

Find and Play: Fostering Creative Agency Through Making with Found Objects

by

Peter Lombardi

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Dalhousie University is located in Mi'kmaq'i,
the ancestral and unceded territory of the Mi'kmaq.
We are all Treaty people.

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Abstract

This thesis is about our relationship to the objects around us: the things we make, use, and waste. It posits the need to take ownership over anthropic material through the act of making with found objects to reassign value to waste while fostering creative agency. Found objects and designers enter an active dialogue of physical form finding through experimentation that capitalizes upon the inherent richness of the object. Working at the scale of furniture, the experiments employ an iterative, informal design process.

The design process is documented using process notation, facilitating a translation that is generative by nature. The resulting handbook reinforces the art of inquiry, imploring people to 'play' in design and making, where the outcome is co-authored by the designer and the objects. Intended as a boundless catalyst of public creative agency, the handbook celebrates the non-linear nature of working with imperfect objects to instill a wasteless mindset.

Acknowledgements

Thank *you* for opening this document. I hope it inspires you to go make something.

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Thank you to my family, friends, and partner, for supporting me even when that meant not seeing me. To my father for not throwing things away, to my mother for knowing when to. This thesis is a product of the life you gave me.

Chapter 1: Introduction

Preface

I like to play. By this I mean that I like to experiment with found objects to solve complex problems in the act of making or fixing; I get satisfaction out of 'making it work'. This thesis is a lot like that, it works with what I am already interested in, within a medium that I prefer to work in. This is a thesis about playing with objects, specifically objects that are otherwise seen as waste. It is not specific to architectural salvage, and it takes issue with the notion of 'upcycling'. The saying 'one person's trash is another person's treasure' applies here, though ideally no one would see the objects as trash. I walk around the city and see piles of 'waste' from demolition, construction, renovation, and everyday life. I see these piles for their potential, the project to be. I want everyone to see waste this way; such is the goal of this thesis. Let's dive in.

Initiation

Waste is all around us: the disposable nature of modern culture predetermines the production of waste throughout our material systems. The volume of waste is on an opposing trajectory to the volume of raw materials, creating a moment in which waste must transition, becoming a resource rather than a burden. To facilitate this shift, our collective relationship with waste must be reconsidered to one in which ownership and responsibility foster an ethic of stewardship that reassigns value to waste through creative agency.

The built environment accounts for one third of solid waste creation in Canada, a reality of the current practice of architecture that must be reconciled (Shorthouse 2021, 1).

Recycling and waste management are short-term solutions that fail to address the core issue of waste production in Canada, perpetuating *tabula rasa* as the dominant approach to material use in design. This approach positions materials as serving design intentions unconditionally through their elemental properties. Recycling reduces material objects to this state, to a featureless lump that is remade to fit design (Ferracina 2022, 5). Reuse, on the other hand, embraces the formal qualities of the material object to capitalize on the embodied energy and inherent richness of the object, positioning found objects as co-authors in design.

In working with waste, value can be reassigned. Acknowledging the latent potential in waste products, the embodied energy and inherent richness of these material objects can be extracted to support new uses. Best practices in reuse follow a model of co-authorship in design, in which found objects share creative agency with human actors. Keeping system boundaries close, this method of practice has developed strategies in reuse that acknowledge and deal with the imperfection of found objects (Weill 2021, Bukauskas et al. 2017). Unlocking the potential of these objects is the crucial step in actualizing their use, and will be the focus of this thesis to answer the question:

“How can experimentation in the use of found objects catalyze creative agency and the use of imperfect objects in design?”

Drawing on documented methods in craft, this thesis posits that creative agency and object potential can be unlocked through the act of making. Celebrating the art of inquiry, experimentation is core to developing an intimate understanding in the use of the discarded (Sennett 2008,

288). The concept of thinking while doing is applied in a generative manner that blurs the line between certainty and risk. Risk and certainty are understood in relation to David Pye's work as a craftsman, in which richness is derived through imperfection (Pye 1978, 30). Experimentation in making with found objects creates a relative certainty through the work of risk with imperfect objects.

Embracing the power of experiment, I developed three scenarios to gain an understanding of the reciprocal relationship between making and perception in material reuse. The three experiments explored approaches and strategies in making with found objects. The first experiment tested the 'kit of parts' approach in design and making, challenging two first year architecture students to create an object they could sit on within a three hour time limit. The second experiment worked with a mental inventory of objects to create a place to sit that expressed contrasting forms for an outdoor art festival. The third experiment worked with observed methods in material reuse to create reenactments of these methods for an exhibition. The function was consistent between the three experiments, enabling comparison. Reflection revealed the iterative nature of designing and making with found objects, demonstrating the need to develop a method of documentation and analysis of the process.

Additional objects were created to test the documentation of the process, shifting the experiment from the act of making to the act of documenting. In the review of the documented process, it became evident that a notation was necessary to code and analyze the iterative nature of the process for translation. Through the development of the notation, a handbook emerged to guide the use of found objects in

architecture. The handbook is not prescriptive in its delivery, rather it suggests how things *could* be done, encouraging readers to develop their own process. Drawing on the ability of abstraction to foster creative agency, the handbook presents states of existence, approaches, and actions in the form of pictograms. The iterative, cyclical nature of designing and making with found objects is made explicit, communicating the importance of experimentation and play in unlocking the potential of waste materials and developing creative agency.

The handbook is tested and revised through the act of making by others, reinforcing its generative nature. The concepts presented in the handbook are unbounded, aspiring to transcend scale and instill a mindset of wasteless thinking that can be applied across scales.

Chapter 2: Our Relationship with Waste

What is Waste?

Waste comes from the Latin *vastus*, meaning unoccupied or desolate, akin to the Latin *vanus* (empty or vain), and to the Sanskrit for wanting or deficient. (Lynch 2022, 146)

Waste is the by-product of our existence, whether immediate or delayed, intentional or consequential. Waste is not confined to common associations with trash or garbage, rather it is the residue of anthropic processes. Refuse, discarded or rejected material, encompasses both trash and garbage. In its use as a verb and a noun, refuse sits in direct opposition to the potentiality of waste, where waste is seen as a "condition whereby a project is possible" (Ferracina 2022, 22). In this scheme, waste is considered as a material consequence that transcends ideological barriers to use through its potentiality. In reconsidering our relationship with waste, by moving away from the "use and enjoy, dispose and forget" (Crocker and Lehmann 2012, 13) culture, our perception of waste can shift from burden to resource. When discarded as refuse, waste is truly wasted; its potential has been lost to a condemnation of decay. Decay is the process by which material objects return to their elemental state, where utility fails through the passing of time. The acceptance of ultimate decay, the loss of utility, is when waste becomes refuse. As such, we can mitigate refuse through an intentional and adaptable approach to reuse where materials can enter a state of decay while maintaining or returning to utility through intervention, drawing on decay to release cultural artefacts from their scripted uses.

Waste in Architecture

All architecture is but waste in transit. (Till 2009, 67)

The production of waste in architecture occurs throughout a building's lifetime. Beginning with design, waste becomes inevitable. The practice of *tabula rasa*, a blank slate, ensures this, as it requires that materials serve design intentions unconditionally, through the purification and preparation of matter for human use (Ferracina 2022, 20). These purifications "operate by introducing selective parameters and removing noncompliant elements; by discarding anything in excess of their reductive intents" (Ferracina 2022, 21). A reductive approach to material eliminates the formal richness of material objects through standardization and conformity. Conventional design embeds this way of working by sculpting matter to form, generating waste with disregard for its potential. This prescriptive approach to design negates the creative agency of the object, perpetuating the production of waste in the built environment by conforming to conventional material flows.

The linear nature of conventional material flows is defined by birth and death. It assigns a beginning and an end to a material object's life. This is evident in the path from extraction to refuse, but also in the path of recycling, where a material object's form meets its demise in pursuit of raw material. In this way, recycling only slows material on its journey to the landfill (Baker-Brown 2017, 57; McDonough and Braungart 2002, 4). Recycling perpetuates *tabula rasa* in design by endorsing the idea that objects, when removed from their intended or original use, can only regain their potential by being reduced to a formable matter (Ferracina 2022, 44). In *Cradle to Cradle*, McDonough and Braungart

(2002) argue for a paradigm shift that challenges the linear model to become circular, in which objects rarely arrive at a true 'end of life'. This circularity, often captured by the term Circular Economy, promotes integration across industries to eliminate waste through the retention of value through each stage of an object's life. Duncan Baker-Brown (2017) points out, however, that this idealized version of the world fails to deal with the abundance of waste and pollution that has already been created (2), arguing that a 'great clean-up' is required of the objects that have already been relegated to their grave (2). These objects, through approaches in reuse, can be given new life despite their prescribed fate. Dealing with the wasted objects that already exist, is the impetus for this thesis.

(Re)Assigning Value

Value is abundant in waste. The embodied energy of these material objects takes both mechanical and human forms. Mechanical embodied energy is the total energy used in material extraction, manufacturing, transporting, and installation of material objects. It is a measurable value that allows comparison across objects (Addis 2006, 60). Arguments have been made to prioritize object reuse based on such data (Addis 2006, 60); however, this is not within the scope of this thesis. The human embodied energy is that of the labour involved in the previously mentioned actions, but also in the objects design and maintenance. Such energy, though difficult to quantify, is an important consideration in the reuse of material objects.

Of greater interest to the scope of this thesis is the inherent formal and functional richness of material objects. Value is reassigned by refusing to reduce these objects to abstract

lists of properties by positioning them as co-authors in design (Ferracina 2022, 5). Working with the features and potential of the objects in design, these inherent qualities can be capitalized upon to create spatially and materially rich environments. Drawing on embedded value in this way, the concepts of upcycling and downcycling are negated, being redefined in relation to relative utility in a given context through creative agency. Recognizing the inherent value of found objects assigns new value to waste as a building material and as co-author in design, elevating waste from refuse streams.

Chapter 3: Working with Waste

Permanence & Maintenance

Work goes into the sustenance of an object over time. It is cared for, cleaned and polished, to bestow upon it an illusion of permanence, to keep at bay the spectres of waste and decay. (Edensor 2005, 317)

Permanence is relative. As O'Donnell and Pranger (2021) note, though ephemeral structures receive much criticism, all buildings are temporary (38). Recognizing that fact, we can begin to understand our relationship to this relative permanence. It is through processes of wasting, decay, destruction, and, inevitably, 'death', that we face the relative permanence of the built environment (Cairns and Jacobs 2014, 1). These processes are inherently linked to change; "everything changes, and death is a strategy for maintaining... ..patterns in the presence of change" (Lynch 1991, 1). The acceptance and management of these changes extend permanence, as acceptance is rooted in cultural perceptions. In Jun'ichirō Tanizaki's (1977) *In Praise of Shadows*, for example, we are presented with a cultural acceptance and celebration of patina and decay. The richness that is gained through the passing of time as wood darkens and deepens, the repair of broken dishes with gold. These are indicative of a culture that does not demand 'new' and 'spotless'.

Objects for reuse are often imperfect, exhibiting scars of a life lived. In accepting this imperfection and working with it, we are able to gain the richness of the passage of time. Decay is not always welcome, however, as utility is often affected. The first signs of decay may be desirable for a time, however they reveal future eventualities of limited utility and

death (Edensor 2005, 319). Maintenance and cascading utility are crucial to the permanence of material objects. The gradual decay of objects may free them from scripted uses as an emergent individuality develops through the unique expressions of decay upon the object (Edensor 2005, 319). The cascade of utility is extended through maintenance, where maintenance is the unavoidable antidote to death and decay (Sample 2016, 3). Through relatively minor interventions, objects can be reused over an extended life, with co-authorship expressing itself as a function of utility.

Tolerance & Imperfection

Working with waste requires an acceptance of the imperfection of found objects. Irregular shapes and a lack of uniformity among objects necessitates strategies and methods for understanding and adapting to imperfection through tolerance. As expressed by Jean-Marc Weil (2021), a hybrid model of design accounts for the imperfection of material through the integration of systems, contexts, and skills. Local material culture and building techniques will influence the expression of tolerance, but the intention will remain constant. Basic methods of addressing imperfection in material objects were ubiquitous before the industrial revolution and standardized construction materials. Stone walls and lashing roundwood poles are examples of how simple it can be to address imperfection. In modern construction, fasteners exist that are capable of dealing with imperfection. The issue is not one of technical capacity, rather it is one of intention. Mark Gorgolewski (2008) notes that "impediments to the reuse of construction components are rarely technical or economic. Instead, they are mostly based on organizational, contractual and social structures" (175). There is ample evidence for technical solutions

to material imperfection; it is a matter of will rather than capability, a matter of mindset over skill set.

