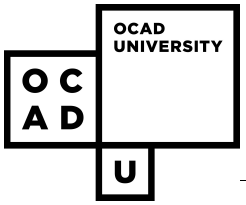

2016

Arational design

Wendt, Thomas

Arational Design

Thomas Wendt

Originally published in Wendt, Thomas. "Arational Design." Advancements in the Philosophy of Design. Eds. Pieter Vermaas and Stephane Vial. New York: Springer, (forthcoming 2017)

Abstract

Too often, designers rely on rationalist notions of their work: from planning to execution, from theory to practice, from strategy to execution, from problems to solutions, from thinking to making, etc. While these sharp distinctions can serve to hyper-focus individual designers on their unique role and responsibilities, the confusion they create outweighs any potential benefits. Rigid distinctions between modes of practice often create confusion and illusions of certainty, especially when two poles come together, even rely on and co-construct one another. Much of the rationalist sentiment in contemporary design stems from a bias in Western philosophy that introduces a hierarchical relationship between mind and body--the mind dictates and the body executes. But there is no designer equivalent to cogito ergo sum--no positivist statement we can make to delineate and prioritize mental functions over bodily engagement. As an alternative to these dualisms, this paper will take a phenomenological and arational perspective on the components of design, with the end goal of articulating an arational understanding of design. It will examine the emergence of design from a rationalist epistemology and contemporary practices that are attempting to break the boundaries of reason-based methods.

Keywords: Design philosophy, Design practice, Rationality, Critical design

Introduction

One of the key lessons from design practice in general is that constraints, when used strategically, can result in more interesting outputs. Instead of limitations, constraints on time, money, platforms, channels, etc. can actually open the spaces of possibility instead of foreclosing them. In this way, design practice has reframed a core assumption around the nature of restriction and creativity. It is time now for design theory to begin rethinking what it holds to be true about the rationalist tendencies in the theoretical frameworks that guide practice.

The best designers are those who can recognize when constraints are beneficial and when they are not. I will argue here that design has limited itself as a field of study by failing to recognize the detrimental effects of rationalist thinking. Just as design is working on shedding the baggage of its perception as a purely aesthetic practice, so too should it ask itself to further engage with its philosophical roots, with the end goal being to interrogate that nature of design as a cultural/social/political force and to question its underlying assumptions. Rational thought is in need of a similar reframe. The extent to which rational thinking is useful for designers should be called in to question. This paper will argue that similar to shifting common notions of constraints, design can and should also shift popular notions of rationality. The prioritization of rational thinking has become an unnecessary constraint.

The following essay attempts to articulate how the rationalist bias in western philosophy has influenced design, beginning with the emergence of Cartesian thinking during the Enlightenment,

how early design theory (consciously or unconsciously) incorporated Cartesian rationalism and dualism into its articulation of design, and why now is the time to start thinking about an arational theory of design. Arationality is neither rational nor irrational. It is a-rational, or simply "not rational," uninterested in questions of rationality because such questions are unnecessarily limiting. Arationality lies somewhere between the rigid functionalism of mass quantification and the nonsense of the Cheshire Cat. This in-between space will be our focus.

The main philosophical lens used here is phenomenology, particularly the relationship between phenomenology and design, but we will not provide a deep analysis of the phenomenological tradition here. (See Wendt 2015) The aim of phenomenology from Heidegger onward has been to highlight the limits of Cartesian rationality and introduce a philosophical practice that does not rely on strict dualisms. We will apply certain phenomenological notions to the theory of design, in attempt to argue for an arational approach to design.

Enlightenment

Design as we know it emerged from a rationalist epistemology. From Cartesian rationality during the Enlightenment up to the Design Methods movement in the 20th century, our conception of design has been shaped by (overly) rational notions of knowledge. Modern concepts of design as "problem solving" stem directly from this early formulation of design and have shaped design practice for decades. Designers are encouraged to adopt a sort of predator/prey model, in which they seek out problems and eliminate them via solutions. More recently, however, we are beginning to see practices that break rational problem solving in favor of a praxis-based mode. We will examine some of these practices in more detail, but first a more detailed look at rationalism and its effects on design.

Our focus here is on Cartesian rationalism in particular, as opposed to rationalism as a broader school of thought. The rationalist philosopher strives for a pseudo-scientific truth, a set of knowledge based on reason rather than sensual information, believing that human senses are not to be trusted, and humans must take advantage of their capacity to reason to understand the world. René Descartes took these ideas even further by relying on doubt as the primary driver for getting to Truth and a sort of paranoid introspection as a means of exploring the nature of Truth, as shown by his famous mistrust of a potential evil genius: "I shall consider that the heavens, the earth, colours, figures, sound, and all other external things are nought but the illusions and dreams of which this [evil] genius has availed himself in order to lay traps for my credulity; I shall consider myself as having no hands, no eyes, no flesh, no blood, nor any senses." (Descartes 1955) Cartesian thinking is defined by a disavowal of all things bodily, as the corporeal can and should be doubted. If there is an evil genius pulling the strings, we should use our reason to outsmart him.

Taken to its logical conclusion, Descartes's prioritization of thought over sense implies that we can cleanly separate mind and body. The mind, for Descartes, is the executive seat of reason, and the body is a bundle of nerve endings that processes ambiguous and potentially deceptive information from the external world. This dualist notion implies that the primary means of action begins with mental activity and intention, followed by bodily execution of mental "strategy," and that knowledge acquisition is predicated on finding an ultimate Truth through a sort of paranoid/narcissistic process of elimination. All action becomes a product of omnipotent reason, instilling an illusion of control and insistence on a hard categorical line between thought and action.

