their keepers? This is the kind of question that springs to mind in contemplating this piece, which in turn inspires my own work.

Despite the vibrant gradient afforded by the inventory packaging, which Mike Watson of Hyperallergic notes lends "the feeling of a color field installation" (Watson 2016), the monumental scale and proportions of the piece, as well as an ominous calm added by the cold gallery, gives the work the impression of a memorial wall. With that in mind, one may interpret the meticulous colour-coded order imposed upon the once useful objects like the alphabetical listing of fallen soldiers. This feeling is further reinforced as Gates has left the sides of enormous plinth open, drawing one's eyes to the dark cavernous area below where larger items, many concealed in cases, stand quietly silhouetted among the shadows. All the while the original hardware shop sign hangs above, so rusty that "True Value" has become almost illegible. While I don't think my own work possesses quite the level of mourning I'm reading into *True Value*, there is no denying that there is a bit of it at play. There is a sense of darkness, perhaps even loss that is constantly at odds with the initial appeal of the absurd or comedic.

To conclude this section on a slightly brighter note I would like to draw a connection between Gates' *True Value* and Ian Bogost's concept of ontography, which comes up time and again in my own practice. That is to say, that by unfolding the aisles of the hardware store, and holding up the awe inspiring variety of random bits and bobs that make up its inventory so one may ponder how they may be used alone or in infinite combinations, *True Value* is a perfect example of Bogost's ontograph. Maybe such a contemplation of "everything" is still too overwhelming to end on, so lets zoom back in and focus on one little thing. When questioned

about the reason for this work Gates related the sentiment of a retired hardware store owner who told him “there is as much knowledge in a screw as in a book.” (Ellis-Petersen 2016)

Los Carpinteros

Figure 7. Los Carpinteros. *Mucho Caliente* | *Much Hot*. 2010. (Image courtesy of Ivorypress, Madrid)

Los Carpinteros translates from Spanish literally as ‘the carpenters’ and in this context, it refers to the Cuban artist collective formed in 1991 by Marco Castillo, Dagoberto Rodriguez, and Alexandre Arrechea. Critics and collectors bestowed the name upon the group early in their practice, which at the time, was heavily rooted in woodwork and the hand tools associated with the traditional trade. Although Arrechea departed from the group in 2003, and their sculpture and installation practice has expanded well beyond conventional woodwork, Castillo and Rodriguez not only continue to embrace the title gifted to them but seem to have expanded it, making the term a conceptual tool in its own right – one capable of bridging the often disparate worlds of arts and trades and resulting in a practice that elevates both. Their “strategies of craftsmanship raise the question of how the artists complicated the object” (Ankele and Zyman 2010, 10). In a monograph published 2010, “Handwork – Constructing the World” editors Gudrun Ankele and Daniela Zyman speak to the great potential of this duality:

> "Artists can tell us about unreal worlds, about fictions; craftsmen build things for "the" reality, which can be used and function in "our" reality. What happens if craftsmen construct new worlds, if they appropriate this fictional competence from the arts and employ it in their own "simple" work of crafting, building, and realizing? What if this construction of new worlds is no longer restricted to artists or politicians but practiced by self-empowered craftsmen as well? Here we find a level of engagement with the political, understood as a new ordering of the relations among art, politics and the sensible" (Ankele and Zyman 2010, 11).

While I could have chosen any number of works from their expansive portfolio to discuss, I have selected *Mucho Caliente | Much Hot*: a standalone sculptural work. The piece, which so convincingly presents a milky white conga drum melting across the floor, may be relatively simple when compared to their often grand installations; however it is nonetheless a perfect example of one of their "prototypical anomalies of the everyday" (Ankele and Zyman 2010, 11). There are a number of elements at play in this work that Los Carpinteros have done so well, that I would be remiss if I did not acknowledge their effect on *Tool-things*. Like Partheniou and Gates, Los Carpinteros' questioning and manipulation of perception is rooted in their use of the familiar, mundane object, which are repeated over and over throughout their projects.

Mucho Caliente, in its exquisite craft, faithfulness to the detail of the original object it references, and the disjuncture it provokes via its rendering of a material known to be solid as a liquid, explicitly plays with humour in a way that isn't present in the works of Partheniou or Gates discussed here. I employ a similar trope in a few of the hammers created for *Tool-things*, whether read as melting or elastic deformation, playing with expected nature of the material suggests a state of flux in our understanding. Returning once again to Ankele and Zyman, they describe the melting at play in the work of Los Carpinteros as "a powerful process of disintegration but also of activation and animation… it is a transgressive procedure invoked to describe the dynamics of movement and stasis in imagery, in which objects are endowed with the qualities of change and becoming – objects suspended between two states of being." (Ankele and Zyman 2010, 144). Though Los Carpinteros' work was born from the political and economic climate of their native Cuba, their questioning of the common perception of the trades, the humble object, and materiality has universal appeal, and serves as a constant source of inspiration and standard by which I measure *Tool-things*.