Co-Authorship

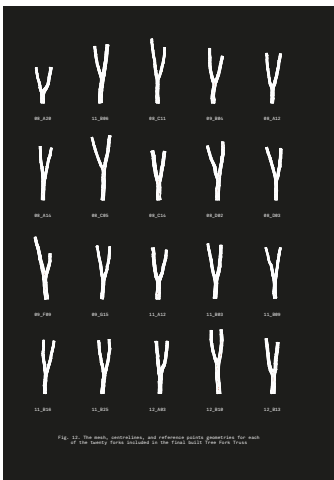
In refusal of *tabula rasa* in design, a re-articulation of authorship is proposed in which authorship is shared with material objects. Following Ferracina (2022), an exaptive design ethic is observed in this thesis that emphasizes the role of found objects as design drivers in reuse and repurposing (5). In this model, design follows an alternative approach that "accounts for (and learns from) the strange reality of objects" (Ferracina 2022, 255). It acknowledges that cultural and equipmental scripts are deeply tied to the way we use material objects, reflecting the socio-cultural nature of human existence (Glăveanu et al. 2016, 13). Overcoming these scripts is crucial in reassigning value to waste and expressing creative agency, as the true potential of an object is not limited by these social constructs. Releasing found objects from the confines of their original and intended uses, they become a crucial element of the creative process through their unbounded potential. As co-authors in design, material objects are able to catalyze the creative agency of the maker, adding constraint that is needed for creative action (Corneil 1987, 46; Costall 2014, 49). The object limits formal outcomes, but in doing so allows energy to be allocated to the potential of the object to solve the problem.

Case Studies

The following case studies demonstrate the ability of found objects to bring richness in design. The processes of each example highlight the varying degrees of formality in design and making with found objects. The case studies also serve to ground the work, showcasing the work that is already being done with found objects in design.

Hooke Park

The Architectural Association School of Architecture's (The AA) woodland site, Hooke Park, leans into the inherent richness of trees and wood in design. Seeing the forest as a co-author in design, Hooke Park has completed numerous projects that are a direct expression of the lush forest in which they are built. An example of this is the site's wood chip barn, featuring a tree fork truss that is constructed entirely of natural tree forks sourced from the immediate forest. The forks were identified and inventoried prior to harvest, using LiDAR and imagery to get a rough geometry of the fork. Specific trees were then chosen for harvest based on their potential fit in the truss, being further documented once on the ground. The documentation enabled structural analysis that could be run through an algorithm that would determine the optimal structural arrangement of forks in the truss. While the exact form of the truss was not known until it was built, the general form was prescribed, with the forks being selected to fit the design intention. This example, though not in material object reuse, shows the capacity of digital technology to catalogue and analyze a found object to optimize its agency in design.



Forks Catalogued
(Mollica 2016, 34)



Fig. 25. The Tree Fork Truss

Tree Fork Truss
(Mollica 2016, 55)



Lemon Loft
("Lemon Loft" n.d.)



Buitenplaats Brienoord
("Buitenplaats Brienoord" n.d.)

Refunc

Refunc is a German/Dutch design collective focused on delivering projects and workshops that co-opt objects, components, and spaces to change our way of thinking. The collective specifies that it builds pilot projects, suggesting a highly experimental method of working that aspires to create "an endless lifespan, a circular way of using resources, where anything can become something else" (Refunc 2022). Their work is object based, working with common objects in pursuit of architectural form or provocative practical function. Refunc's work is the aspiration of this thesis. It is the method of working that the handbook aspires to instill.

Superuse

Superuse Studios is a leader in circular practices in architecture. The Studio achieves this through the implementation of seven strategies: Harvesting Materials, Building Reuse, Circular Materials, Circular Building Process, Demountable Construction, Material Driven Design, and Permits and Warranties (Superuse 2022). By engaging in numerous areas of building and design, Superuse is able to integrate material reuse across scales, while developing and documenting strategies and methods towards a normalization of material reuse in architecture. Their work shows that reuse can be integrated at scale in material systems to create exciting, inspiring spaces.



Phonebook Construction
("Ambient Material" n.d.)



Phonebook Construction
Exterior ("Ambient Material"
n.d.)



Rain Boot Spout (Horsanali
et al. 2019, 12)



Bollard Stool (Horsanali et
al. 2019, 6)

Richard Kroeker

Richard Kroeker's work in both reuse and material driven design demonstrate a design ethic that is malleable to available materials and methods. The work features methods of working with roundwood that enters the realm of appropriate technology while operating with an ethic of Two Eyed Seeing, the intersection of Western and Indigenous ways of knowing. Kroeker's work looks to Indigenous and vernacular methods of building not for their formal qualities, but for their "sophistication by using whatever's handy" (Macy 1998, 4). Kroeker's work brings the crucial aspect of appropriate technology to the discussion of reuse.

Halletmek

Halletmek is a Turkish verb used in reference to "taking care of things" (Horsanali et al. 2019, 1). It has evolved into a concept that captures a way of thinking and making in which one 'makes do' with what they have. Nur Horsanali et al. (2019) conducted an inventory of objects in the streets of Istanbul that express the essence of *halletmek*, objects that are purpose built from available materials:

Objects are being repaired, adapted or modified in order to find a solution to an urgent need; things are articulated, fixed, combined, hacked and problems are solved. (Horsanali et al. 2019, 1)

This approach to problem solving, to design, is one of necessity. There is a need, a problem to solve, that is addressed using the means and materials at hand. These interventions demonstrate the inherent ingenuity of everyday people.

Chapter 4: Power of Experiment

No Matter. Try Again. Fail Again. Fail Better. (Beckett 1983, 8)

This thesis employs the power of experimentation as a method of discovery, celebrating the art of inquiry. It argues for an uninhibited approach to design and making that redefines success by embracing failure. This section lays the theoretical groundwork for experimentation in making with found objects.

Play: Telic & Paratelic

Play is at the core of this thesis: it is a plea for people to engage in play in the act of making. Play takes two primary forms: telic and paratelic. Telic play is goal oriented, striving to achieve a particular outcome or product (Gore 2004, 42). Paratelic play enjoys a freer state, without destination or judgement, in which experimentation, discovery and learning emerge (Gore 2004, 42). Both types of play have a role in the progression of working with found objects, where paratelic play enables unscripted experimentation with these objects to build an understanding of the methods and strategies that support their use. In this way, paratelic play fosters and expression of creativity through the agency of the maker with the object. Telic play enters as the discoveries and learned methods become embedded, being applied toward an aesthetic or functional goal.

As presented by Nils Gore (2004), experimentation cycles through telic and paratelic states, where each moment in the cycle is informed by the discoveries of the other (42). Carrying this notion into the reuse of material objects, it becomes evident that there is a reciprocity that occurs between telic and paratelic states that is fostered by the

relationship between the hand and the mind. As a method of understanding the potential of found objects, paratelic experimentation provides an unbounded environment through which knowledge transfer can occur. The telic state comes in once understanding is gained, allowing the maker to follow an aesthetic pursuit within the desired function of the form, creating a relational approach in the reuse of material objects.

Thinking While Doing: Reciprocity in Making

Drawing from craft, this thesis argues that the relationship between the hand and the mind is crucial to the transfer of tacit knowledge. Juhani Pallasmaa's (2009) work detailing the relationship between the hand and the mind as *The Thinking Hand* emphasizes the relationship between maker and material, where the work implies a collaboration in which preconceived ideas and shapes are not imposed on a material, rather there is a dialogue that guides form (55). This give and take necessitates a change in design processes to one in which function guides material expression, but form is the product of the reciprocal relationship between designer/maker and material object. This is where telic and paratelic states intersect. These notions are echoed in Richard Sennett's (2009) *The Craftsman*, where the cohesion between understanding and doing is emphasized (125), and the work is undertaken for its own sake (20). In making with found objects, this relational process is invaluable, as the imperfection and relative abstraction of the objects requires an intimate approach that is conducive to knowledge transfer. These concepts and approaches embed themselves in the experiments, ensuring knowledge transfer between material object and maker.

Certainty & Risk

The experiments conducted in this thesis are intentionally uncertain. The absence of a predetermined outcome ensures this; there can be goals and aspirations, but the final outcome is unknown. The presence of risk assigns agency to the maker, for it is their judgement, dexterity, and care that determines the result (Pye 1978, 20). In opposition, certainty posits a method of working in which the result is predetermined, making it unalterable once production has begun (Pye 1978, 22). In making with found objects, exercises in risk lead to a relative certainty. In Pye's distinction, this work would never leave the realm of risk; however, a relative certainty exists as the result of experimentation and the work of risk. Certainty manifests through an understanding of a way of working with found objects, it is a mindset rather than a system of production.

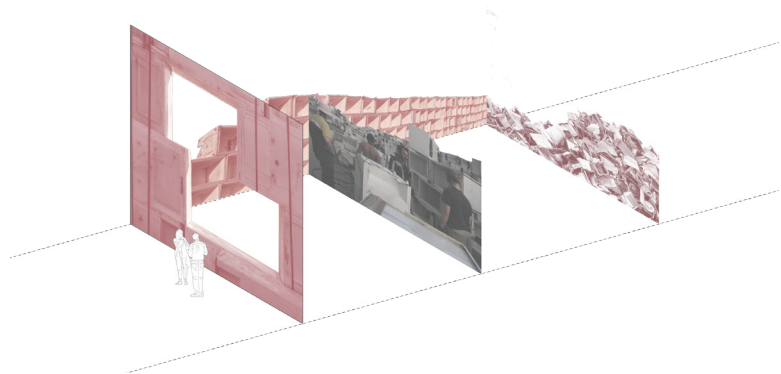
Scope & Skill

The scale and method of working presented in this thesis is intentional. Driven by the intimate working relationship of maker and object, the work focuses on the act of making with found objects to create furniture. The scope intersects with the concept of affordances, where the potential of an object is directly linked to the capabilities and perception of its user (Norman 2013, 11). Furniture, specifically those that offer a place to sit, require the maker to consider important factors in their creation: structure, comfort, stability, and aesthetics. These concepts are transferable to architecture, yet offer the opportunity to play and experiment without consequence. Furniture, then, is presented as an object that transcends its context, yet is the product of it. The result is an approach that is inherently tailored to local regimes

of construction and making. Schumacher (1973) discusses the importance of these regimes, noting the integration of the human being in modes of production as crucial to the attribution of agency (114). The experiments depicted in this thesis and the resulting handbook are not skill driven nor skill reliant, as the mindset and approach it aspires to relay can be applied across the spectrums of scope and skill.

Perception

Experimentation serves to unlock the full suite of potential uses of an object by breaking down barriers of perception and expanding capabilities. Perception is rooted in scripted and cultural uses of material objects (Glăveanu et al. 2016, 13, Ferracina 2022). Scripted uses, the uses for which the object was made, can be considered as the most effective or efficient use of an object. Once the object is rejected from its intended use, it can be conscripted to alternative uses through its internal potentiality (Ferracina 2022, 134). Recognizing found objects as cultural artefacts, we can begin



Perception is crucial to use

to understand the preconceived notions of its use (Costall 1995, 471). Culture can serve to reinforce or challenge equipmental scripts, while experimentation seeks to release objects from their scripted use, rejecting the systems that generate perception to expose the full potential of an object.

Chapter 5: Experiment in Action

Experiments were conducted with the following assertions:

- » Experiments in design and making are inherently and necessarily unpredictable.
- » Controls enable comparison across experiments.
- » Bias is inevitable and useful.
- » Constraint catalyzes creativity.

Working in these terms, I developed three preliminary experiments with which to further my understanding of the relationship between the act of making with found objects and the development of creative agency.

Rossetti

The Bruce and Dorothy Rossetti Scholarship provides M.Arch students at Dalhousie University with the opportunity to explore a topic related to their thesis through travel. Receiving one of these scholarships, I was able to travel to the Netherlands to study and engage with material reuse. I observed conditions and strategies of reuse in Rotterdam, The Hague, and Amsterdam, documenting the experience in images, sketches, and notes, with the intention of constructing reenactments.

During my time in Rotterdam I observed three strategies for dealing with imperfection in material reuse: tolerant fasteners, inherent tolerance, and nodes of connection. I used these three strategies as prompts for experiments in making with found objects. By applying a consistent function, a place to sit, comparison is facilitated between processes and formal outcomes of each experiment. This

set of experiments share a timeline, being part of the Bruce and Dorothy Rossetti Scholarship exhibition. Each resulting form is an expression of the function of the available objects, the capabilities of the maker, the function, and the assigned prompt. The objects used were chosen for their ability to meet the demands of each prompt.