In short, Cartesian rationalism holds that we think and then act. This simple formulation of thought and action shaped much of the western approach to scientific inquiry up until the present. The past century, however, has seen a significant backlash against rationalist thinking, from phenomenology questioning the primacy of the mind, to critical theory pointing out flaws in hyper-technical capitalist systems, and most recently, design practices beginning to think beyond the bounds of problems and solutions.

Martin Heidegger famously rejected Cartesian subjectivity as a purely mental activity, instead positioning phenomenology as the practical study of Dasein, the contextualized being characteristic of human life. Dasein avoids the harsh dualism of mind and body, the transcendentalism of res cogitans, and the reduction of existence to the capacity to formulate thoughts. Dasein is defined by the objects with which it interacts, and knowledge acquisition is associated with engaged interaction with those objects rather than pure reason.

Critical theorists took up a critique of Enlightenment rationalism and its focus on hyper-objective scientific thinking, from the perspective of political inquiry. Critical theorists argue that the radical Enlightenment adoption of science over mysticism has resulted in an over-emphasis on scientific objectivity over all other forms of inquiry, a domination of nature in attempt to institute reason throughout all existence, and the creation of a system in which modern capitalism can thrive. They took issue with most Enlightenment-Capitalist topics, especially the imposition of rationalist work processes, the domination of nature, and commercialization. We will return to critical theory in the section on critical design.

Finally, contemporary design theory has begun to articulate the Enlightenment's effects on design thinking. Most relevant for us is how Enlightenment rationalism foreclosed on craft knowledge and cultural wisdom that shaped social practice, as rational thinking tends to dismiss non-reason-based forms of inquiry. For design, however, cultural knowledge is highly important as a driver for inspiration and models of practice and preserving it is necessary.

Design’s Emergence Out of Rationalism

What we commonly think of as design emerged largely as a product of the Industrial Revolution, when the rationalization and standardization of production introduced greater complexity into prior modes of craft, and design came to be as a means of planning before acting. The core components of pre-industrial craft--cultural knowledge, local material, and unified maker and user--were shuttered by design's violent separation of planning and making. Rational-industrial modes of production introduced planning as a project task, and design emerged as a field that planned, sketched, modeled, and attempted to predict future effects of products. Klaus Eder explains this phenomenon in terms of architecture and engineering:

"The craftsman's work is in turn the starting point for an additional natural division. The knowledge acquired in craft work is systemized logically; the observable effects of this work become the object of explanation attempts. A new type of interaction with nature arises, supported first by architects and finally by engineers. They interact with nature by calculating it. The architect plans on the drawing board with the aid of assumptions on statics and material properties. The engineer recombines nature and calculates the energetic effects that result from it for people. By expanding this activity, society enters a new state of nature." (Eder and Ritter 1996)

Craft making shifted from a mostly individual act of creation based on cultural knowledge to a standardized, logical process of production. The craftsperson handled natural materials by working with them, interacting with the materials by allowing the materials themselves guide the making process, while the architect and engineer attempt to manipulate nature for the benefit of humans. This new relationship set the context for modern design: an act of domination and manipulation to benefit human and (or?) commercial endeavors.

Herbert Simon's work represents one of the first serious inquiries into the nature of design as the production of artifice. Simon was largely successful in framing design as an inherent process in all industries, not just “capital D Design,” thus articulating a design theory that moved away from pure aesthetics. However, his work also attempted--less successfully--to establish a science of design. In his famous Sciences of the Artificial, Simon sought to define design as a scientific activity, which can be broken down into discrete parts and formulated as a standardized procedure. His well known definition of design as the movement from "existing situations into preferred ones" (Simon 1996) is an easy way to understand design in an everyday sense--it evokes a sense of improvement, a movement toward future states that improve upon our current state. It also, however, positions design as a logical movement from one point to another; it refuses to come to terms with the complexity of design, the limits of designer intention, and non-linear designerly activities. His conception of design is a primary example of how rationalist thinking can often serve as the default framework for theoretical work.

Another key aspect of Simon's work on design is his reliance on a hard dualism between "inner" and "outer," or the sense that the "self" has some quality of being removed from the rest of the world. This of course stems directly from Cartesian thinking, in which the mind separates itself off as the executive, reason-based function, and the body takes the position of a secondary, practical component of mental activity. Supporting his insistence on binary opposition, Simon's notion of the artifact sets up a way of thinking about artifice and the artificial world in a neutral way, as opposed to sticking to the purely negative connotations of artificiality. At the same time, his overly rationalistic conceptualization of an artifact as an "interface [...] between an "inner" environment, the substance and organization of the artifact itself, and an ''outer" environment, the surroundings in which it operates" (Simon 1996) is entirely too simplistic to account for the complexity of object relations. He states further that artifacts "serve their intended purpose" and are thus successful "if the inner environment is appropriate to the outer environment, or vice versa." (Simon 1996) Again, this rationalist, dualist view is accurate but not sufficient. What is the difference between "inner" and "outer" in this context, and why is the artifact the point of interface between the two?