Chapter 4: The Making of an Apprentice

My own process of making, as an Alien Apprentice, resulted in a singular installation consisting of what I am now calling *Tool-things* – a series of sculptural experiments using various metals, woods, and readymade objects that resemble in many ways some of the most readily available and widely recognizable basic hand tools: hammers, handsaws, screwdrivers, clamps and toolboxes. These tool-things are not tools in the traditional sense since their expected use functions have been all but removed, or in some cases never included. Judged as tools they are of course useless and frustrating; however, as tool-things they are intended to be intriguing, even comical in their strangeness. They implore one to set aside their assumptions about what they think they know of tools - call it a kind of Husserlian bracketing (Husserl 1971, 110) - so one may see again with fresh eyes and open minds, restoring even for a moment the wonder one experienced as a child in response to even the most basic things.

If an apprentice must first familiarize themselves with the relevant tools, let me list those that became my inventory, the contents of my toolbox.

The workshop inventory:
1 wall mounted workbench, 1 pegboard, 2 toolboxes, 6 hammers, 7 screwdrivers, 2 saws, 1 vice, and 1 clamp

The storage room inventory:
1 escape ladder, 1 pegboard (beside itself), 1 metal shelf containing: 3 inverted tools (hammer, saw, and screwdriver), 3 pink silicone moulds (socket set case, hammerhead, and half a saw handle), 5 carvings (screw, nail, bolt, screwdriver handle and a dripping paint brush), and the remnants of 1 attempt to understand Martin Heidegger (digital video and aluminum panel)

There is a further tool involved, language: both visual and written. Both are required for the apprentice to communicate, and by communication I mean the ability to form, or craft, something of value, along with the fluency by which to articulate the full range of human emotions, including the power of humour to connect and engage. I will now try to demonstrate the use of this particular tool:

Toolbox-thing: A Précis of the Workshop

I'm staring at a toolbox. At least it looks like a toolbox. It's toolbox shaped. It's almost rectangular, a bit more than a forearm long, by a hand wide and tall. The two longest edges on the top are chamfered thirty degrees, so the box looks kind of house-like if viewed from the end. Without having to pick it up, it has a familiar weight and it gives the sense that it is made of metal. The colour is that bright fire engine red that a lot of metal toolboxes are painted. It has a hinged handle on top and a draw latch on the front - both are shiny chrome. It looks a lot like the toolbox that followed my father around when I was growing up. If it wasn't on the workbench in the garage, it was in the trunk of the car wherever we were going. "Just in case" he would say. It looks just like that, except for one small thing.

Figure 8. *Red Toolbox, Full?*

Well, more like, except for the absence of one thing. It is missing a line. The line. There is no line to divide top from bottom, lid from box. On any other toolbox that line is a seam. Really, it's the absence of a physical line that is important there as well. Maybe it is more importantly a space demarcated, in fact, by two lines – one that defines the top edge of the box and another that defines the bottom edge of the lid. The tiny radius created by the hemmed edge

of the metal however further dissolves the line and upon staring it is more of a soft dissolving gradient from bright red to blackness.

Either way, whatever you want to call it, it's not here, not on this toolbox-ish thing. This toolbox cannot be opened, not physically anyway, not without destroying it. Whatever is in there is never coming out and nothing else is ever going in. Its contents, even if just empty space, are forever cut off from the outside world. I recall, as I laid down that last TIG weld that finalized the division of inside from outside, the joy of making being momentarily interrupted by the feeling of doing something wrong. The contents can now only be contemplated – and I can't stop thinking about Schrödinger's poor cat.

But is it a toolbox? Was it ever a toolbox? I mean, it looks like a toolbox. I cannot NOT see a toolbox when I look at it. Contemplating it as I write this, it just continues to sit there, quietly, doing whatever it is doing. Is it useless? I would say no. This particular toolbox was never made to open, not literally anyway; it was never intended to contain or store another physical tool. It was made to be made and now it is a point of focus, enabling me to write this paper, and at least in this moment it's doing that perfectly well. Like a word said too many times – toolbox, toolbox, toolbox, toolbox, toolbox – this object is moving farther and farther away from normative sense the longer I look at it, and in a way it is taking the toolboxes it represents along with it.

This toolbox was made at the beginning of this apprenticeship. But I can honestly say that in that moment I didn't know why I was making it or even what it was at the time. I just needed to make something. Looking around the metal shop, inspired by tools and attempting to understand their organization in that unique space, a toolbox seemed like a good place to start.