Inherent Tolerance

Inherent Tolerance

Inherent tolerance refers to the ability of a material object to account for its own, or another object's, imperfection. The formal qualities and properties of the object afford a method of connection that is tolerant of imperfection. In this example, the malleability of the net accounts for the uneven edge of the pipe.



Tolerant Fasteners

Tolerant Fasteners

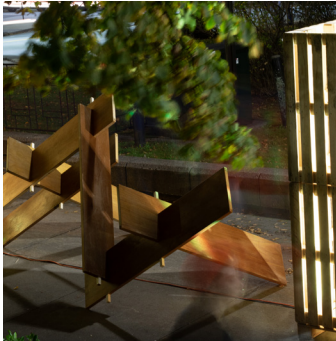
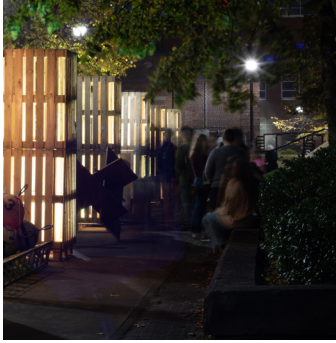
Tolerant fasteners are adjustable by nature, enabling connection between imperfect materials. The adjustment in the fastener is such that it is able to account for variations in material objects. This expressed itself through two types of fastener, a two sided clamp and a length of rope.

Nodes of Connection

Custom or found nodes can be used to connect objects for reuse, serving as a connection point that can be made to work with the imperfection of the elements. The node can be custom made, or be a found object itself, adding to the richness of the formal outcome.



Nodes of Connection



Top: Outdoor Gallery on Opening

Second: Installation by Sam Beckley

Third: Installation by Marcus Van Vliet

Bottom: My Installation with Erin MacKenzie

Nocturne

Nocturne: Art at Night is an arts festival held in Halifax, NS each fall. The festival theme, *Legacies*, called for a consideration of the past, but also of things yet to come. To answer this call, I proposed an installation on behalf of the Dalhousie Architecture Students Association (DASA) titled *Ephemeral Permanence*. The proposal's intentionally vague description left opportunity for interpretation, allowing authorship on the project to be spread among the school. The project had two constraints: the installation had to be assembled and disassembled in one day, with minimal storage space to construct ahead of time, and it had to adhere to the project description. Design charettes lead by myself and Marcus Van Vliet resulted in an outdoor gallery within which there could be multiple installations. Six groups of students emerged to exhibit installations in the gallery. The installation spaces were separated by light pillars constructed of used pallets. The groups were invited to express their ideas around reuse and regenerative approaches to design, working without constraint but within the intentionally vague project description and relatively defined space for each installation. Material choices and means of assembly were their own, with support from the leadership team.

I used the installation to explore unencumbered experimentation with a mental inventory of material objects to achieve the same function as the Rossetti experiments: a place to sit. The process in this experiment attempted a level of prescription, where conceptual design was done ahead of making to give direction in the limited assembly time. Material connections drove form, with the contrasting shapes and methods of assembly defined expression.

Charette



The B1/M5 Charette is a core part of the pedagogy in the Dalhousie School of Architecture. It pairs first year B1 students with an M5 student who is in the early stages of their thesis. It is meant as a reciprocal exercise in which the M5 student gains insight on their thesis while the B1 student learns from students who were in their position years earlier.

I proposed a quick design-build experiment for the three hour charette. I presented two B1 students with a kit of parts with which to achieve a simple program: a place to sit. The 'kit of parts' approach limited the students in the available objects for use, bringing needed constraints to match the limited time available. I offered minimal guidance, with subtle reminders to consider the consequences of material choices.



The exercise began with brainstorming, using sketches to come up with potential approaches in material use. Discussion accompanied the sketching, until the point at which the 'will this work?' question was asked, to which the answer was 'let's find out'. This was the beginning of the iterative approach where design ideas were tested without consequence. The result was a swing that the students were proud of, that was celebrated and shared.



Top: Exploring expressions in material relationships.
 Middle: Understanding structure.
 Bottom: Sharing the result.

Experimental Recording

Reflecting on the initial experiments, it became clear that a thorough documentation of the process was required. While certain moments were captured, the iterative nature of working with imperfect objects was not documented. I understood that the documentation of an informal, iterative design process can have no impact on the process itself, using a video recording method that allows the process to continue with minimal impediment.

Recording became an experiment in itself, with no clear goal or expected outcome. Preliminary forays into recording focused on the functional actions in making, those which orbit methods in working with imperfect material. Moments were captured in short segments, with a pause in recording between these sequences. This method provided an adequate account of the assembly process, but neglected to capture moments of reflection and reconsideration, those which challenge perception. These moments, uncaptured, would provide the next path of inquiry to follow in the functional experiments.

Reviewing the recordings provided further opportunity for reflection. Moments and opportunities that went unnoticed during the initial process of making became apparent through review, a sort of 'hindsight is 20/20' moment. This provided additional avenues of exploration. In this way, the shorter captures facilitated periodic review, enhancing the exploratory process. Through this approach, the recording of the process has the opportunity to become embedded in the process.



Identifying Moments in the Act of Making

Analysing the recordings provided a framework for the development of the handbook and set guidelines for how I would capture the tests of the handbook.

Chapter 6: Process as Product

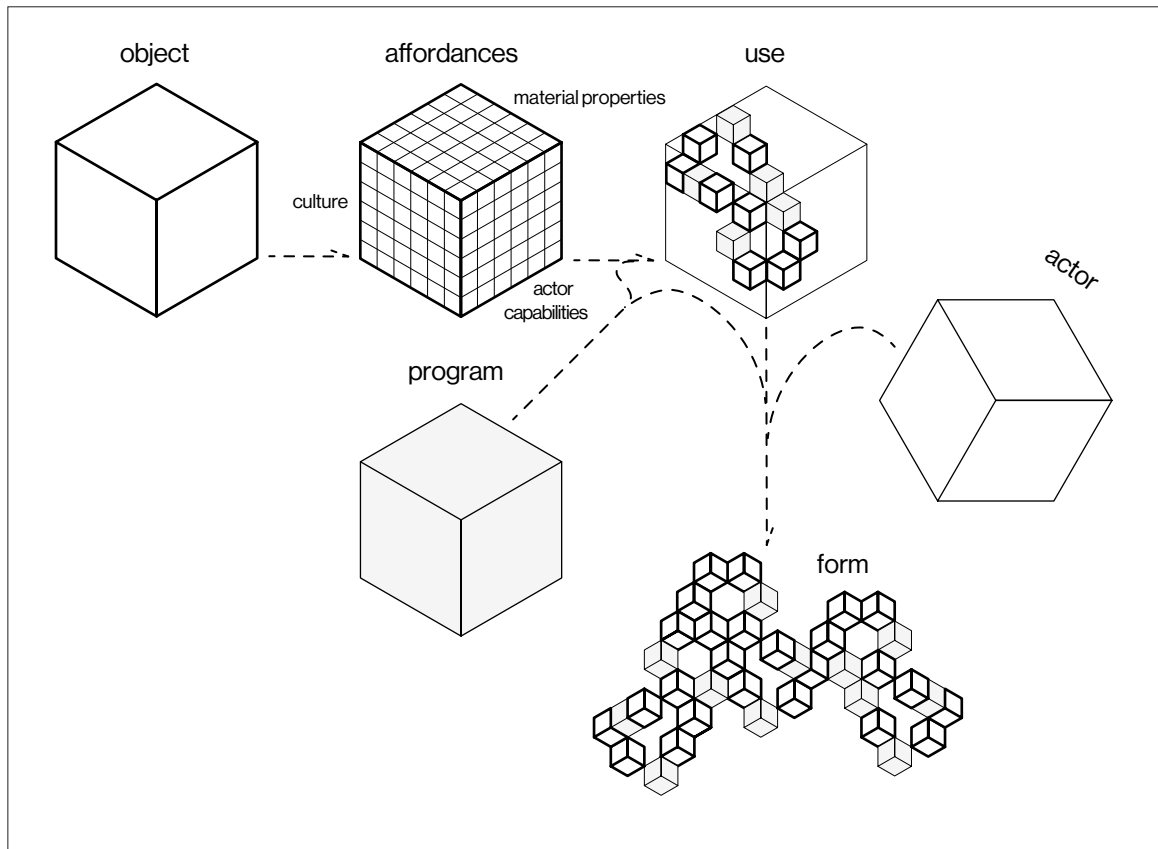
...allow for experiments without predictable results, for it is from things and thoughts which are not immediately understood that both the maker and the receiver can learn something different, or new. (Altes Arlandis et al. 2016, 171)

Analytical Framework

The analysis of the experiments, and the translation to the handbook, is framed by the concept of affordances and Reversal Theory. Affordances serve to decipher the functional actions while Reversal Theory sheds light on the cyclical nature of informal processes.

Affordances

Originating in James J. Gibson's (1979) *The Ecological Approach to Visual Perception*, the term 'affordance' was created to capture the relational supports that an environment affords an animal (127). The concept enters design as a way of understanding how people engage with objects and spaces. Don Norman (1988) considered the actual and perceived properties of an object as a method of understanding how it might be used (9). The capabilities and perception of the user intersect with these properties, resulting in a suite of potential uses (Norman 2013, 11). Affordances, in relation to making with found objects, are the intersection of the properties of the object and the capabilities and perception of the user in their context. As such, the potential of the object and its user are inherently linked, catalyzing creative agency in design (Costall 2015, 49). This is crucial to the efficacy of the handbook, as the non-prescriptive nature of the guide meets the user where they are, with no expectation of skill or experience; play and



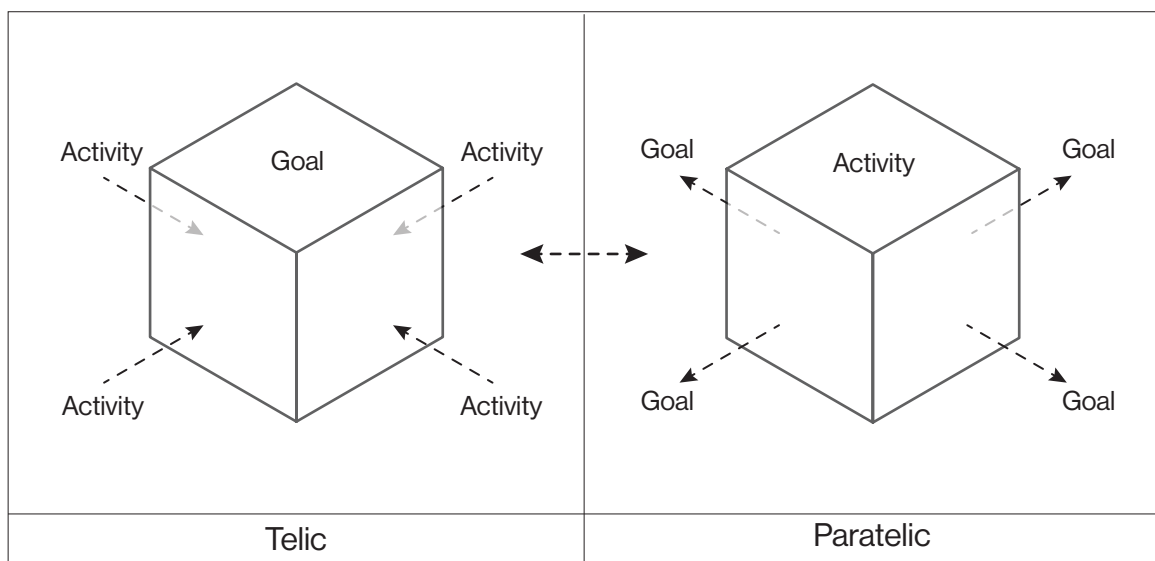
The Concept of Affordances as Applied to Making with Found Objects

experimentation in making with found objects are relative in this way.

Each experiment in the reuse of material objects is analyzed using affordances as a framework. Capabilities are expanded through familiarity, while perception is challenged through abstraction. In working with the object toward a relatively unbounded function, the maker understands the methods and tools that are effective for a given object, while punctuations in the work provide a moment for embodied reflection, changing perception. These evolutionary cycles of form finding are considered as an iterative design process.