These dualist and rationalist influences gained major significance in design communities with the Design Methods movement, which aimed to introduce scientific thinking into design work. Theorists such as John Chris Jones, Horst Rittel, and Christopher Alexander devoted their time to working out methods designers can and should follow in order to achieve certain goals and solve problems. The technical rationalism of Enlightenment thinking had finally made its way to design via the Methods movement, causing palpable anxiety among designers for their lack of scientific rigor. The Methods movement was an attempt to bring this sense of rigor and objectivity to design, mostly for noble reasons: if design is actively shaping the environment, and the types of activities designers perform have definite political and ethical implications, then we should be as rigorous as possible when articulating the nature of design work. And while many authors of the Methods movement explicitly avoided step-by-step processes, or insinuations that following a method will always result in a certain outcome, standardizing design as a set of phases will always be read sequentially and technically as a means to an end. The issue is that design includes technical activities, which have discrete goals and

usually a set of steps to achieve them, as well as praxical activities, which do not necessarily have an end point. We will look closer at this difference in the following sections.

The common thread that runs through this emergence of rationality in design is the assumption that science is the preferred model by which we measure design. The following sections will question this assumption via a discussion on contemporary methods that resist being measured against science.

Arational Turn

The rationalist methods introduced to design discourse in the post-war period served commercial purposes: if we can position design as a scientific activity, which potential clients already understand and trust, then it will be easier to sell design work. There was (and still is) a strong desire to standardize design work into a nice, clean framework that "non-designers" can easily understand and ultimately pay for. This impulse to make design understandable to non-designers has resulted in a few outcomes: it has decreased the esoteric aura that tends to surround design, ultimately making it easier for clients to understand and pay for it; but this effect has also begun to revert back on itself, causing designers to internalize the overly-simplified frameworks meant for clients and the public. It did not take long, however, for designers to realize that the complexity involved in most design projects does not lend itself to clean, linear frameworks. Some projects go so far as to rupture the entire rationalist mode and call for a more flexible, adaptive, and one might even say spontaneous model.

The concept of wicked problems emerged as a way to explain this rupture. Rationalist models of design often rely on the notion of problem solving--specifically, that designers use reason to fully understand a problem, and only when that problem is understood do they apply creativity to envision solutions. This model relies on many assumptions: 1) problems lend themselves to complete understanding; 2) designers have access to information needed to understand a problem and possess the skills to interpret that problem in its entirety; 3) the problem space is confined enough to set non-porous boundaries around it; 4) once the problem is understood and the design moves to solutioning, the original problem space remains static; 5) we have valid means of assessing whether solutions actually fit the problem space. Seeing the many difficulties with relying on these types of assumptions, Horst Rittel and Melvin Webber articulated their theory of wicked problems to help deal with the inherent complexity and fluidity of design projects. In a certain sense, wicked problems mark what some theorists think of as the failure of Design Methods; thinkers who were involved in the Methods movement (Rittel and Jones, especially) began to rethink their earlier formulations of design in the light of this wickedness.

Wicked problems have a number of characteristics according to Rittel (1972), including some that are relevant for our current work: 1) There is no expertise. Wicked problems are complex, and complex fields do not have experts. They call for unique, emergent approaches (Snowden 2000); 2) They have no definitive formulation. It is impossible to understand the problem and then solve it. There are simply too many inputs and outputs, all of which are constantly changing; 3) Problems and solutions are interconnected. Each solution is a reframe of the problem; 4) There is no end point. Each solution creates new problems, which must be dealt with; 5) Conceptions of truth or falsity are not relevant. A solution is simply better or worse; 6) Each problem has multiple possible causes, and it is often impossible to trace a problem back to its single root cause; 7) Every problem is a symptom of another problem. The retroactive line of problems is infinite; 8) Every problem is unique and context-dependent. "Best practices" are irrelevant, as each problem exists within a unique context.

We get the sense from these eight criteria that wicked problems are massively complex; they exist in systems with multiple inputs and outputs, they resist understanding, and even when "solved," they replicate themselves as new problems. This is not to say wicked problems are beyond understanding and are thus not worth our time and effort. Quite the contrary: wicked problems have a huge potential to affect our future as a species, and breaking our obsession with rational thought is necessary to deal with them. We need to reframe how we think about the nature of problems and solutions from an arational and non-positivist perspective. Design must move beyond a simple problem solving perspective. I have argued elsewhere (Wendt 2015) that there exists a paradox in design, which I have called the problem-solution paradox (for lack of a better name), which follows Rittel and Webber's anxiety over the hyper-rationalist conception of design planning (Rittel and Webber 1973) and Dorst's (2006) continuation of design paradoxes. In short, the problem-solution paradox states that we cannot design solutions until we understand the nature of the problem, but it is also true that we cannot understand a problem until we explore solution possibilities. Given this paradoxical relationship between problems and solutions, it is necessary to rethink the categories themselves--not to simply dismiss them as anachronistic Enlightenment relics, but rather to understand them beyond simply stating that one comes before the other.

Rittel (1972) goes on to explain two more components of wickedness that are relevant here. First, any attempt to work with wicked problems involves a rhetorical method. If expertise is irrelevant--that is, the system of a wicked problem is complex and involves emergent, novel solutions--then the potential for understanding cannot reside in the mind of a single person. There is no omnipotent and omniscient designer-god who can claim specialized knowledge. Design in this context is rhetorical and argumentative; it is a truly collaborative effort, in which any potential solution is distributed among many contributors. Second, every act of design involves a sense of what ought to be, which is of course quite different from what is. Processes based on scientific rationalism often guide toward a specific end goal, as when one applies the scientific method to obtain a sense of clarity around the current state of things. When concerned with what ought to be, however, the designer's focus is not necessarily on the technical aspects of how to reach the end of the process, but rather the end goal of what ought to be often unfolds in the process itself.