(Un)Making a Screwdriver

Tool, machine, device, technology, object, thing, sculpture, art, artist, studio, post-studio, studio-craft, craft, craftsman, craftsmanship, workshop, work, labour, make, maker, build, building, builder, design, designer, architect, architecture, writer, writing, theory, theorist, discipline, interdisciplinary, trans-disciplinary, post-disciplinary, thinker, thinking, philosopher, philosophy, phenomenology, ontology, being, object oriented, unknown, knowing, knowledge, tacit, embodied cognition, hierarchy, value, use, useless, skill, skilling, de-skilling, re-skilling, up-skilling, purpose, frustration, emotion.

I juggle these words, for what feels like the thousandth time. I add and subtract from them with each new reading, conversation or venture down the internet hole. Their hierarchy

shifts daily. Trying to make sense of them, I fight to get them out of my head in some coherent way. I attempt to arrange them in a mind map on piece of heavy paper from an oversized drawing pad, then I move to tracing paper, maybe fluorescent post-it notes will work, or my black notebook, finally I go to my laptop. The longer I try to force them into order the less sense they make. Frustrated, I push my computer aside and grab my notebook again and make a drawing. This time, it's a pair of screwdriver handles connected to either end of a single shaft. It takes less than a minute, but this makes sense to me.

With a heavy feeling of guilt that I should be trying harder to find the words, I get on the streetcar and head to a big box hardware store. There, I stare at the options for much too long. Other customers walk over, grab what they are looking for, and walk off, barely missing a beat. Two different sales representatives ask me if I need help. "No" I say to one, to the other I mumble something like, "it's for a sculpture" and they walk away. I'm sure there is a surveillance camera focused on me at this point. I finally decide on a pair of identical, ¼", 6", slotted, (or flat-blade depending on the vernacular) screwdrivers. They have standard chrome vanadium shafts, which can be seen as anchored by a pair of ribs about halfway into the clear, acrylic, fluted, handles. The plastic is marked with a primary blue, semi-transparent paint, on the concave of every flute. They look the most screwdriver-ish to me. As I am thinking about the similar one that lives in my father's red toolbox – his may have been yellow - the cashier ask me if I realize I'm buying two of the same screwdriver. "Yes, thank you." This confirms they are indeed identical enough. I thought someone might notice that the blade on one is rotated off a couple of degrees from the other. I think about the minimal allowable tolerances of factory production.

Avoiding my clean desk a little longer, I bring the implements to the metal shop in the basement of the school. Upon seeing one of my shiny new screwdrivers locked helpless in a bench vice, angle grinder equipped with a cutoff wheel in my hands, the regulars in the shop smile and shake their heads. They have a pretty good idea of what I'm about to do and they don't bother asking why anymore. Under the scream of the grinder I apologize to the brand new, perfectly functioning tools, then decapitate both. The cuts are then de-burred and given a 45-degree bevel on the stationary belt sander. Using a couple of small c-clamps to temporarily hold the headless screwdrivers, (is a headless screwdriver still a screwdriver?) tip to tip in the concave of a piece of angle iron. This simple jig ensures the alignment of the shafts and acts as a heat sink, making it slightly less likely that I will melt the plastic handles during welding – a real possibility.

With the patients in place, I open the valve on the gas tank, turn on the MIG-welder, adjust the voltage and wire-feed speed, and suit up for the procedure. I put on a heavy raw leather

jacket and gloves, and a welding mask, one of the fancy techy ones with a sensor that electrostatically increases the opacity of the lens at the moment of arc. I pull the curtains around the table, get my hands in position, put my mask down and in a lighting white arc of electricity the two screwdrivers become one. I unclamp the screwdrivers/screwdriver/sculpture, and quench them/it in the water barrel. Back in the clamps I tack the other side and then build up any low spots.

Figure 9. *Screwdriver IIII*

Next is the finishing. While a grinder might be faster, on something so small I prefer to take down the weld with a hand file. Then I employ increasingly finer grits of sandpaper, 80, 120,

220, each one replaces the scratches of the previous with their own set of finer ones. After that, the piece is polished on a buffing wheel in a sequential process similar to sanding, except with compounds that are applied to the wheel in the form of what looks like colour-coded bars of soap, black, brown, green and rouge (and don't call this one red if one wants to be taken seriously). Finally the metal is brought up to the shine of the unaffected metal with a liquid rubbing compound on a piece of leather.

Then it is done. It makes me smile and it reassures me, at least for a moment, that I might know what I'm doing, that I am capable of clear thought. Then I show it to you and you look at it, and maybe you smile, and maybe this makes you look at it again. I add it to the slowly growing set of similar thought tools. I can pull it out of the box any time it's needed. I also know that it needs to be part of a set, no one ever owns just one screwdriver.

