Exploring Design Through Examples

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Abstract
Among the diverse inquiries into design, two have regularly persisted: what is the nature of design? And what is its relationship to science? Nonetheless, design is consistently treated as a reducible concept either rigidly defined or categorically excluded from other fields. Furthermore, as the methods of design research have evolved, so have the phenomena that are observed. The scope of this project will be to explore design’s relation with science by way of belabored examination of particular designs that could complicate assertions of design as belonging to any one conceptual framework. When trying to abstract the idea of some universal properties that belong to design, these case studies should serve as warnings to those intent on creating arbitrary boundaries with which to limit a Philosophy of Design.

Introduction
What image enters your mind when the term 'design' is spoken? Certainly there is a manifold number of ideas, at least as many as there are individuals to think them. Some aficionados may quickly name their favorite Eames chair, or for others, perhaps recent changes to the body of the newest Ferrari. As for myself, my thoughts often dwell on the Zebra model F-301 ballpoint pen. There is something about the balance of its weight in my hand that facilitates the releases of its ink smoothly onto the paper. Perhaps the ponderings of a computer programmer would arrive more quickly at a prime example of a well-designed website, rather than a mouse and keyboard. There are as many concepts about what makes for good design as there are people to conceive them.

Design, as it is to be treated here, is the quality possessed by an object, either real or imagined, that gives it an intended purpose for use by some agent. These objects can be manipulable objects, tools, or artifacts; they can be plans for the construction of an object, or building, or for an event or activity. The purpose of a definition is not so much to find the boundaries of what can be designed—or not—but rather to create an idea about what things are capable doing. By this, I mean that identifying the qualities of design is most useful for the insights that we are provided into our own cognition. This can be seen by the previous work into design cognition, which should not be misconstrued as fruitless. Rather, we should now be open to looking at what our designed world can say about those who navigate it.

A great number of activities are today being called design. Many of them scarcely appear to have a thing in common, except to be called designed things. The goal of this paper will be to address the topic of design in general and will, therefore, look at things that claim to have design, or to have been designed. The purpose will be to evaluate the current methods of design-based research, and in particular, the value that can be gained by exploration of designed objects (not limited to the physically real), and the implications they have about the nature of design and design research. This is viewed in contrast to the limitations of past design research and its focus on methods of design.

Care must be taken so as not to repeat the previous mistakes of brazen overreach or rigid confinement. The examples that I have chosen highlight wide-ranging problems in current design research. But they should in no way be considered exhaustive. The choice of using designed things is a deliberate attempt to move away from the trend of research devoted to the activity of design, i.e., looking at what happens when designers design. In an attempt to look beyond what was previously possible, a new approach must be utilized when examining the relationship between thinking beings and the
physical world that they occupy. This relationship is exemplified by the interplay of two distinct minds; the designer and the user.

History of Design Research

Our epoch is hostile to every subjective speculation in art, science, technology, etc. (. . .) In order to construct a new object we need a method, that is to say, an objective system. --De Stijl (1923)

Scientific research into the design process began to gather steam in the 1960s. From the very onset, you can find the propensity towards a concise, even laconic definition of design. The early research began just after the turn of the previous century and took on the shape of modern rational determinism and scientific structuralism. Efforts were focused on equating design with science, and imbuing design with similar values. Two such values are objectivity and rationality, and hence, design would grow to be defined by those values.

What emerged was the desire to find an equilibrium between science and design by clearly defining the boundary between the two. This struggle oscillates between drawing inclusive boundaries that amicably share territory and erecting a wall so that the two never meet.

One notable character from this movement is R. Buckminster Fuller, whose contribution to design includes the systematization of design procedures based in scientific values. Fuller believed that such a formal system could answer the human-based problems that both science and economics were not able to properly engage. Herbert Simon would later treat design as the science of the artificial, where it is “concerned with how things ought to be.”

The focus during this subsequent period was to highlight those things that design could have in common with science. Toward this end, architecture, as a proxy for design, is used to expose the fact that their common purpose is overcoming chaos.

The next big movement within the fractured arena of design research is to establish journals and symposiums that aim to empirically study the activity of designing things. Instead of attempting to address the question of whether design is a science, the 1980s saw the beginning of scientific research into design. This often takes the form of gathering and analyzing empirical data from controlled design activities. The intent is to build knowledge about design by making claims about the cognitive processes that lead to design. The observed phenomenon is then the behavior, and underlying features therein, of those who design. When organized as such, this research informs us about the cognitive processes that result in designed things.