The work around wicked problems represents a larger arational turn within design theory. Following the Methods movement, it quickly became evident that not all design work calls for a reason-based approach to thinking about what ought to be. This is not to say design does not contain components of problem solving in the traditional, positivist sense, but simply that the hyper-rationalist assertion that design is problem solving is myopic and insufficient. While not all design problems are inherently wicked, I would argue that much commercial design attempts to over-simplify problems to fit existing processes. Contemporary design methods, however, are attempting to account for complexity by balancing the desire for process and the variability of design work.

Design Thinking

One such contemporary method falls under the umbrella of Design Thinking, a popular and somewhat contentious method that has emerged over the last few decades as an attempt to analyze the cognitive activities in design. It is disconcerting how many practicing designers seem to believe that the history of design thinking began in the 1990's with large firms like IDEO adopting design thinking as a process-driven way of engaging with client work. Of course, while IDEO was highly influential in popularizing design thinking, its roots go much deeper than IDEO's brand of neo-methods. Indeed, we can locate many of the principles of design thinking in Simon's Sciences of the

Artificial and perhaps even earlier in the early writings on industrial design, Rittel and Webber's theory of wicked problems and Buchanan's (1992) continuation, Donald Schön's (1983) The Reflective Practitioner, and Nigel Cross's (2006) Designerly Ways of Knowing. What IDEO and subsequently the Stanford Design School did so well was to take the previous academic work and reframe it for a business audience and introduce human centricity.

We have seen already how the notion of wicked problems introduces major issues for the problem solving vision of design, despite Rittel and Webber's attempt to reconcile the two. Schön's work on reflective practice and critique of sequential thinking also played a part in the non-rational articulation of design thinking. Schön explored how professional activity often does not follow a predefined plan but rather the course of action emerges out of engaged activity with the environment. The chef's work, for example, is not defined by following recipes; the interesting and productive aspects of cooking are when the chef diverges from the plan, or has no plan at all, adding "a little of this and a little of that," tasting it, and then adjusting. For design, we might conclude that the argument for design as planning is insufficient, as the most interesting, and perhaps the most important, aspects of design work occur when decisions are made in the moment. Science and design diverge at this crucial point: while science attempts to factor out variability through rigorous experimentation, design embraces the unknown by leaving room for the emergent properties of the creative process.

These approaches focus on the process of design, whereas work from Nigel Cross and others has focused on the cognitive components of design, or the "thinking" part of design thinking. Cross showed how different cognitive modes of thinking play in to the cognitive activity of designers, including inductive and abductive reasoning. Induction deals with claims to truth based on experience. The scientific method is an obvious example; it attempts to build empirical evidence to make claims about how the world works, thus articulating the current state of things. Design research methods certainly have a strong inductive component, as they aim to uncover explanations of how people interact with their environment. What we commonly think of as the "creative" components of design--what allows us to move from an understanding of the current state of things to a preferable future state--includes aspects of abductive thinking, the style associated with futuring. Abductive thinking is a unique design skill, one that sets it apart from the sciences as an active shaping of future worlds, and a style that differentiates design from rational technique. Cross holds that "designing is not a search for the optimum solution to the given problem, but that it is an exploratory process" and that "in the process of designing, the problem and the solution develop together." (Cross 2011) This convergence of problem and solution in the 'exploratory process' of design indicates a certain non-rationality. Design is not always a technical process that positions itself toward an end goal but can also be a praxical movement in which the goal reveals itself through action.

Kees Dorst (2004) goes so far as to say designers evolve out of rationalistic thinking through experience. He argues that what he calls novice, advanced beginner, competent, and proficient designers rely on rules and reason to solve problems. Novices need structure in their process, following "best practices" to complete tasks. Beginner and competent designers work to pick out situational aspects on the design environment to choose which rules are most relevant and then reasons through them. Proficient designers can immediately see these situational elements. Even expert designers, for Dorst, rely on planning, although it tends to be an intuitive rather than conscious planning. Then there is a shift in his hierarchy of design expertise in which reliance on rules and reason dissolve. Master and visionary designers no longer need rules and reason, instead relying on intuition to fuel innovative ways of combining elements of a design problem, paying attention to how strange combinations create different perspectives. While we might quibble with

Dorst's choice of words to describe these levels ("visionary" is a bit over the top), it is significant how rationality and reason never go away, they simply become less important for the designer. In the evolution of a designer, s/he becomes less and less reliant on the guardrails of rationality and begins to experiment with novel, emerging ways of understanding and shaping worlds.

Moving from the more academic origins of design thinking, we can start to see how this early work shaped the mindsets and processes involved in modern design. Contemporary design thinking extracted key mindsets from academic design thinking work in attempt to form a theoretical foundation on which to build process. Some of these mindsets might include:

Thinking = Making

The traditional binary opposition between strategy and tactics, thinking and doing, etc. are no longer valid within design thinking. Thought activities are associated with creation, and vice versa. The act of sketching or building prototypes is not a purely "making" process; the creative action serves to assist the designer in better understanding--specifically, understanding through experiencing.

Context and Experiential Understanding

Design thinking emphasizes the need to experience in order to understand. Designers are never able to separate themselves off from the human needs, behaviors, and thoughts they seek to understand, as a scientist might do, leading to an inherent acceptance of bias in design research. What is lost in scientific rigor is ideally made up in depth of insight. This play between breadth and depth is characteristic of design thinking.

Divergence and Convergence

One of the greatest skills in design is to know when to diverge and when to converge. Divergence can allow for breadth of thought and possibility exploration without the hindrance of artificial constraints. But it can also result in lack of focus and getting lost in seemingly infinite options if not used properly. Convergence helps design teams make decisions and focus their energy, assisting designers in making choices and preventing them from spending too much time on inconsequential tasks. But it can also hinder creative thought when introduced too early.