Reversal Theory

Reversal Theory is rooted in the bi-stability of opposing meta-motivational states. It posits that a switch between these states is always possible despite their relative stability, and is coined a reversal due to the opposing nature of the states (Apter 1979, 51-52). In material object reuse, Reversal Theory is expressed in the switch between the paratelic and telic states discussed in Chapter 4. The cyclical, iterative nature of informal design is conducive to the switch between telic and paratelic states, with reversals between states occurring throughout the design process. As a reciprocal pair, the stability and necessity of each state can not be overstated. When occupying one state there is no internal compulsion to switch to the other, rather it is an expression of motivation. Reversals between states are a product of the act of making, fostering discovery that enables functional or aesthetic pursuit, leading to further discovery. These switches can be read as iterations in the design process.



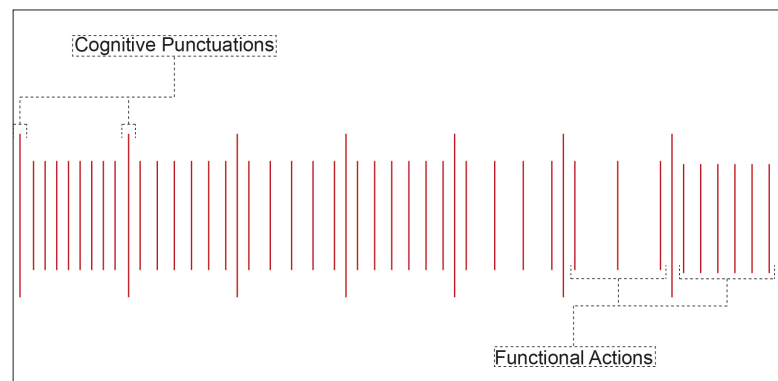
Reversal Theory (adapted from Apter 1989, 34)

Iterative Design

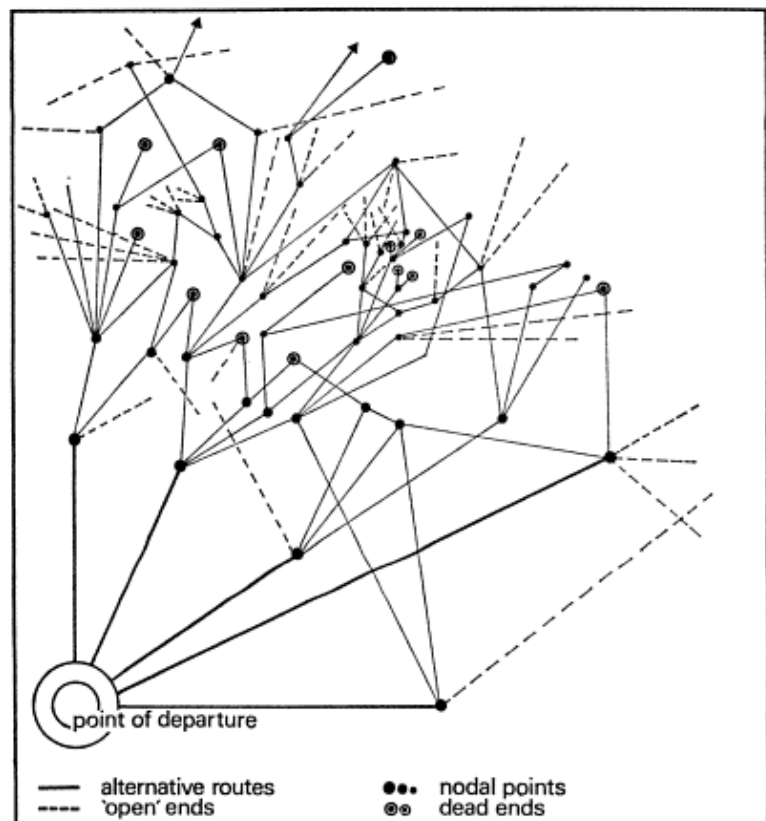
Aligned with Anton Ehrenzweig's (1967) serial structure of a creative search, an iterative approach is implemented which ensures that the multiplicity of outcomes is unbounded (50). As seen through each experiment, there is no aesthetic or formal prescription, rather these qualities emerge through the iterative nature of the process. Similar to the iterative nature of design-build as expressed by Verderber, Cavanagh, and Oak (2019), a creative synthesis of skill development and design occurs where design is intended as an expression of skill development, as opposed to the goal of skill development. Unbounded experimentation is a critical element in this method of working, as the object embeds itself as the root of experiment, toward new or alternative conditions and circumstances (255). In this way, experimentation becomes endemic in the process (254), where the final form is unknown until it is actualized.

The iterations manifest as cycles of functional actions and cognitive punctuations. The functional actions are those that make reuse possible, the physical handling of the objects and components. The punctuations are characterized by moments of pause; reflection and reconsideration that promote a shift in perspective. Through these cycles, the scripted functions of the object no longer limit its potential.

Iterations exist as cycles of functional actions and cognitive punctuations



The nodal points in Ehrenzweig's serial structure serve as decision points, with design pursuits emanating from them. The functional actions and moments of punctuation in the iterative cycles can be derived from the serial structure, where nodal points represent moments of orientation, while the direction of the overall path represents changes in perception. As seen in Ehrenzweig's structure, the paths often return the original direction following a diversion, where it may be necessary to stray from a design intention to return to it through greater understanding. The other key feature of Ehrenzweig's structure is the presence of dead ends. Dead ends are crucial to true experimentation, where it is as important to find out what is not possible as what is possible, emphasizing that experimentation is an end in and of itself.



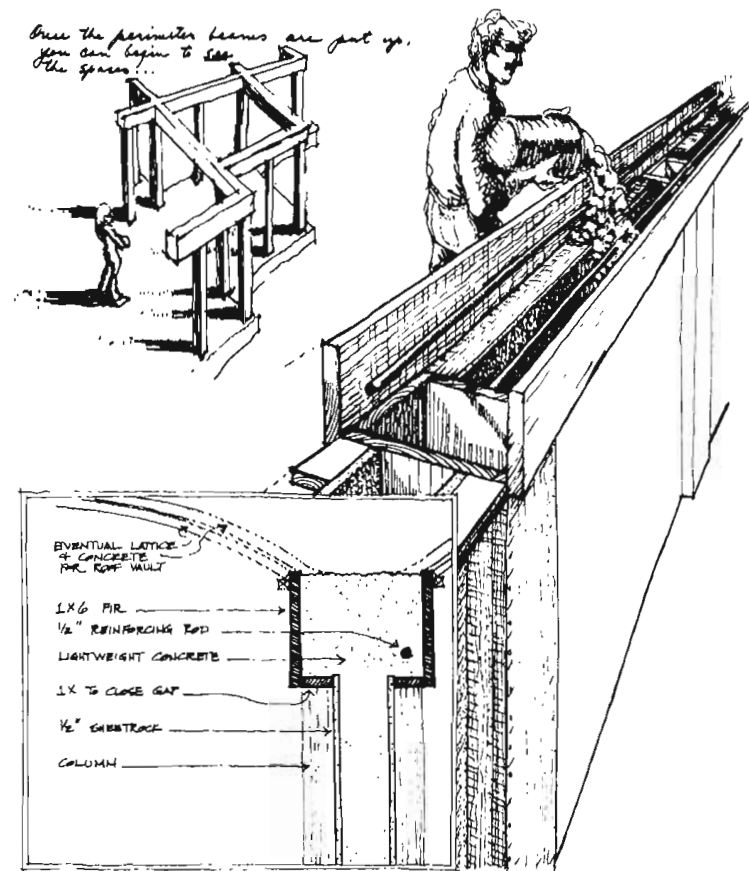
Anton Ehrenzweig's Serial Structure of a Creative Search
 (Ehrenzweig 1967, 50)

Tacit Knowledge

Building and making are inherently linked, yet our relationship to these actions is one of increasing disassociation. A return to an engaged culture of making is crucial to addressing issues of waste and the impending material crisis. The intimate relationship between maker and material in craft provides an avenue through which to approach making with found objects. Richard Sennett (2008) notes the relationship craftspeople hold between each other and with material, where a continual dialogue exists (125). This dialogue facilitates knowledge transfer in the act of making, and in making with others. Tacit knowledge, the embodied dimension of knowing, provides grounding to the dialogue presented by Sennett. The tacit dimension of making, the experiential knowledge of the maker, can only be truly expressed through the act of making. Michael Polanyi (1966) introduced tacit knowing as a way to understand unstated connections, stating that "we can know things... ..that we cannot tell" (22). This followed closely on Gilbert Ryle's (1945) paper on the dichotomy of knowing-that and knowing-how, in which Ryle argues that "knowledge-how cannot be defined in terms of knowledge-that" (4). This is the crux of capturing the tacit dimension of making: embodied knowledge cannot be transferred in the language of explicit knowledge. This is the impetus for the handbook, to lay out a framework for the transfer of tacit knowledge between actors through the act of making. It sets out an approach to working rather than a how-to, encouraging people to gain tacit knowledge through experimentation and play in design and making.

Process Notation

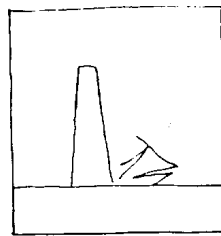
To facilitate the transfer of tacit knowledge, a process notation is introduced to translate and convey alternative approaches in making. Differing from movement notation, the process notation developed in this thesis proposes actions as a catalyst for creative agency by portraying an approach to inspire action rather than an instructional how-to. Christopher Alexander's (1977) *A Pattern Language* is written with similar aspirations, aiming to "provide a complete working alternative to our present ideas about architecture, building and planning" (ii). Alexander presents a compilation of how things *should* be done, where the notation presented in this thesis and handbook suggest how things *could* be done.



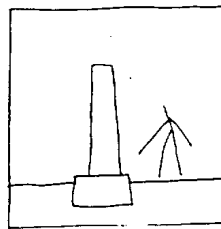
A version of the perimeter beam consistent with the box column shown before.

Sample page from *A Pattern Language* (Alexander 1977, 1020)

The work of Yona Friedman and Rudolf von Laban enter as a reference point for the process notation. Friedman's (1990) manual for building roofs features simple, non-technical drawings that can be copied easily (3). The manual provides step-by-step instructions for constructing simple roof assemblies using local inexpensive materials and unskilled labour. It provides written instructions with drawings that show people carrying out the actions described in the notes. It describes techniques of assembly, but does not specify connection methods.

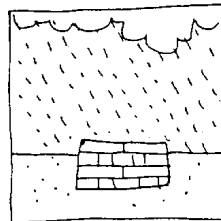


WALLS CAN START
DIRECTLY FROM THE GROUND.



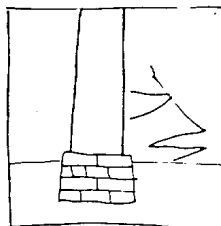
BUT IF YOU WANT TO HAVE THEM
MORE SOLID,

IT IS BETTER
TO BUILD THEM ON FOUNDATIONS.



FOUNDATIONS ARE MADE
OF MATERIALS WHICH DO NOT BECOME SOFT
WHEN WET.

WHICH DO NOT ROT
WHEN BURIED IN THE SOIL,



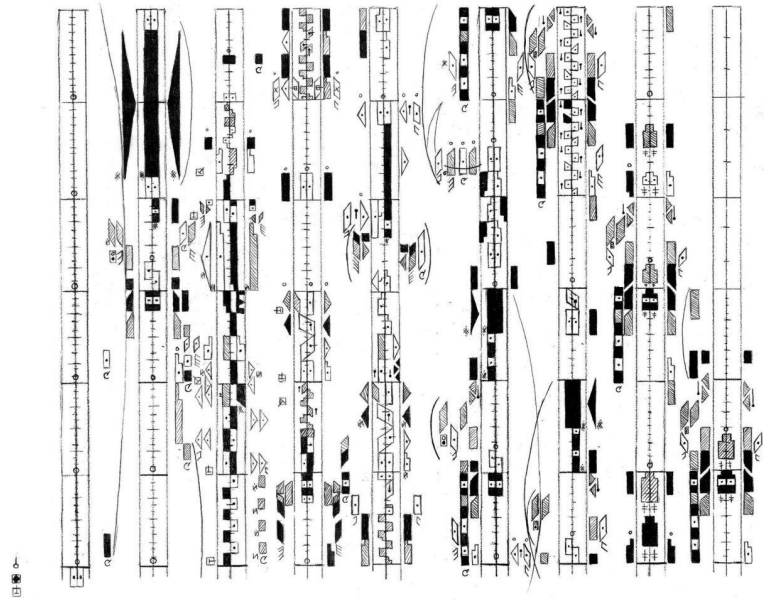
AND WHICH ARE SOLID ENOUGH
TO BEAR THE WEIGHT OF THE WALL.