Then, I go back to writing and I get frustrated and so I make another drawing. This time it is of a hammer that looks extremely tired.

Hammer Variations

I am trying to know the hammer by pounding my head on my desk.

As I searched for the perfect hammer, I realized that the wooden hammer may be going the way of the dodo. This triggered two thoughts. One, how my surprise in this betrayed my own disconnect from the people who actually use the tool everyday and what they are looking for. And two, the power of nostalgia and its relation to materials. Is it easier to forge a long term memory of something made of a material more readily recognizable as natural, such as wood, rather than say carbon fiber or metal alloy?

The desire to make the first of what soon spun into a series of confused hammers came as an impulse. It was sparked by a project brief for the introduction to woodworking course that I audited. The requirement was to make a useable implement. Considering my questioning of the concept of use, and given that all of my objects are at least representative of implements, this was a way to explore use further.

Figure 10. Inverted Hammer

I had made one hammer previous to this as part of a three piece set also including a screwdriver and a saw. In that set the materials were inverted. The hammer head and saw blade were carved and laser cut, from basswood, while the screwdriver blade was sharpened from an acrylic rod. In all three objects the handles were cast in aluminum. This project didn't feel completely successful then, and only feels slightly more so now. While they are aesthetically pleasing objects, they come across as confused, which I felt was a negative at the time and have since attempted to refine. The cast aluminum and soft basswood felt like the wrong choice. Returning to the more recent hammers which are all made out of hard maple and cast bronze…

Figure 11. *Hammer #5*

I tried to make a hammer. Multiple times. But this is what came out. I'm acting as their union representative, allowing their voices to be heard in a way us 'dumb' humans can understand.

Chapter 5: Conclusions

I wanted a perfectly formed design of what this thesis paper would be before I started to write it. But making doesn't work like that. I should know that by now. Knowledge and skill, much like the product itself, be it art object, a piece of furniture, a thesis document, is emergent as the Kellers might say. One must take up the tool and make the thing to allow knowledge to emerge. This was supposed to be a journey of discovery, an adventure, and if discomfort is one definition of adventure then I guess it did indeed turn out to be just that. But one must learn to trust the tool, guide the saw, since if it's forced, it will bind. I was trying to so hard to force the tool that I almost didn't make the cut.

At the end of all this writing do I consider words tools? I have to answer Yes. And sentences? Tools. And paragraphs? Also tools. Chapters? Books? All tools. It's tools all the way! More and more complex and polysemic tools, but tools nonetheless. What are letters then? Well perhaps letters are more like raw materials. How can these literary things, the tool-things in the exhibition, and the tools employed in the shop that made them all be tools? Well, simply, they are all implements that one uses to shape and understand the world around them. They aid or allow one to externalize and share otherwise ephemeral inner thoughts.

As a result of this alien apprenticeship I have removed the normative function of the tools and turned them into tool-things, disrupting the flow, re-focusing attention on how the thing itself came into being, and how knowledge is both constructive and constructed.

The work is not to be handled, which works against a natural inclination to do so. The tool-things exist purely as implements of reflection, and this serves two purposes. First, they function on the inverse conditions of Heidegger's hammer, the idea that when one stops and looks at the (normative) hammer and consider what a good job it has done, it ceases to be a hammer. In contrast, this apprentice has made tool-things, which when in hand cease doing what they are meant to do and become novelties. Second, they exist as manifestations of the time spent in their creation, which another can never grasp fully unless they were to take up the same process for themselves. This apprentice sees the completion of the work occurring in the mind of the viewer through their imagined interaction with the tool-things. Tool-things don't function well as pragmatic hand tools, but they function perfectly well as tools for the imagination.

The Toolbox, the Workbench, and the Storage Room

The workbench serves as the anchor for the project within the gallery, acknowledging both the content of the project and site of its viewing. The dedicated workbench offers an assertion of place or permanence; it has the capacity to transform any space it occupies into a workspace, a place for making. Or, as is the case of the art gallery, it has the ability to 'highlight' a place as one where important (conceptual and/or relationship) making occurs. The toolbox, on the other hand, is of a more nomadic nature - a concentrated, précis version of the workshop, available to travel and adapt to most challenges well enough. Also, the toolbox is a less intimidating volume for the apprentice to start filling and organizing with newly acquired tools that the apprentice must at some point bring to the workbench.

Not to be underestimated is the storage room. It is a space of incubation, where old objects - the physical manifestations of past ideas that were never fully developed or just needed time to rest – accumulate, intermingle and metamorphose. A return to the storage room can often prove to be rewarding. Unintentional groupings, or simply the passage of time have the astonishing ability to allow one to see something banal in an entirely new light. This was the experience I had upon installing the objects in the 'storage room' of *Tool-things*. Originally intended to showcase experiments I considered unsuccessful or divergent, seeing them all together sparked new ideas and reignited interest in some of the paths I was perhaps too quick to abandon early on.