These mindsets are then translated into a process, which on the surface looks sequential, phased, and limiting. These phases go by many names, but usually include:

Discovery
Design problems are sought out. Researchers will explore an area of interest and gather as much information as they can within time and budget constraints, diverging in focus to take in as many observations as possible.

Synthesis
Once information is gathered, designers work to make sense of it and converge on needs, problem frames, or insights.

Idea Generation
Based on the products of Synthesis, designers diverge again to generate many solution options.

Testing
Finally, designers converge again to test, refine, and potentially abandon ideas.

These phases, if properly planned (i.e., flexibly and adaptively), tend to overlap and allow for backward movement. In other words, unlike most phased approaches that require forward movement from step 1 to 2 to 3, etc., this generalized process of design thinking tends to account for the inherent connection between "problems" and "solutions," and that no problem or solution space emerge separately from one another. The arationality we can read into design thinking begins with its espoused mindsets and flows through its process. Of course, this formulation is quite idealistic, and not many design teams work strictly within this process. But this is not necessarily a detriment, as the arational qualities would begin to dissolve if a process is followed too dogmatically.

Lean

To a certain extent, Lean was popularized in design communities on the heels of design thinking. Originating as a manufacturing process for Toyota, Lean emphasizes waste reduction to maximize output and worker time. From a design perspective, it attempts to eradicate the "theoretical" or "speculative" aspects of design, opting instead to focus on the so-called "making" or "doing" activities. In practice, this often takes form in rapid cycles of building and testing prototypes that help gather evidence for or against pre-determined hypotheses. Many design thinking mindsets mentioned above are also embodied in Lean design, particularly the role of context and the relationship between thinking and making.

Most contemporary versions of Lean, for better or worse, are based on the Lean Startup method, a process popularized around 2011 (Ries, 2011) as a way for startup companies to embody lean principles of waste reduction and continuous customer discovery. In its ideal form, Lean design minimizes time spent on activities that do not contribute to greater customer understanding, especially in the more ambiguous phases of design research. It tends to see upfront research as speculative and thus wasteful. On the other hand, in its most surface level form, Lean design tends to fetishize action over thought, even when thoughtfulness is sacrificed for a false sense of productivity.

One might argue that Lean tends to be a larger product and service development process rather than focusing strictly on design, but it can be difficult to determine where design stops and product/service development begins, especially when working in a cyclical process. The Lean Startup process is commonly composed of three modes--Build, Measure, Learn--which are best thought of as a circle rather than a line. It is uncertain where the process begins and ends, lending to the complexity of planning Lean projects but also the advantages of the practice. The Build mode involves the creation of a prototype, a materialization of a key question emerged in the act of design. Lean commonly opts out of large research phases at the beginning of a project, instead positing that any design is contingent on assumptions, so it is best to identify those assumptions and build prototypes to gather evidence for or against them. Once prototypes are made, the Measure mode involves testing the prototypes with potential users of the product or service, soliciting feedback, and most importantly, experiencing real world use scenarios (or as close to them as possible). Finally, the Learn mode involves taking the evidence gathered in Measure and working it into another Build cycle.

We can see how this process explicitly avoids the linearity of most rationalist design methods. There is no predetermined end point toward which designers are working. Instead, the end point reveals itself almost intuitively through the process of customer discovery and prototype creation, allowing designers to break free from the technical impulses that commercial design tends to impose. At least, this is the ideal. In reality, Lean Startup (as distinct from Lean in general) lends itself to amateurish adoption by untrained designers fueled with investment money and dreams of neoliberal fame. Lean Startup is so attractive because it feeds an illusion of shortcutting to the end--i.e., the inversion of what Lean does so well in avoiding rationalist impulses. Profit motive trumps design rigor. The "talk to your customers" and "design things people want" mantras disguise the complexity of uncovering unmet, often tacit needs, resulting in a surface level understanding of how to perform design research. As opposed to applying methods and principles from design research to discover unarticulated needs, it is much easier to simply ask people what they want and then go build it, actively ignoring or simply being ignorant of the idea that most needs, wants, and desires are unconscious and therefore not easily discovered in a 15 minute interview.

Despite these potential shortcomings, Lean Startup takes much of its arational inspiration from design thinking insofar as it resists an exclusive focus on strategically moving toward a predetermined end goal.

Frame Innovation

A third method worth noting is the Frame Creation Model developed by Kees Dorst (2015) in his book Frame Innovation. The Frame Creation Model adds a bit more rigor to traditional/commercial design thinking. This is not to say design thinking is unrigorous in and of itself, but that its incorporation into commercial design practice has the tendency to be somewhat "dumbed down" to fit within budgets and timelines. Dorst calls for a greater sense of depth in the design process, a need to take time to actually think through complexity, to make bold leaps in attempt to surface real needs, and consider cultural/social context. He also makes it clear that that rationalist approach to design is insufficient, and that design must also promote a sense of irreverence: "The "self-made box" of received wisdom and conventional practices is often considered the very core of the culture of our societies, and eagerly reinforced by popular media. The 'rational high ground' that is often implied in this claim to authority sparks another archetype: the clever outsider who runs circles around accepted behavior." (Dorst, 2015) These 'clever outsiders' are commonly known as tricksters, an archetype historically used as a rhetorical device for authors to convey a popular, yet socially unacceptable opinion. We will have more to say on this archetype later, especially on how design can benefit from the trickster's arational approach to existence.