Most recently, this trajectory has lead to the idea that design is the result of a mental state, or what is known as Design Cognition or Design Thinking. Designers and thinkers, such as Tim Brown from IDEO, have seized on this momentum to encapsulate their own methods for thinking as a designer into carefully crafted steps and procedures. Once again, the analysis focuses on the conditions for design, and the certain steps that can be taken to design, rather than on the designed thing itself, and the user who interacts with that object.

It is for this reason that it seems necessary to analyze various designs in order to see what insights they can provide about the nature of their creation and use. While not a complete picture, I hope to show the immense value that not ignoring this aspect of design research could provide for further understanding the nature of
design. This nature could instead be thought of as a bridge between distinct minds. As the previous research has worked to show how the mind can better design, or what happens internally to facilitate designing, it has also begun to look into the mind of the user, the agent acted upon by design. In this fashion, insight can be gained about possible interactions between minds, namely the designer, and the user.

**Design Examples**

**Juicy Salif**

Professional designer Philippe Starck tells a story about how he came up with the design for the Juicy Salif citrus juicer. Starck had been contracted to design a serving platter for an illustrious kitchenware manufacturer in Italy. This company has gained notoriety for their penchant to deliver elegantly designed cooking utensils and kitchen appliances. Inspiration struck as he watched a waiter squeeze half a lemon over his plate of squid. He knew he was to be hired for his services of designing a platter, but he could not help taking a new idea for a design and right then he drew it up on his napkin.

The inspiration could be thought of as a synthesis of distinct forms, one is the body of the squid lying on his plate. The others are the three spider-like legs and a body reminiscent of the Jetson’s floating home mixed with a nose-diving dirigible. Where these body shapes gain a recognizable new life is in the introduction of the all-too-familiar spiked head and ridges of a common hand juicer.

By all accounts, the operation of this juicer, while intuitive, is messy and cumbersome. The legs allow for a free hand to provide the extra stability, which is needed; otherwise, the juicing action can be sloppy and unpredictable.
not the case; the object’s affordances toward action.

Where many people have struggled to pinpoint an exact rationale for the success or the appeal of the Juicy Salif, I believe the affordances that it provides gives us a clear picture. The device itself seems to call out to us to mash a halved citrus on its head, and twist. We want to watch the juice roll down the vertical grooves. The device itself seems to want to be used, and furthermore, the shape of its curves direct us towards an appropriate action.

According to Gibson’s theory of Affordances, the object provides to us the opportunity to interact with it. From the basic shape of the chair, which tells us where and how to sit, to the near universal shape of an ergonomic pistol grip, our mind searches out for footholds within our environment with which to grab a hold of things, both literally and figuratively. While affordances are naturally found in nature (does a child need to be taught that trees can be climbed?), design has within its scope the business of creating those affordances that provide a link between the user and the object of design. Success in this realm could be feasibly judged on the ease with which a person can intuit the proper use of a given implement.

It is from this perspective that one should analyze an example of an outlier, in terms of form and function, such as the Juicy Salif. Some of the initial groundwork has been laid for us by previous designers who, through their earlier design schemes of hand-juicing devices, created a familiar connection to a ‘traditional’ shape of juicers. Over time, the ability to use such a device eventually becomes ‘natural’. Hence, when you see a type of a tool, even a specific one you have never seen before, if you are familiar with the schema you will ‘instinctively’ ‘know’ how the tool is meant to be used.

For these reasons, the Juicy Salif should not have been judged on looks alone, where it gets high marks. Nor should it be solely judged in the category of functionality, where it rarely fares as well as its aesthetic. What is most attractive about the device is the beauty of its ability to attract us to a natural interaction. The purpose inherent in the juicer’s shape is obvious to even a culinary novice, while at the same time, it combines forms and shapes in a novel and indisputably pleasing way.

Shipping Container

To think of a revolutionary, ubiquitous, and at the same time under-appreciated logistics platform, one would be remiss to not consider the standard shipping container for the genius of its conception and implementation. The Intermodal Shipping Container is currently responsible for over a trillion dollars worth of imported products brought into this country annually.

It may be more than apparent fortuitousness that one of this century’s greatest design achievements, in the form of the standard shipping container, may be tomorrow’s greatest solution to low-income and urban housing.

A typical Inter-modal Shipping Container
SOURCE: containersfirst.com.au

All of the contingencies for material strength, durability, stackability (here, the suffix ‘-ability’ can be thought of as in reference to the perceived affordance that the containers are able to be stacked onto one another), issues of construction and production have already been covered. None of that is yet to be determined; it is already given. Every part of the design process for the container; the creative discovery, the development of ideas, the prototyping, the testing, have already happened and are of little consequence to the new architect.
Of course, new concerns arise concomitant to the object’s novel purpose. Now, a designer must be conscious of the well-being of a person residing within the walls, instead of mere cargo. The walls are strong and sturdy, and riding on ships they can be stacked to certain heights. To people living inside them, height takes on new dimensions, not the least of which is structure permanence.