Laban's notation, called Kinetography Laban or Labanotation (Knust 1979, iii), is a movement notation for use in dance. The notation provides description of a movement based on four main principles:

1. *What* happened?
2. *When* did it happen?
3. *How long* did it last?
4. *Who* (or what body part) did it?

(Knust 1979, 1)

Using a collection of symbols in combination, the notation is able to communicate complex choreography that anyone familiar with the notation could execute. The notation is not specific, however, as the abstract nature of the symbols leave expression to the individual or group.



Example of Labanotation (Kleida 2018, 44)

This abstraction technique is carried into the process notation of the handbook as a method of communicating intention without prescription.

Chapter 7: Generative Translation

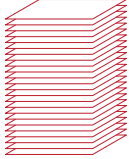
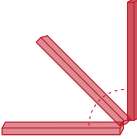
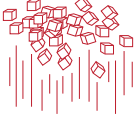
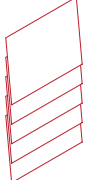

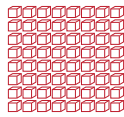
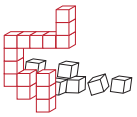

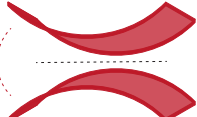


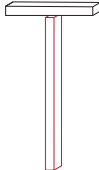
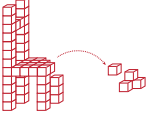

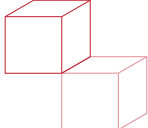

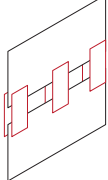
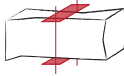
The translated design process is generative by nature, fostering an ethic of playful experimentation that ends when the designer/maker meets their functional and aesthetic goals. To promote this ethic, a handbook is developed that draws on three key characteristics: abstraction, iteration, and informality. The generative nature of the handbook is crucial to fostering creative agency in design: it does not require any previous experience or skill in design or making, rather it encourages the reader to embark on their own journey of discovery that inherently fosters knowledge transfer and builds understanding.

Presented

A handbook is understood as a way to learn something new. Whereas most handbooks focus on conveying a new skill to achieve a task, this handbook strives to cultivate a way of thinking: it presents approaches and methods in making that facilitate the act of making with found objects. The handbook takes the reader through a path of discovery, first understanding the actions, states of existence, and approaches that make designing with found objects possible. These key elements are presented in abstraction to show that *anything* is possible, yet they are paired with examples that give an idea that *something* is possible. The elements are then presented in context to a design process, showing the non-linear nature of their relation to each other. The informal and iterative nature of the process is reinforced through abstraction, encouraging the reader to follow their own path of exploration.

Abstraction

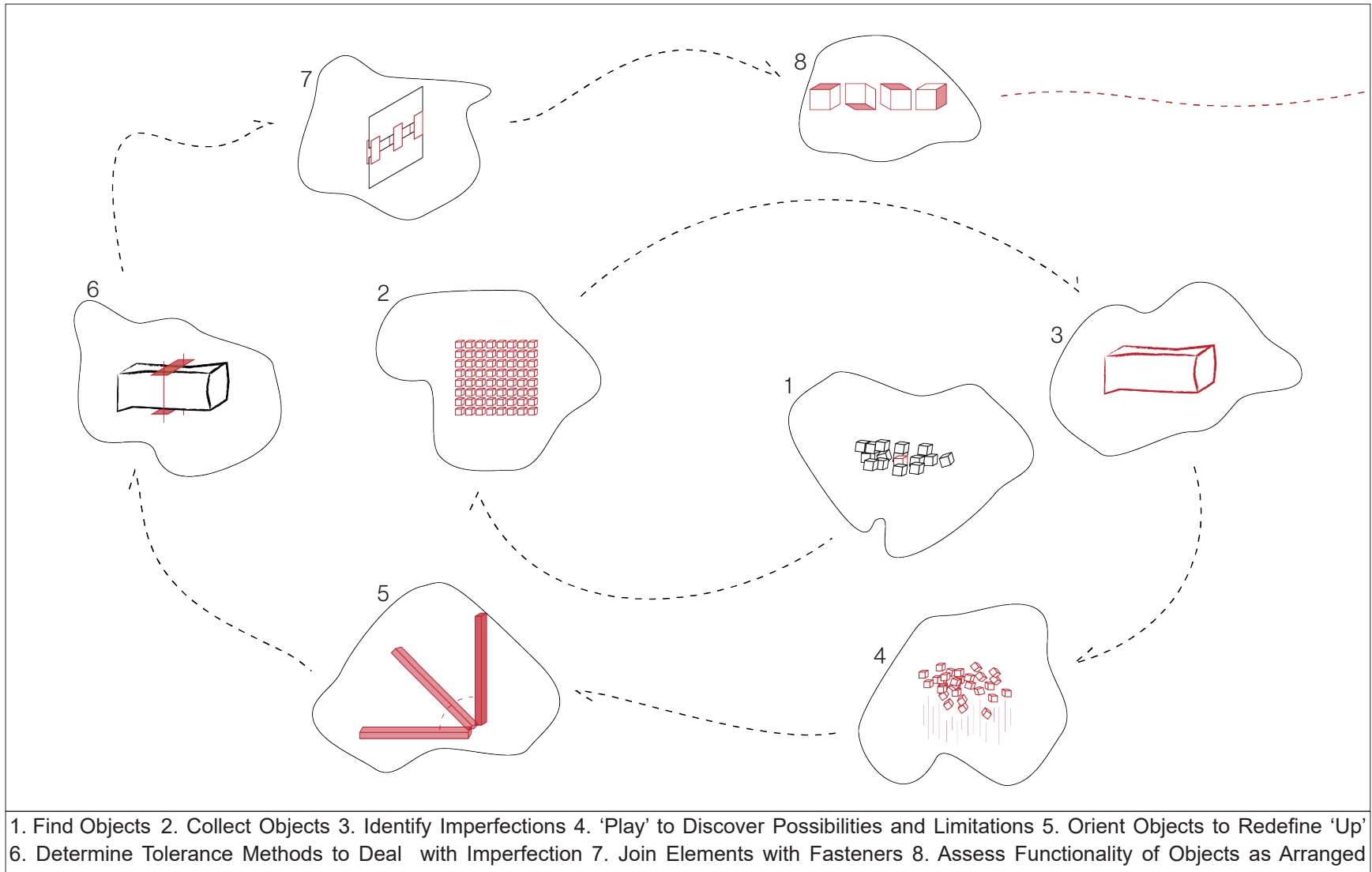
Intended as a suggestive gesture rather than a how-to, the handbook abstracts the elements that make the use of found objects possible in design and making. States of existence, functional actions, and approaches in making with found objects are presented through simple pictograms, facilitating discussion and analysis through a notation of the design process. The abstraction of these elements allows the reader to imagine their own version, one that is aligned with their ability, context, and goals. Operating as a tool to further the reader's understanding of their relationship to the object, the pictograms follow no particular order, yet they reveal patterns and cycles within the process that make explicit the iterative and informal nature of designing and making with found objects.

Functional Actions	States	Approaches
 <p>STACK</p>	 <p>ORIENT</p>	 <p>PLAY</p>
 <p>OVERLAP</p>	 <p>COVER</p>	 <p>COLLECT</p>  <p>EXPERIMENT</p>
 <p>SPAN</p>	 <p>INVERT</p>	 <p>INVENTORY</p>  <p>ASSESS</p>
 <p>SUPPORT</p>	 <p>DISASSEMBLE</p>	 <p>IMPERFECTION</p>  <p>REFLECT</p>
 <p>ADAPT</p>	 <p>JOIN</p>	 <p>TOLERANCE</p>

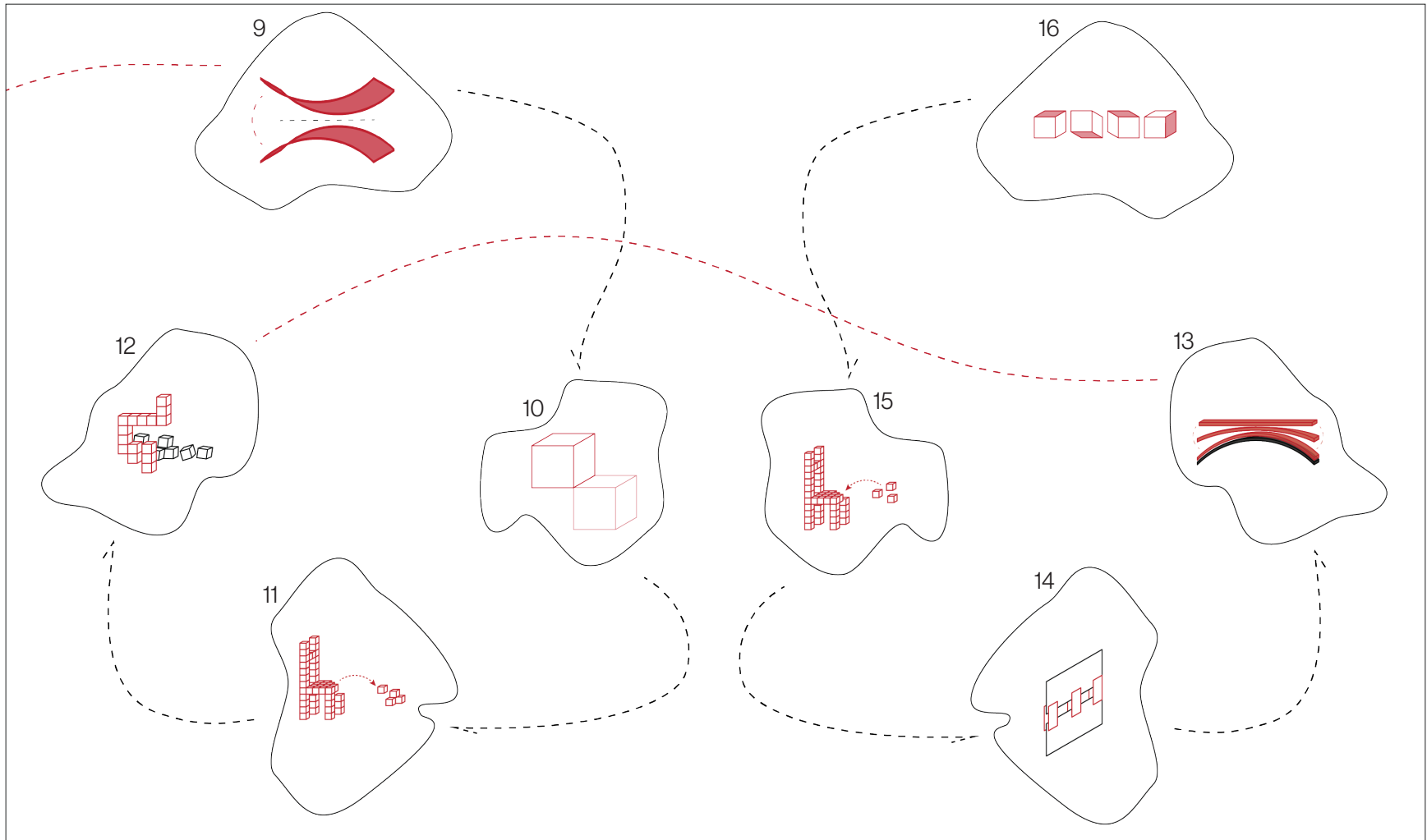
Pictograms depicting actions, states and approaches in making with found objects

Iteration

The process depicted in the handbook is cyclical. It promotes an iterative design process that celebrates 'failure' as a key characteristic of the act of making. It follows a non-linear path that is punctuated by moments of consideration and reflection, where divergent avenues of exploration have the opportunity to reconnect toward an aesthetic or functional goal. The handbook suggests an evolution of skill development through the process that lessens the functional actions between cognitive punctuations as an understanding of the methods of working with objects expands. The iterations do not demand a result at each punctuation, rather they are the product of shifts in perception of the object and its potential uses. The following two diagrams depict the process as presented in the handbook.



Diagrammatic Cycle Suggesting a Non-linear Process



9. Invert the Assembly 10. Reflect on Understanding of Object and Changes in Perception 11. Disassemble 12. Experiment Toward the Functional Goal 13. Adapt Objects Toward Goal 14. Join Components Together 15. Assemble Functional Object 16. Assess Functionality of Object

Diagrammatic Cycle Suggesting a Non-linear Process, Continued

Informality

The importance of the informality of the process cannot be overstated, it is crucial to a path of unbounded discovery. Informality is expressed through the balance between playful and experimental actions. These actions serve to upend our preconceived notions of how an object is meant to be used, releasing the object to its potential. Removing structure and prescription from the process also serves to embolden the maker to explore their creativity without constraint or repercussion.