Dorst develops his Frame Creation Model from the perspective of breaking the self-imposed box of rational limits. His process is laid out in nine steps:

1) Archaeology
Designers begin by examining the nature of what Dorst calls the "apparent" problem, acknowledging that many design projects begin from a place of ignorance. A design problem does not exist simply because someone says it does, and even if it does, it can easily take form as something other than originally believed. The archaeological phase is one in which designers attempt to reveal contextual elements of the design problem that will be useful later--elements that would otherwise surface at inopportune times if left buried.

2) Paradox
Dorst then advocates for identifying what he calls the "clash of rationality." This is the point at which designers begin to realize the complexity of the design problem, and within its complexity, there are likely paradoxical relationships among the design problem's elements. Paradoxes might include conflicting stakeholder views, requirements that cannot exist simultaneously with one another, or even the general paradox of rationalistic conceptions of design problems and solutions. (see Wendt 2015) An abundance of paradoxes usually means the original design problem might need to be reframed and examined from a different perspective. For Dorst, the best way to proceed through paradoxical situations is to learn as much as possible about the context in which they exist.

3) Context
Learning about context involves design research methods such as stakeholder interviews, customer interviewing and observation, and a variety of ethnographic methods that aim to gather a wide variety of contextual information.

4) Field
Field and Context are inherently interwoven insofar as observations about the context of a design problem will likely also uncover observations about the cultural and social field of the problem. Combined together, Context and Field provide the necessary human-focused background information needed to form key insights through deep sensemaking.

5) Themes
Finding themes is an exercise in pattern recognition and hermeneutics. The development of insights requires both deep knowledge of context and field, and a willingness to take risks associated with making inferences.

6) Frames
Themes allow designers to form Frames, or perspectives that can launch the more "creative" aspects of design. Frames are described as "as if" statements that provoke designers to consider multiple perspectives and look at problems through many lenses to consider possibilities for future states.

7) Futures
In the creation of Futures, designers finally transition to envisioning possible futures based on the Frames created in the previous step. They use generative abductive reasoning to expand the areas of possibility as wide as possible before narrowing down to the preferable.

8) Transformation
Critique and prototyping come in to play in the Transformation step, in which designers interrogate their decisions and make choices about which Future to pursue.

9) Integration
Finally, Integration accounts for fitting Futures into the larger organizational context of the design problem.

The Frame Creation Model is significant for the current study in its expansion of design thinking into more rigorous territory that can potentially break the bounds of rationality even further. Even from a surface level examination, the Frame Creation Model resists the teleological (profit) motives of commercial design to the last responsible moment. It forces designers to become comfortable with the inherent discomfort of not knowing "the answer." It acknowledges paradoxes instead of

ignoring them, promoting an active engagement with the ambiguity of design work, which often runs counter to more scientifically grounded design methods. Finally, it refuses to decontextualize design decisions from their complex environments, choosing instead to take the necessary time and effort to understand both internal and external contexts in effort to integrate design solutions into them ethically and responsibly.

Critical Design

Perhaps the most radical break with rationality in design is an approach somewhat redundantly called critical design, or a design philosophy and corresponding practice expressly aimed at evoking critical discourse around a topic, as opposed to a "solution" introduced to address a discrete problem. If we take it seriously, critical design is inherently impractical: it produces objects and experiences that serve no concrete purpose other than influencing opinionated debate. In its impracticality, however, it tends to reproduce the conditions it wishes to overthrow. Insofar as qualifying design with adjectives like "critical" reinforces the relegation of design to style (Tonkinwise 2015) and aesthetics, critical design easily becomes obsessed with the form of its outputs rather than the critical debate it sparks.

Nonetheless, critical design is highly representative of the arational movement within design in that it attempts to avoid design practice being designated as a technical skill for producing commercial ends. Anthony Dunne and Fiona Raby, originators of critical design as an articulated practice, hold that the core objective of critical design is to resist the status quo, or in other words, to practice design in a non-commercial sense by creating prototypical objects that challenge common, uncritical ways of viewing the world. It attempts to explore possible futures in a way that highlights the dystopian aspects of uncritical thinking and hopefully to encourage the creation of more preferable scenarios. It is an exploration in utopias via their extreme opposites and rooted in arationality: "Driven by poetry, imagination, and intuition rather than reason and logic, [critical design projects] have their own sense, an alternative to our everyday scientific-industrial one. These are tales about the space between rationality and reality, which in an industrial society have come to be synonymous." (Dunne 2008) In their ideal form, critical designs embrace this difference between rationality and reality by playing with the irrationality that industrial production attempts to suppress.

There are several aspects of critical design that are important for the current study, but we will look at two for the sake of being concise. First, critical design projects depend on defamiliarization and the uncanny. Making the familiar unfamiliar is a key rhetorical technique that displaces any sense of historical comfort with familiar objects. The real power of defamiliarization comes not from how an object can be presented as the diametric opposite from its normal interpretation but rather how from how close the two poles actually are. Sigmund Freud referred to this phenomenon as the uncanny, (Freud 2003) or the resulting feeling of encountering the "familiar unfamiliar," the thing that is so defamiliarized specifically because it is so "close to home." The word "uncanny" is a translation of the original German Unheimlich, or the sense of eerie familiarity of "homeliness." Take for example a project entitled Scary Beautiful (Figure 1), which depicts an exaggerated woman's high heel shoe, with the heel and toe in their opposite position. The resulting image is of the model's body contorted, knees bent, struggling to keep her balance, looking both strangely elegant and in pain, as (supposedly) opposed to normally designed high heels, which frame a woman's body into a pleasing shape, lengthening the legs, pushing out breasts, and arching the back. The image is so disturbing not because it creates such an unnatural shape in the human body but because, upon encountering the image and interpreting it, the viewer realizes that the familiar

image of a woman in stiletto heels is not radically different than the image intended to be disturbing. The lasting effects of the image now begin to seep into everyday life as the viewer sees high heels in mundane settings. This is the uncanny: the recognition that the everyday is just as disturbing as what is meant to be outrageous. It is important to point out, however, that the designer must walk a line between familiarity and strangeness. If critically designed objects are too familiar, they become status quo; if too unfamiliar, they become art. (Kjærsgaard et al 2014)