Malcom McLean most certainly did not intend to start a housing revolution with his design (not that a revolution is more than speculative at the present). His aim was industry standardization and increased freight efficiency. What resulted was a worldwide improvement in transportation. With whatever method Mclean used, be it creative problem solving, spontaneous discovery, or some fixed formula of procedures, he was not intending to solve any of the problems in urban and low-income housing. The problem he was faced with was the standardization of freight containment and inter-modal congruity. He saw that various industries were spending vast amounts of time, and therefore capital, on product logistics because of the amount of labor that it took to load and unload trucks and then load and unload boats. There were no previous standards of product vessels that could be easily and quickly transferred between truck and ship.

McLean’s innovation was brilliant, as well as lucrative. The standard shipping container has created a monopoly in international shipping, and yet is used by trucking companies, railway freight lines, and oceanic cargo operators alike. Mclean decided that it was better to create a standard, and then allow all companies access so that worldwide shipping could improve across the board.

Needless to say, the container has been a success. So much so that now one can find a used container to purchase for whatever storage needs you may have. They have become ubiquitous at businesses, farms, even homes within city limits, that afford the space where they sit and protect all sorts of goods from theft and the elements.

Whether or not McLean had the ability to foresee a vast excess of steel containers scattered across the landscape, his design did not include provisions for the housing of people. But that may very well be the next innovation awaiting those versatile boxes. All over, and for some time, people have seen the value of leftover shipping containers as a dry and secure place to sleep.

Architects have also begun to see the usefulness of shipping containers as a standardized atomic structure for building large homes, multi-story apartment buildings, offices and sprawling multi-unit complexes. Some of the value comes in the overabundance of a cheap building material. There is also a factor of ease in designing with a building unit that is already made to standard heights and lengths (think Legos!).

All of these conditions have allowed for the design of the shipping container to be well suited for application in low-income housing design. Some architects have preferred to use the shipping container as the main element to home’s design as a matter of statement rather than necessity. Homes built out of containers look interesting. While the container itself, as a designed artifact, has already been designed, the application of this artifact to the architect’s novel problems is, in itself, a new design. This shows that one does not need to innovate every step or element of a design project.

Finding new applications for old artifacts is also a creative design solution. Instead of thinking about the designer and user as distinct entities, we often find ourselves in circumstances...
that necessitate that the end user put on another hat and become the designer.

Elucidations

When one considers the nature of such a complex concept like design, one would be remiss not to explore the vastness of examples available for study with an openness as to the insights they can provide. Those numerous examples should lead us towards the possibility of certain universals, namely that design is the result of a thinking mind, and results in interaction with other thinking minds.

By limiting what we consider to be design we are greatly limiting the possibilities of human achievement. One way is by careful retrospection of those designed things that allow us insights into their nature, and by extension, the nature of the activity of design, and the use of designed things. Use of the term ‘things’ is meant to reference the tangible, as well as intangible. We are just as capable of interaction with a plan for a not-yet-in-existence object, as we are with its prototype. The only difference is, while we use our mental faculties for both the object and its mere conception, we can physically grasp an object in the real world. A thing can be said to be designed even if it is not yet produced, or never will be produced.

Furthermore, the method that one utilizes to arrive at a design should not be a determining factor for the condition of being designed. By extrapolation, all humans that interact, physically or mentally, with the world are capable of designing. All things made by human hands, or by human thought, have an element of design to them. Whether or not they adequately solve the problem they set out to address in the first place, there was a design to it. Sometimes a proper solution to some problem in life comes about after multiple attempts, or revisions, and it can take years, generations even.

To say that design must be comparable to science is to ignore all of the design that is demonstratively not. While on the other hand, some design is rather hard to distinguish from a science, or a science-like activity. Sometimes, the two can make great strides while working hand in hand. Other times design is best partnered with management, still others with art and architecture. To approach design with an investigation that is already limited in its scope and structure is to limit possible outcomes and conclusions. If the purpose is to merely eliminate the activity of design from that of the sciences, then not much can be said outside of that argument. On the other hand, if one is able to leave open the limitlessness of humans’ interaction with the world that they have created and thereby look at all things designed as providing some possible insight into the human mind, then we can avoid any arbitrary constraints to our thinking.

References