Tested

The Found Object Handbook can be found in its entirety in Appendix A.

The handbook was given to two individuals with no other instruction other than to make a place to sit. Each person was provided with an inventory of found objects, fasteners, and an assortment of tools. Neither person was sought out for their skill in design or making. Their respective design and making processes were recorded and notated for comparison and analysis to each other, but also to the processes captured prior to the creation of the handbook.

Perpetual Draft

The handbook is considered to be in a perpetual draft state. Its emergent qualities draw on its users to broaden its scope and refine its message. Its purpose is twofold: to foster creative agency in design and making, and to reassign value to waste. The handbook is intended to react and evolve through its use, as it is meant to instill a mindset rather than teach a skill.

Experiment Considered

The tests of the handbook are considered alongside the recorded design processes that pre-date its creation. The diagrams in this section highlight the cyclical nature of each design process, with the cycles delineated by a red bar. Patterns emerge in each process, making explicit the broad spectrum of iterative approaches in design and making with found objects.

The Swing

The diagram below shows the process extrapolated from the Charette. Images were captured at particular moments; however, the recording was incomplete. Within this incomplete recording, a pattern of functional and punctual moments can still be identified. The individual actions of any of the following design processes are not critical to the analysis, rather it is the pattern that is most revealing.



Capture and notation of the design/making process in the Swing

The process for the Swing begins with sketching, attempting to prescribe the function of the objects provided to the two students. As they sketch, they begin to ask questions, mostly in the realm of 'will this work?'. The only answer: 'let's find out.' The students begin working with the objects, broadening their understanding. They pause, considering their work in relation to their goal: a place to sit. Unhappy with their current iteration, they explore a different solution. This small change also does not satisfy the makers, further reconsideration is required. Deciding on a new direction,

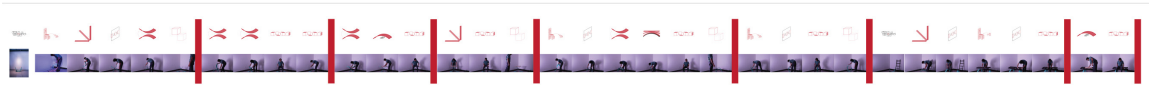
the makers enter a long cycle of functional actions that bring them down a different path of exploration. This one is fruitful, leading to consideration of ways to improve and refine their work. This demonstrates a learning that has taken place through their method: they have broadened their understanding of the objects and the effective methods of working with them. Through this transfer of knowledge, the makers are able to refine the functional and aesthetic qualities of the produced form.



The Swing by Katherine MacLeod and Shane Bannister

The Bench

To address shortcomings in the recording of the process, I created additional objects to the experiments detailed in Chapter 5. The process was recorded on video, with stills being pulled from the video to capture moments in the process. Depicted in the diagram below, a similar pattern emerges. I start with the disassembly of an assembled object, considering the connections and techniques used months earlier. I adapt the concept of the original object to a new arrangement through short iterations. Exploring alternative approaches and introducing new objects, the cycles become longer, fostering dialogue and knowledge transfer. As I narrow in on a satisfactory result both functionally and aesthetically, the cycle shortens, pursuing refinement.



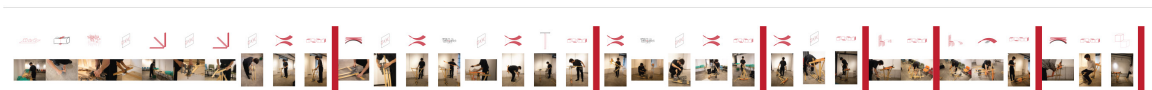
Capture and notation of the design/making process for the bench



The Bench

The Spring Chair

Working with the notated processes from the Charette and the Bench, I developed the handbook to translate and disseminate the process of making with found objects. A draft was given to a student in the school of architecture along with an inventory of found objects. As someone early in their formal design education, the student brought with them experience in design and making, though not necessarily in making with found objects. The student was provided with an inventory of objects and a simple program: a place to sit. The process, depicted below, is a clear depiction of the evolutionary nature of this work. The cycles become increasingly efficient as the student develops an understanding of the objects with which they are working. A playful approach leads to discovery, with the student forgetting momentarily that there was a program for their creation. This approach sets the following cycles down a path of purposeful experimentation, through which the design is refined toward functional and aesthetic goals.



Capture and notation of the design/making process of the Spring Chair



The Spring Chair by Daniel Robertson

The Net Chair

The Net Chair was made by someone from outside the School of Architecture, someone with no formal design training or experience in the trades. Revisions were made to the handbook between the completion of the Spring Chair and the beginning of the process for the Net Chair. This person was provided with the version of the handbook that is included in Appendix A , as well as an inventory of found objects. Their process, depicted below, differed from previous processes in that it features a series of short cycles at both the beginning and the end of the process.



Capture and notation of the design/making process of the Net Chair

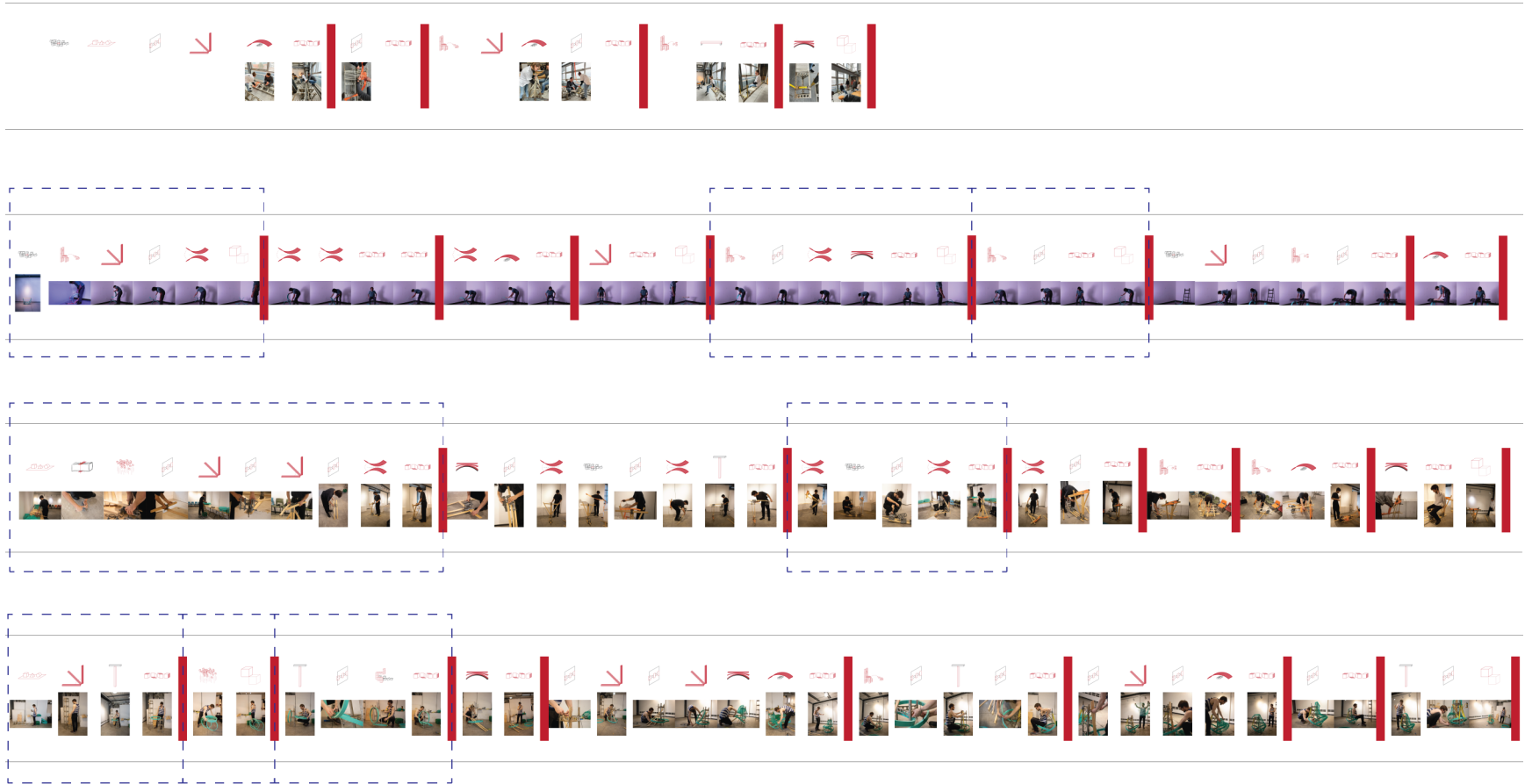
This is the result of the volume of objects provided. The maker explored all of the objects presented to them through quick playful experiments that revealed the core qualities of each object. Once a subset of objects was chosen, the cycles became longer as the maker developed an understanding of the objects and the functional methods that would facilitate creation. The maker also explored and developed their ability to work with the objects and fasteners provided through iterations of trial and error. Playful discovery enabled purposeful experimentation toward aesthetic and functional goals.



The Net Chair by Böðvar Ingi H. Geirfinnsson

Discussion

The processes in design and making depicted in this thesis make an argument for the crucial relationship between play and experimentation that is expressed through working with found objects. Considered together, these elements foster creative agency while reassigning value to waste through the creation of functional objects. Comparing the processes, as seen on the following page, makes explicit the relationship between play and experimentation as parallel stable states that are mutually fulfilling. The paratelic state, shown by the blue dashed line, is present in each of the documented processes except the first one. The process for the Swing, the product of the Charette, began with sketching, causing the two makers to enter into the process with a goal in mind and a preconceived idea of how the objects might be used. This caused them to skip the playful discovery phase and move directly into the purposeful experimentation phase. While the process did produce a result that was satisfying to the makers, their ability to bring their experience to other objects is less developed than the makers who allowed themselves to enter playful discovery. The other processes highlight the reciprocal relationship between telic and paratelic states, between playful discovery and purposeful experimentation, where the experimental phases were directly influenced by the playful phases and vice versa.



Design/making processes captured and notated for comparison and analysis. Paratelic cycles are delineated by a blue border.

Chapter 8: Conclusion

I began this thesis as a maker: I enjoyed the art of inquiry and making-do. In my effort to understand the importance of making in design with found objects, I learned to theorize about making, understanding its unique ability to convey tacit knowledge. I learned to recognize the different motivations in making, the telic and paratelic states that promote discovery through their reciprocal relationship. I strived to share this knowledge and way of working with others, to enable them to develop their own mindset of wasteless thinking.

I discovered that working with the inherent richness and imperfection of found objects enables a dialogue that facilitates knowledge transfer between object and maker. I rely on this dialogue and the connection between the hand and the mind to convey the tacit dimension of designing with found objects.

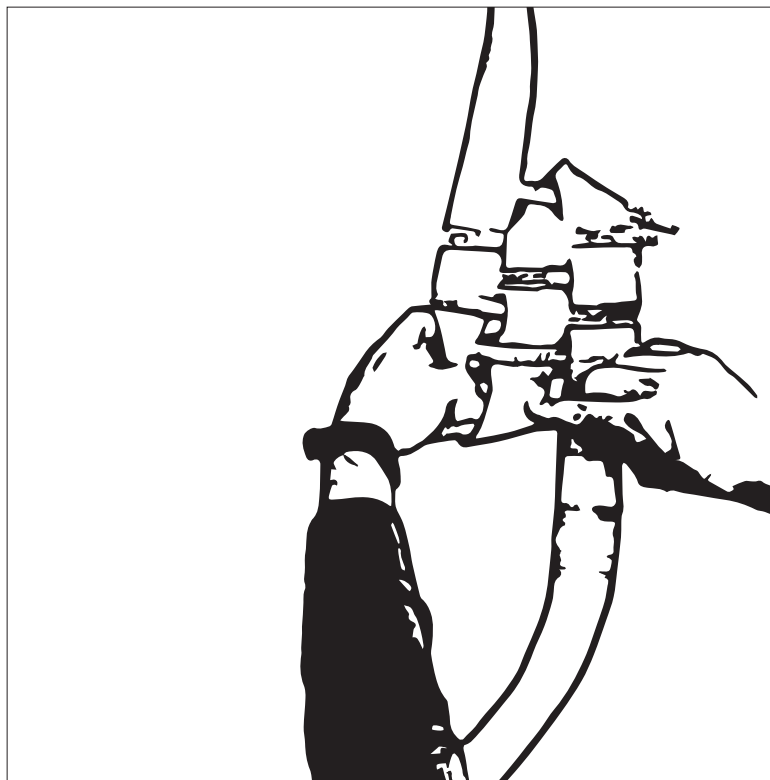


Making brings me back to the work.