Second, critical design relies on the grotesque. These projects tend to be comically absurd and irregularly formed; their physical imagery is exaggerated to show just how far ideas and interpretations can be pushed before breaking. "Grotesque" originates from French and Italian words associated with "emerging from the cave," (an apparent reference to the excavation of cave paintings) indicating that the grotesque tends to reveal that which has been hidden from everyday life. We can see this phenomenon in action with projects such as Tender (Figure 2), which aims to critique the mobile dating app Tinder by imitating the main interaction of swiping left or right. Tinder users are presented with profile pictures of other users and must swipe to the left or right to indicate whether they are interested in learning more about that person. Tender pokes grotesque fun at the interaction by fixing a piece of meat to a rotating fork, slapping the meat against a mobile device with Tinder loaded, swiping the screen with each rotation. The video (Tender 2014) allows viewers to see the full extent of the project, particularly the characteristically grotesque sight of raw meat slapping a surface and leaving residue, perhaps the symbolic residue of conventional dating practices. The grotesque elements of this project highlight the anxiety around the convenience of modern dating and the transition of the proverbial "meat market" mentality into digital spaces.

Insofar as critical design practices exist, they refuse to follow rational progression of problem to solution, opportunity to execution, or strategic vision to tactical execution. There is a sense of play in these projects, a vision of possible (mostly dystopian) futures that can only be expressed through playful exploration rather than strategic visioning. This haphazard way of designing, however, is the basis for legitimate critique against critical design--that it fails, or actively ignores, current problems in the world that affect real people, instead focusing on hypothetical ways of being that have little to do with current material existence. The irony here is critical design's still largely unexplored relationship with critical theory. Attempting to take Marx seriously on his point that philosophers have merely interpreted the world but have largely failed to do anything about it, (Marx 1845) critical theorists highlighted the paradoxes, contradictions, and ethical imbalances of modern capitalism in hopes that other enlightened citizens would act on their insight. Critical theory took consumerism, ideology, and alienation as their targets of criticism, whereas critical design seems to take specific instantiations of these forces as its target. Especially pertinent here is both critical theory and critical design's discomfort with hyper-rationality. For critical theorists, capitalism's rationalist conception of work lead to profound worker alienation; for critical designers, rationalist design processes lead to designer alienation. Further exploration of this relationship is needed to address the tension between speculative futures and material realities.

Toward Arationality

The discussion of design methods is as much about who the designer is as it is about what the designer does. What rationalist design methods forget is that activities and practices are intimately connected to identity. While design is something that everyone does, the identity of "designer" indicates an intense focus on designing as a practice that defines oneself. Rationalizing design tends to decontextualize practice, standardizing methods into identity-free activities, which then results in designers becoming alienated from the work that defines them. In other words, rationalization

positions design as a technical output and thus limits the potential benefits of design labor to the end result; instead of the work acting as a potential source of value, technicalization works to ensure that designers can only measure the quality of their work based on the final output, and too often, whether it can be bought and sold. An arational design approach holds that technical aspects of design are important, but we should not forget about the phronetic and praxical components of design work.

The act of designing can teach the designer how to live well through adaptation and coping with unintended and unplanned events. The problem is that living well and acting unintentionally do not directly translate into profit. Commercial design inserts a hyper-intentionality that mandates that designers predict the unpredictable. The so-called data-driven methods, rising popularity of A/B testing, analytics benchmarking, etc. are celebrated for their ability to create a (false) sense of security in inherently complex environments, and the illusion of certainty pervades the methods by which we design. Rationalist design cannot account for the pleasure of unintentional action or the idea that the success of design hinges on adaptive skill that can only be acquired when one is forced to adapt to the unplanned.

In Strategy Without Design, Robert Chia and Robin Holt argue that the success of a given activity is not dependent on a singular plan of action, an individual intention, or standardized activity. Practical success comes from the "phronetic capacity to continuously make timely and ongoing adjustments and adaptations to local circumstances." (Chia and Holt 2009) This perspective has lead to some of the more arational design methods outlined in the previous section. It is my hypothesis that the "more arational" the design method--that is, the closer it is to the middle ground between rationality and irrationality, the space of flexible structure that is neither bound by scientific rigidity nor subject to random whims of an individual--the more satisfied the designer is with his or her work, and the stronger connection s/he feels with the identity of "designer." Humans are egotistical animals. The connection between self and activity must be highlighted in order to promote successful and fulfilling work. If one cannot project oneself into work, it becomes simple pantomime and fails to contribute to a greater purpose.