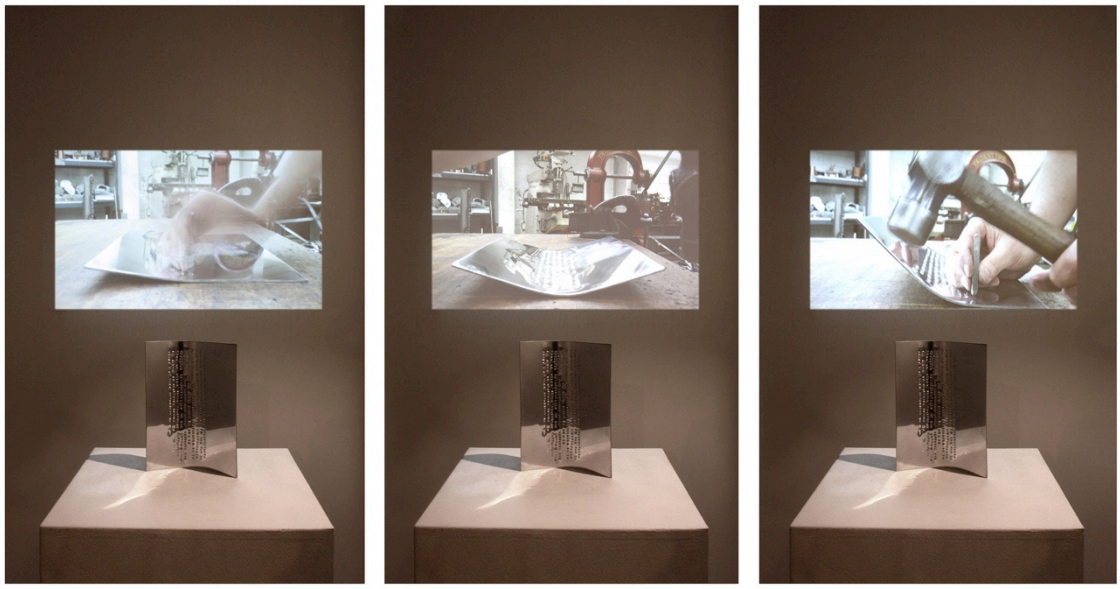

Figure 12. Stills from *Hammer Thing (remnants of an attempt to understand Heidegger)*

One particular example is the piece *Hammer Thing (remnants of an attempt to understand Heidegger)* in which an attempt was made to understand and verify a passage by Martin Heidegger that claimed that the only way to understand a hammer is through using it. The result was a barely legible yet intriguingly formed piece of polished aluminium, an experiment that I would like to return to.

The toolbox, workbench, and as I would find out, the storage room, and the collection and organization of tool-things they allow combine to serve as an auto-biographical document revealing a small part of the apprentice's internal logic. They are doing what they do perfectly well. I approached this project with a suspicion that even the most rudimentary of tools are capable of more work – be it creative, philosophical or conceptual – than they are typically given credit for. Judging from the variety of reactions I've received so far, and the endless possibilities for theoretical exploration, this hunch seems to be true – perhaps to an even greater degree than I imagined.

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Appendix A: Documentation of the workbench from exhibition at Ignite Gallery