In this work, I have not prescribed a method; rather, I invite people to discover their own process through the act of making. The work is adaptable. It is intended as a perpetual draft that evolves through its implementation, transcending scale by embracing an emergent ethic; the generative nature of the handbook ensures this.

I have presented a way of thinking, an approach to design and making, but also an ethic of care and consideration. This ethic expresses itself through the non-prescriptive nature of the process: it acknowledges and celebrates the unique constraints we each may face in solving problems through the act of making. It considers that there is no one-size-fits-all method, and that it is as important that people foster their own creative agency and process as it is that they produce.

I envision this work as a kind of curriculum, shifting pedagogy away from prescription toward co-authorship and co-learning. It invites unbounded play and experimentation that sets people on a path of discovery while releasing them from perfectionist tendencies. I intend to reinvigorate an interest in the art of inquiry, in seeking out the unexpected without expectation.



The path is never linear.

This work is not over, it never will be. This is an iteration; a moment to pause and reflect. I consider the actions taken and the divergent paths ahead, counting on them to converge in unknown and unforeseen ways.

To the reader: co-opt this thesis, take the work and make it your own; *push it further*.

Appendix A

This Appendix holds the handbook in its entirety, as it was presented to the final reader.



for the future

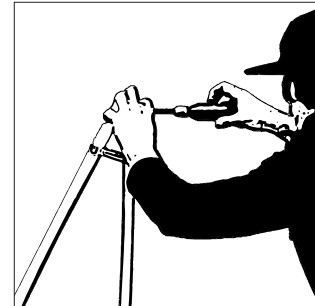
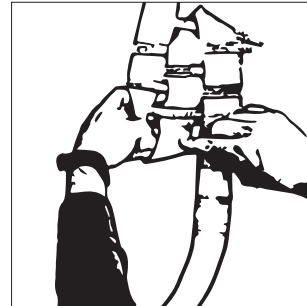
Foreword
What You Need to Know
Mindset in Action
Potential Realized
Furthermore



Foreword

This book is the culmination of experiential knowledge, research, and uninhibited experimentation in making with found objects. It explores the intimate and reciprocal relationship between the hand and the mind, making an argument for an approach to design and building that emphasizes the iterative and informal nature of play. The goal is that this approach allows for an accumulation of knowledge through doing, through active engagement in the act of making. Expressed through general approaches and strategies for

material object reuse, it is less of a 'how-to' and more of a 'could try'. The intentional lack of explicit direction is meant to promote a change in mindset rather than teach new skills. It is a plea for play in design, for an unbounded expression of creativity. Found objects foster this expression, as their inherent richness and imperfection release the maker from perfectionist tendencies.

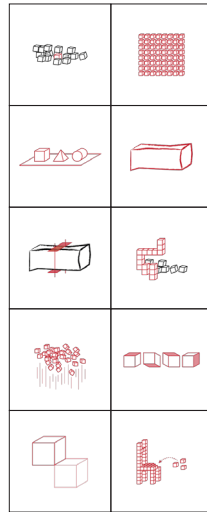


What You Need to Know

The following key terms and actions set the stage for experimenting and working with found objects. They facilitate a common language for talking about methods and strategies in material object reuse, providing definitions and diagrams to share and debate. It is not intended as a dictionary, rather as a set of pictograms to support the visualization of the processes presented in the book.

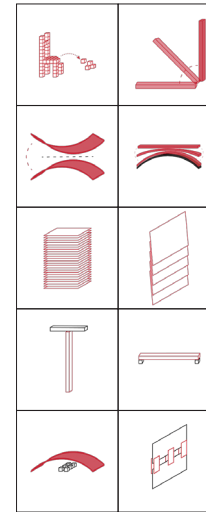
States of Existence Actions in Making

- | | |
|---------------------|--------------------|
| <i>Found Object</i> | <i>Assemble</i> |
| <i>Collect</i> | <i>Disassemble</i> |
| <i>Inventory</i> | <i>Orient</i> |
| <i>Imperfection</i> | <i>Invert</i> |
| <i>Tolerance</i> | <i>Adapt</i> |
| | <i>Stack</i> |
| Approaches | <i>Overlap</i> |
| | <i>Support</i> |
| <i>Experiment</i> | <i>Span</i> |
| <i>Play</i> | <i>Cover</i> |
| <i>Assess</i> | <i>Join</i> |
| <i>Reflect</i> | |

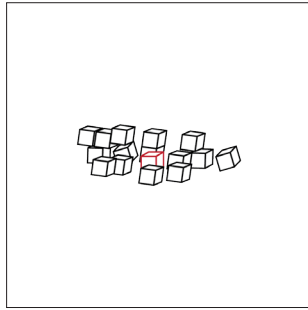


Mindset in Action

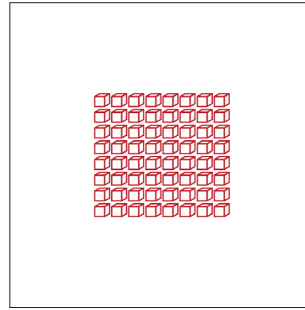
The images paired with the pictograms provide real world evidence of the key terms and actions in the reuse of found objects in making. It is a small sample of the potential of the actions portrayed in each pictogram, reinforcing the importance of engaged action in designing with found objects. The power of these actions can only be truly understood through implementation, where all of the senses comes into play. The experience gained through working with real material objects expands your capability to not only create with found objects, but also to see waste as a resource. The abstract yet direct nature of the pictograms suggest that the object can be *anything*, while the images show what can be done with *something*. This is the goal of this handbook, to make explicit the fact that something can be done with anything, and that through this understanding, value can be reassigned to waste while empowering people to create through design.



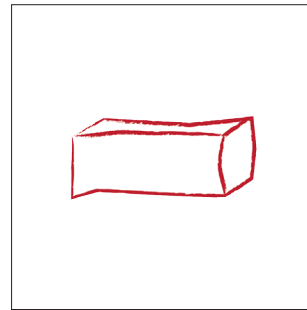
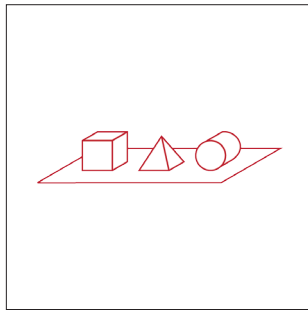
Found Object
(n) byproduct, externality, or 'end of life' object



Collect
(v) to bring together a selection of objects; to harvest



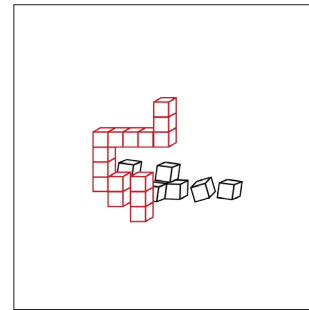
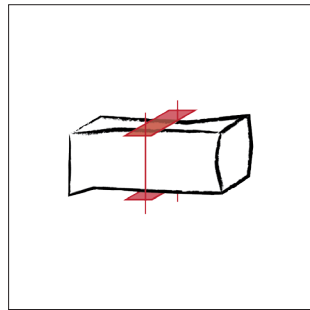
Inventory
(n) a stored collection of objects or components for the purpose of making



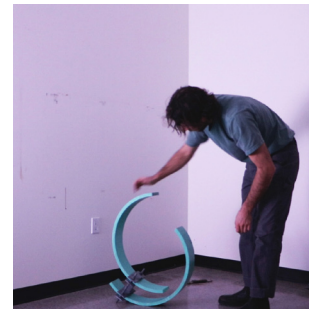
Imperfection
(n) irregularities in form due to decay, modification, or use



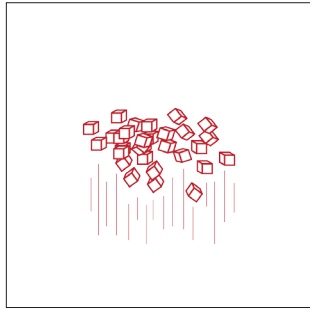
Tolerance
*(n) the ability to account for or work with the
imperfection of a material object*



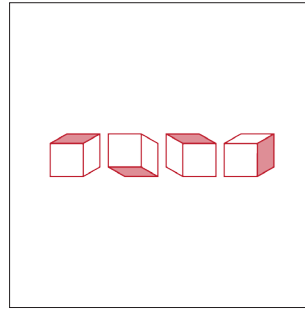
Experiment
*(n) an activity through which the outcome is uncertain
(v) to test new ideas or concepts*



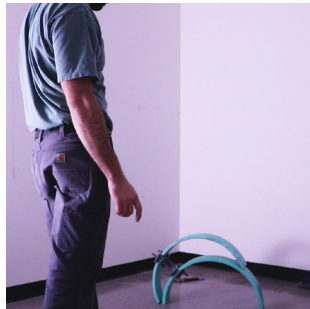
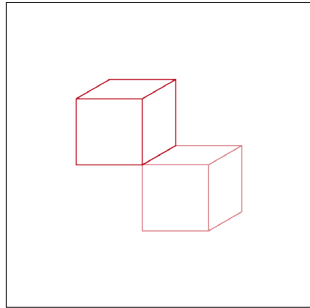
Play
(v) to express unbounded imagination



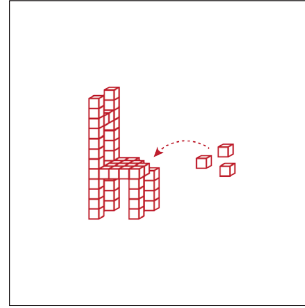
Assess
(v) to evaluate an outcome



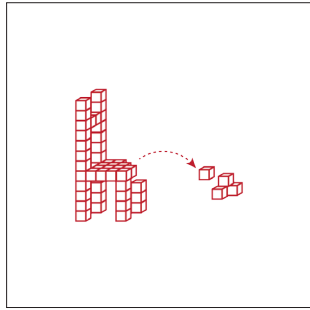
Reflect
(v) to pause intentionally to gain understanding



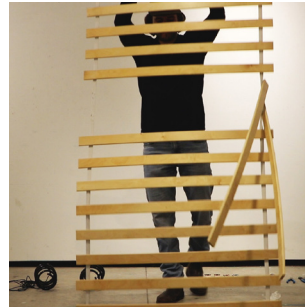
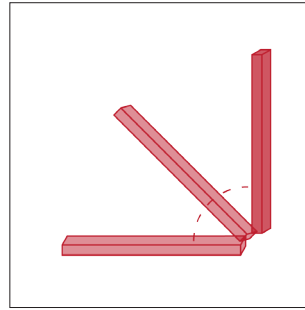
Assemble
(v) to put together



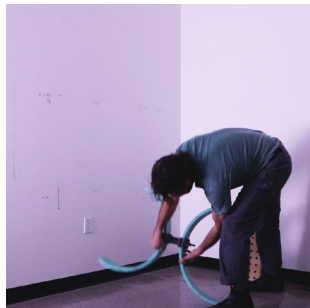
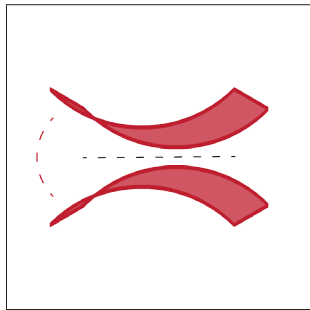
Disassemble
(v) to take apart



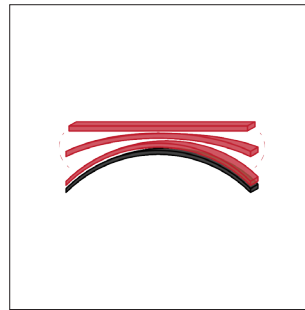
Orient
(v) to position relative to a constant



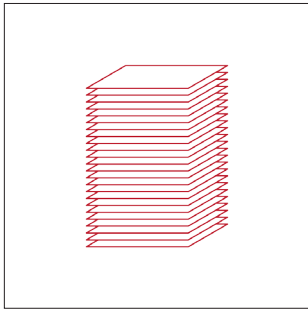
Invert
(v) to reverse orientation, position, or relationship