The imposition of rational strategy has stripped away the individual designer's personal connection to work. While we should hesitate to simply reverse this affect and advocate a return to craft, it is worth considering how inherently non-strategic craft activities might be incorporated back in to design work. One way to do this is beginning to incorporate some of the arational components of the methods discussed in this paper, keeping in mind that design methods are never plug-and-play. Instead, designers must take the preferable aspects of methods and shape them to their context rather than reading a book, attending a workshop, or taking a class and attempting to adopt a method wholesale. Design thinking introduces a sense of non-linearity to traditionally forward-moving commercial design. Instead of setting goals in an unforeseeable future and working sequentially toward them without adapting to change, design thinking promotes the use of designer intuition, experience, and "gut feeling" to know when to move forward, when to back up, and when to dwell in one place. Lean is attractive in its orientation toward action. Designers in Lean settings are able to see the empirical results of their work and can course-correct based on real time feedback loops. If balanced with thoughtful planning, Lean promises to cut wasted time and effort that has become so normalized in commercial design. Frame Innovation has the benefit of honesty, especially in its direct interrogation of paradox. Many designers and design methods attempt to ignore, sublimate, and deny paradoxes, allowing them to fester in the background. Frame Innovation takes care to acknowledge and deal with paradoxes before they appear later as symptoms. Finally, critical design offers the idea of provocation and playfulness. Rational design methods leave little room for play, as their focus is on meeting strategic goals and attempting to

materialize a pre-determined intent; and they leave less room for political engagement, as they attempt to neutralize any sense of individuality the designer might bring, especially if employed by a for-profit company. Critical design, however, embraces political action through play and provocation, allowing for design to consciously take the form of social commentary.

I have tried to argue throughout this paper that rationalist design methods serve commercial purposes but fail to account for the complexity of design and for the role of individual perspective. Rationality continues to impose itself as an artificial constraint. A movement toward arational design methods would need to combine the best parts of existing methods along with inventing new ones to balance business goals with the individual perspective of designers. Apart from new methods, however, there lies the more basic need to combat rational thinking as the default cognitive style for all professionals; this concern is certainly much more complex than promoting one method over another, involving a radical shift in epistemological approach. Nonetheless, if design is an arational practice, epistemological support is not necessary for change in praxis.

Bibliography

1. Bardzell, Jeffrey, and Shaowen Bardzell. 2013.What Is Critical about Critical Design? *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 3297–3306.
2. Buchanan, Richard. 1992. Wicked Problems in Design Thinking. *Design Issues 8*(2): 5–21.
3. Chia, Robert CH, and Robin Holt. *Strategy without Design: The Silent Efficacy of Indirect Action*. Cambridge University Press, 2009.
4. Cross, Nigel. 2006. *Designerly Ways of Knowing*. New York: Springer.
5. ———2006. *Design Thinking: Understanding How Designers Think and Work*. Oxford: Berg.
6. Descartes, R., 1955. *The philosophical works of Descartes*.[2 vols.].
7. Dorst, K., 2006. Design problems and design paradoxes. *Design Issues, 22*(3): 4-17.
8. ———2015 *Frame Innovation: Create New Thinking by Design*. Cambridge: MIT Press
9. ———2004 *Investigating the Nature of Design Thinking*. Future Ground: DRS Conference.
10. Dunne, Anthony. 2008. *Hertzian Tales: Electronic Products, Aesthetic Experience, and Critical Design*. Cambridge: MIT Press
11. Eder, Klaus, and Mark Trans Ritter. 1996. *The Social Construction of Nature: A Sociology of Ecological Enlightenment*. Thousand Oaks: Sage Publications.
12. Freud, Sigmund. 2003. *The Uncanny*. New York: Penguin.
13. Fry, Tony. 2009. *Design Futuring*. Oxford: Berg.
14. Gadamer, Hans-Georg, Joel Weinsheimer, and Donald G. Marshall. 2004. *Truth and Method*. London: Bloomsbury
15. Horkheimer, Max, Theodor W. Adorno, and Gunzelin Schmid Noerr. 2002. *Dialectic of Enlightenment: Philosophical Fragments.* Princeton: Stanford University Press.
16. Hudson, Martyn. 2015. *The Anthropocene and a Critical Theory of Machines*. Heathwood Press. http://www.heathwoodpress.com/the-anthropocene-and-a-critical-theory-of-machines-martyn-hudson/ Accessed 28 September 2015

17. Kjaersgaard, M., and Laurens Boer. 2014. The Speculative and the Mundane in Practices of future–making–Exploring Relations between Design Anthropology and Critical Design. *Research Network for Design Anthropology Seminar*.

18. Malpass, Matthew. 2009. Contextualising Critical Design: Classification of Critical Design Practices. *Design Connexity Proceedings of EAD Conference*, Vol. 9.

19. Marx, Karl. 1845. *Theses on Feuerbach*. marxists.org/archive/marx/works/1845/theses/theses.htm

20. Ries, Eric. 2011. *The Lean Startup: How today's entrepreneurs use continuous innovation to create radically successful businesses*. New York.Random House.

21. Rittel, Horst WJ. 1972. *On the Planning Crisis: Systems Analysis of the First and Second Generations*. Institute of Urban and Regional Development. 390-396.

22. Rittel, Horst WJ, and Melvin M. Webber. 1973 Dilemmas in a General Theory of Planning. *Policy Sciences 4* 2: 155–69.

23. Schön, Donald A. 1983. *The Reflective Practitioner: How professionals think in action*. New York: Basic Books

24. Simon, Herbert A. 1996. *The Sciences of the Artificial*. Cambridge: MIT Press

25. Snowden, David. 2000. *Cynefin: A sense of time and space, the social ecology of knowledge management.*

26. *Tender - It's How People Meat*, 2014. https://vimeo.com/111997940. Accessed 28 September 2015

27. Tonkinwise, Cameron. 2015. *Just Design*. Medium, https://medium.com/@camerontw/just-design-b1f97cb3996f. Accessed 28 September 2015

28. Wendt, Thomas. 2015. *Design for Dasein: Understanding the Design of Experiences*. USA: Createspace.