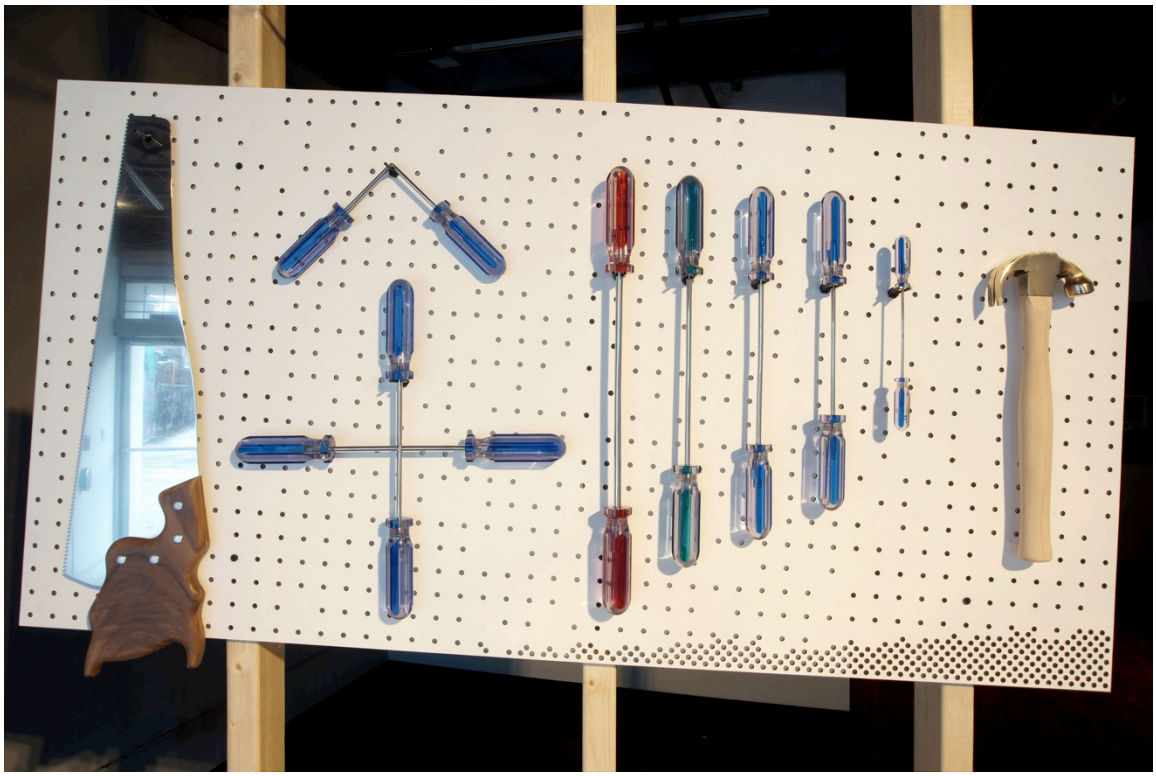

Figure 13. Workbench detail with pegboard, screwdrivers, hammer, and saw.