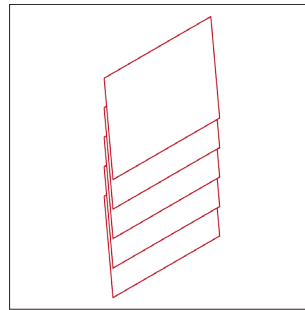
Adapt
(v) to modify for a new use



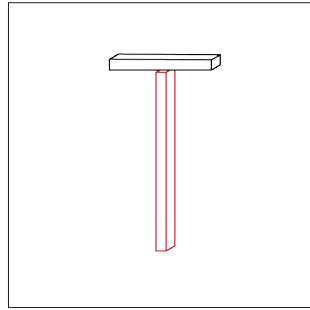
Stack
(v) to arrange in a stable pile
(n) an organized collection of objects



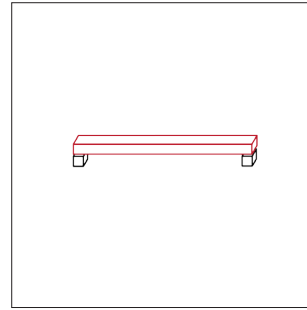
Overlap
(v) to layer in a way that covers exposed edges



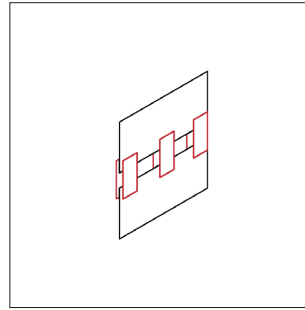
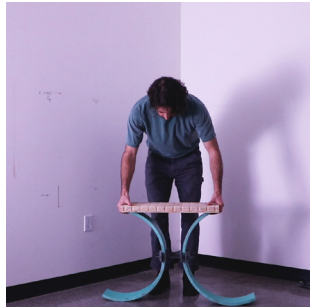
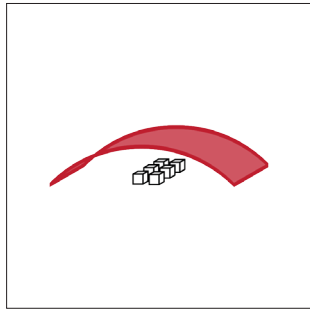
Support
(v) to hold up



Span
(v) to cross without support



Cover
(v) to enclose, protect, or envelop

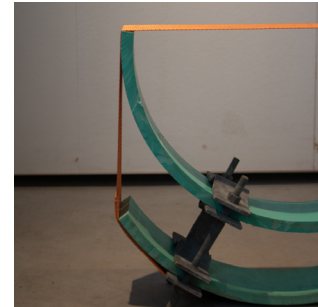


Join
(v) to connect two separated objects, permanently or temporarily

Potential Realized

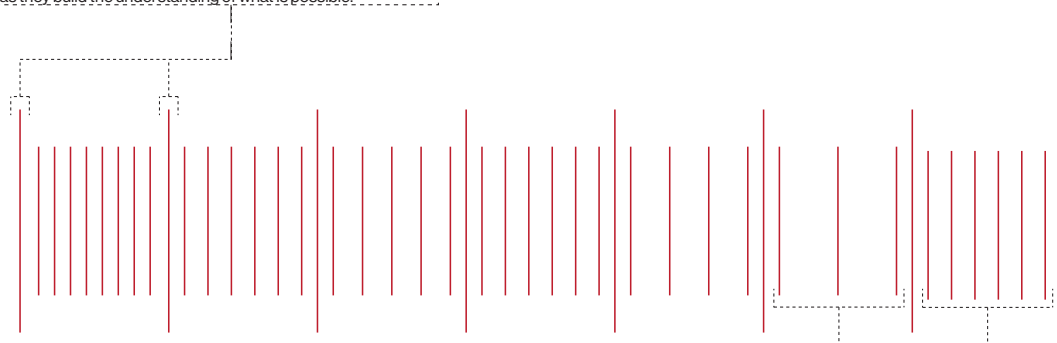
Experimenting with found objects not only reveals the potential of the object, but also the potential of the maker. As your understanding of how to work with an object expands, so does the potential uses of that object. This reciprocal relationship is the whole reason for experimenting in the first place. Instead of taking an object and forcing it to conform to a predetermined design, the process must evolve with the understanding of the object and its potential. The possibilities will also expand, as you begin to learn new skills and ways of working through experimentation. Design will become iterative as a result, drawing on the informality of the playful experiments. Play cannot be underestimated in this work. Releasing the pressure of pursuing a solution, a greater understanding can be gained through unbounded play than restricted work. The play will become increasingly directed, culminating at the point where the functional goals and your aesthetic desires as a maker meet. These evolutionary cycles are delineated by punctuations - moments where reflection and reconsideration provide a change in the perception of the potential uses of an object. Between these punctuations, the functional acts of working with found objects evolve as

you discover your preferred ways of working with the object, leading to fewer and fewer trials of methods between punctuations. As you get closer to achieving the functional and aesthetic goals of the project, the actions may become more refined, or you may employ more strategies that you discovered work well. There are no rules. It is a balance between you and the object. It may take three tries, it may take twenty. You will likely find as many methods that do not work as those that do. This is part of the process.



Punctuations

Punctuations delineate each cycle as moments to reflect and reconsider. It is at these moments that you may choose to change course, to pursue a different direction of exploration with the object. All pursuits are valuable, as they build the understanding of what is possible.

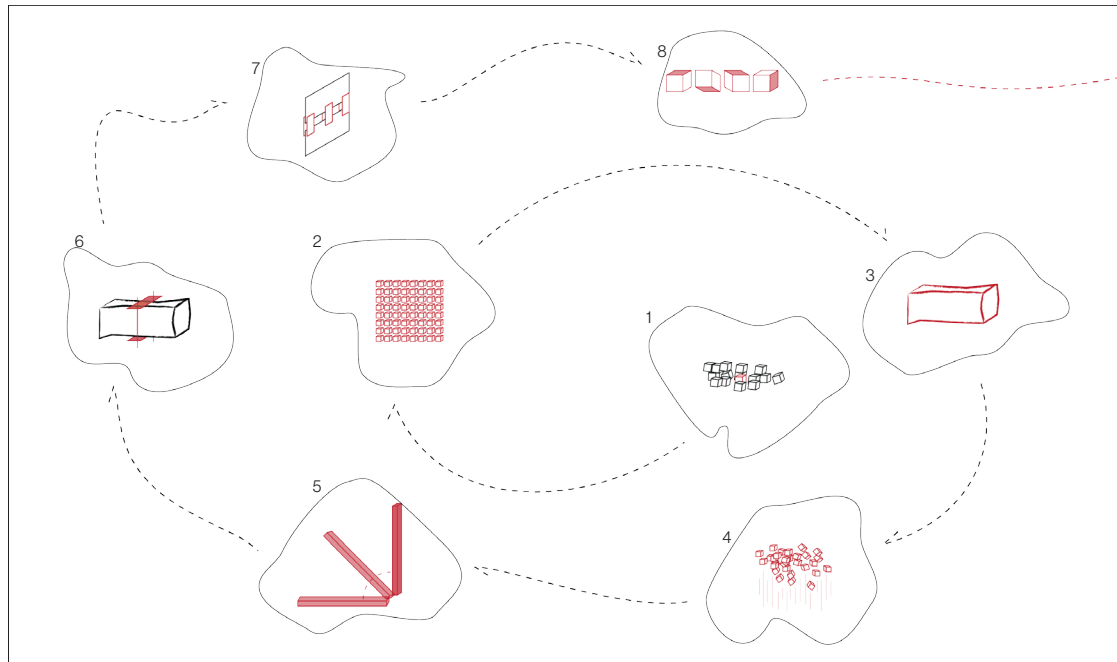


Functional Actions

Functional Actions are the physical manipulations of the object(s). These are the moments where the hand informs the mind through making, instigating reconsideration at the punctuations. These cycles are evolutionary, as fewer manipulations may be required between punctuations as your understanding expands. There can be as many or as few cycles as you want.

Cycles

Working with found objects in design requires an iterative approach. The iterations flow in cycles, where understanding is gained and capabilities are expanded to discover the full potential of the object. The cycles begin with the found object, where the decision to use an object marks a moment of acceptance of the object as a co-author in design. The cycle presented is an example of a potential workflow or way of approaching making through play and experimentation with found objects. There is no right way or wrong way, rather there are abundant avenues of potential to be explored, culminating in a functional and aesthetic result that satisfies the maker. In this process, the product is not predetermined, rather it emerges from the process.



1. Find Objects
2. Collect Objects
3. Identify Imperfections
4. 'Play' to Discover Possibilities and Limitations
5. Orient Objects to Redefine 'Up'
6. Determine Tolerance Methods to Deal with Imperfection
7. Join Elements with Fasteners
8. Assess Functionality of Objects as Arranged

9. Invert the Assembly

10. Reflect on Understanding of Object and Changes in Perception

11. Disassemble

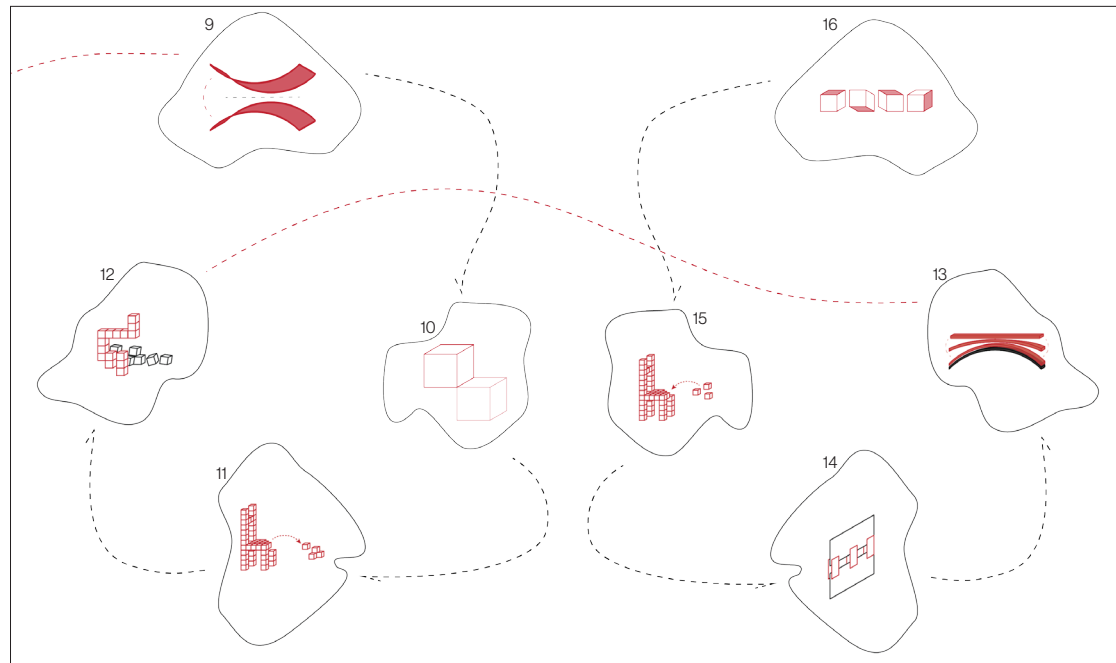
12. Experiment Toward the Functional Goal

13. Adapt Objects Toward Goal

14. Join Components Together

15. Assemble Functional Object

16. Assess Functionality of Object



The End?

The process ends when you, the designer and maker, decide it does. The cycles can have more or fewer steps, there can be multiple cycles or just one. There can be different types of cycles, with some geared toward play and discovery, and others pursuing experimentation for a functional or aesthetic goal. Cycles are typically delineated by moments of reflection and reconsideration, where the understanding of how to work with an object begins to shift your perception of that object and its potential uses. This perception shift is what releases objects from their original intended use, allowing them to become co-authors in design.

Furthermore

This is not a conclusion; it is a starting point. Play and experimentation in making with found objects only unlocks more potential. Experience in working with imperfect objects expands the potential of yet-to-be-found objects, as you will be able to identify the properties and characteristics of objects that enable their functional capabilities before you begin working with them. Objects will interact with other objects in new and different ways that must be accounted for and adapted to, continuing the learning process. Opportunities to jump in scale will arise, bringing learned practices and methods to the building scale and even the landscape.

In the end this work is all about mindset. It is about viewing waste and found objects as a resource rather than a burden. It is about embracing imperfection as a source of richness in design, prompting ingenuity in problem solving. Material decays, objects show scars of a life lived. By understanding the implications and opportunities that are left by the passage of time, we can embrace an ethic of maintenance and renewal that reassigns value to waste.





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