Figure 14. *Hammer #2*

Figure 15. *Hammer #3*

Figure 16. *Hammer #4*

Figure 17. *Hammer #6*

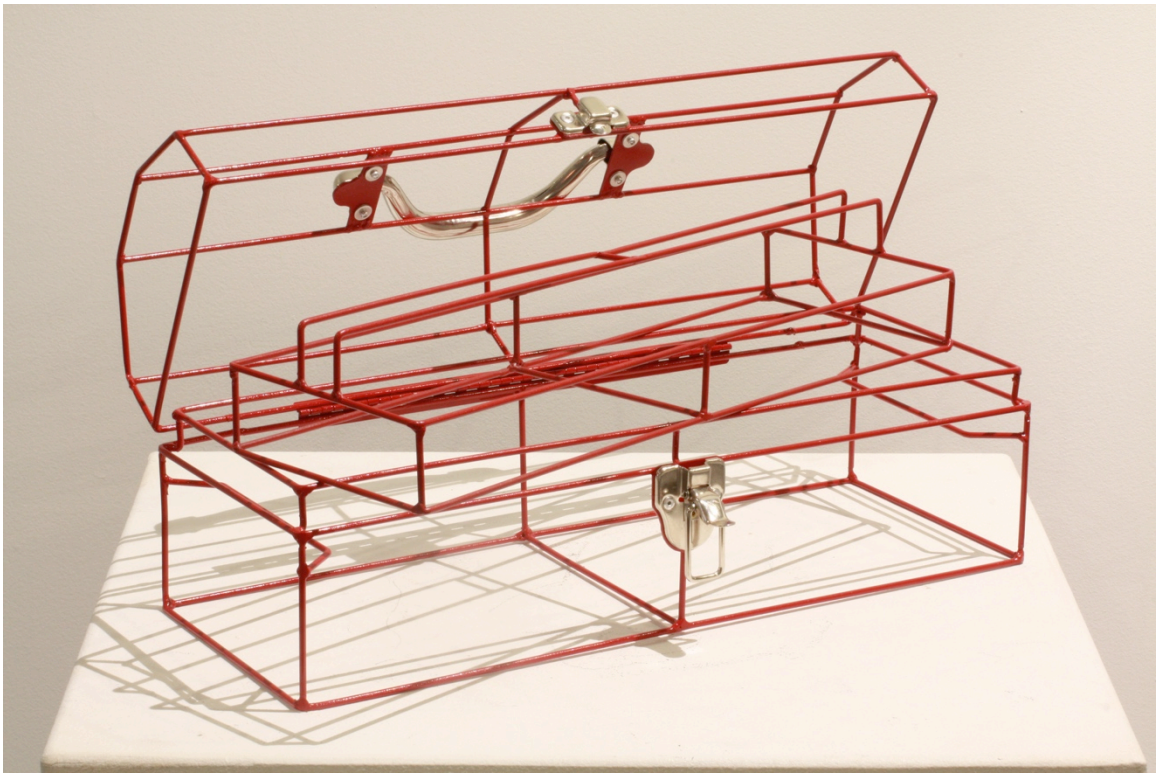

Figure 18. *Red Toolbox, Empty?*

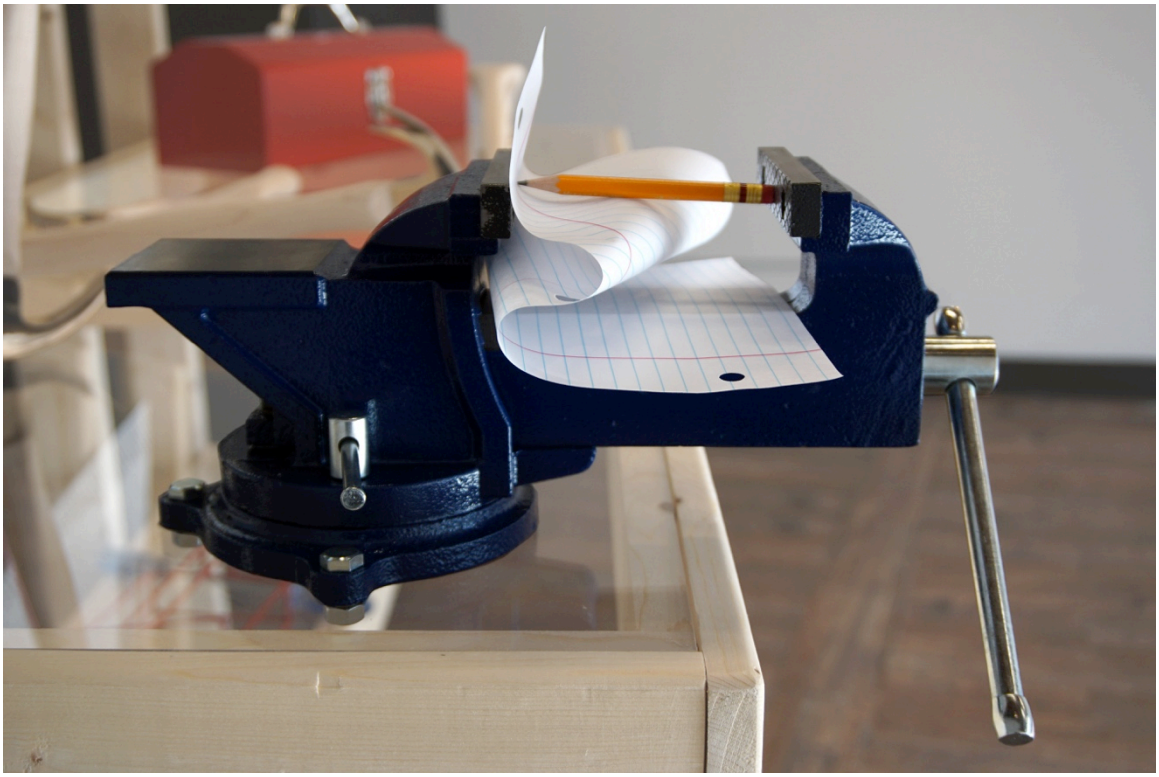

Figure 19. *Pressure*

Figure 20. *Long in the Tooth*

Figure 21. *The Harder I Work the Clearer I Become*

Figure 22. *Hold That Thought*

Appendix B: Documentation of the storage room from exhibition at Ignite Gallery

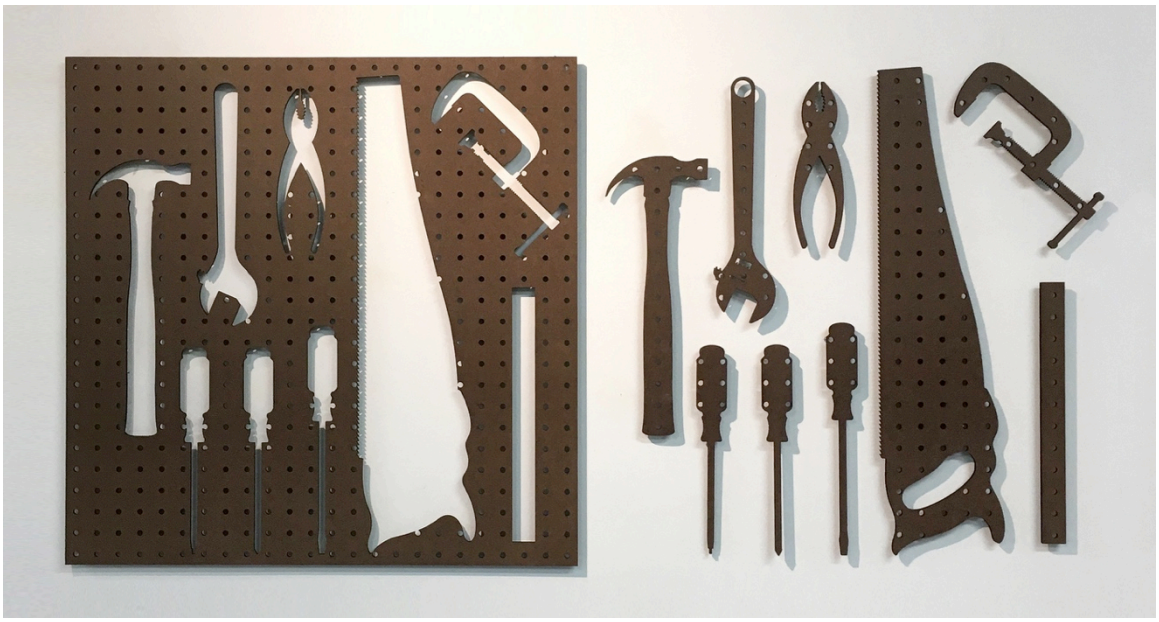

Figure 23. *Parts and Holes*

Figure 24. *Case Study #1*

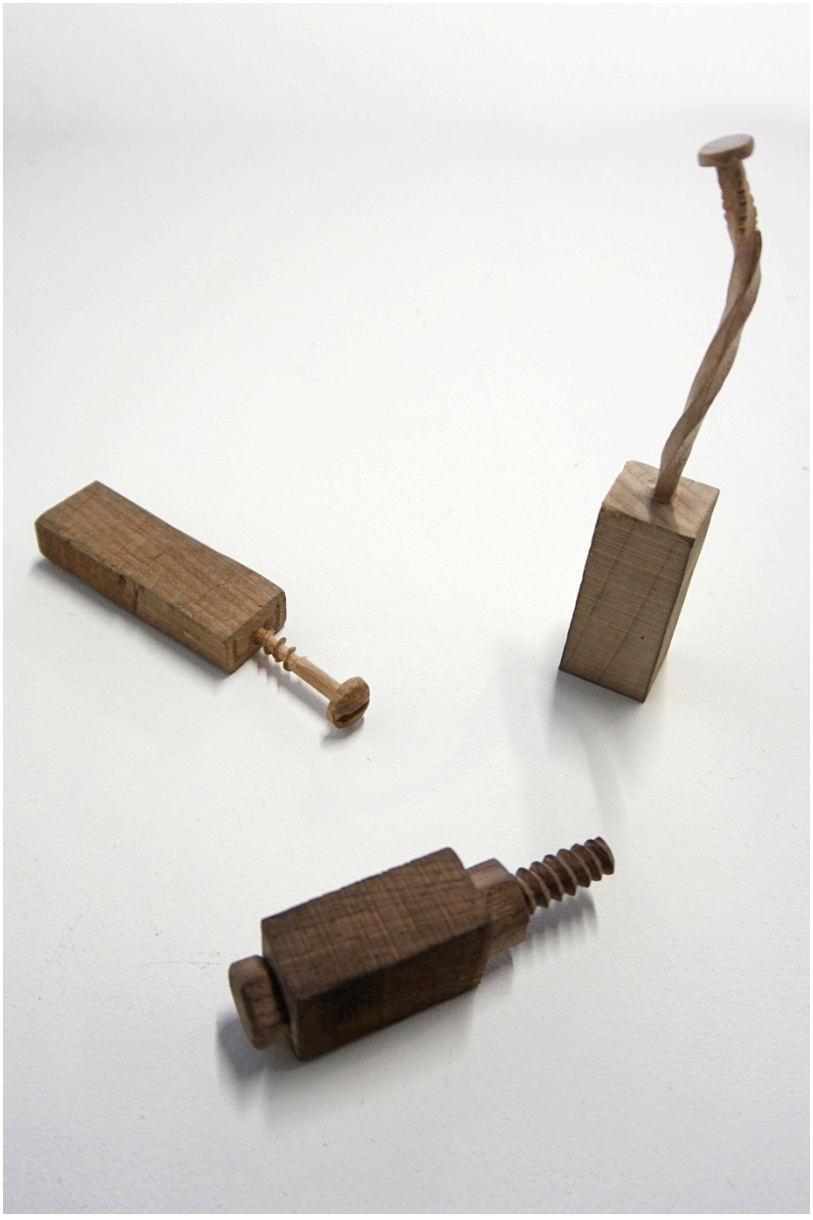

Figure 25. *Fasteners*

Figure 26. *Drip*

Figure 27. Inverted Saw

Figure 28. Inverted Screwdriver