A Survey of Definition and its Role in Strengthening Design Theory

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Abstract

This paper argues that an essential task for managing complexity in design is clarification of key terms within the field, and most importantly the term that defines the field itself: Design. This position rests on the argument that theory—a key tool for managing complexity in design—is weakened by ambiguous terminology, and crucially, ambiguity of the word *design*. Although it has been well documented that design is a highly ambiguous term and that this is problematic for the field as a whole, many designers are resigned to this fact since it is unclear how one can resolve differences of opinion about what such a central and sensitive term means. This paper argues, though, that once designers have a better understanding of the process of definition—a process that has its own complexities—they might see the benefit of trying to define design and other key terms. To this end, this paper provides an overview of definition, borrowing largely from philosophy, which includes a survey of the types and methods of definition and issues related to each. It will also explore methods and criteria by which one can evaluate various competing definitions. From this survey, I propose that designers use a stipulative and pragmatic approach to definition outlined by Edward Schiappa (2003). Schiappa's approach is useful because of these two key underlying assumptions: first, defining design (and related terms) is not a search for the record of past usage but an act to persuade others of how to use the word in the future, therefore the person defining must provide a compelling argument for why others' usage should be modified; second, defining design is not a search for the 'true' or 'real' meaning of a word but instead a goal-oriented process and, therefore, dependent on the context and purpose of those defining the word.

Keywords

design; complexity; definition; terminology; concept analysis; philosophy; language; ambiguity

Design research, education and practice have all faced greater complexity as the field has grown and matured over the past several decades (Buchanan, 1992; Meurer, 1999). This added complexity comes from several sources, including:

- A growing emphasis on *research and methods* in design, borrowing largely from more established disciplines such as psychology, sociology, anthropology, marketing and engineering (Meurer, 1999; Frascara, Meurer, Toorn, Winkler, 1997).

- A greater awareness in the business community (and to some extent the general public) that design plays a *central role in product and service development*. Thus, designers have seen their roles expand from stylist to "strategic consultant" (J. O'Grady, K. O'Grady, 2006, p. 10-11).

- A recent *expansion of new media and technology*, such as the Internet, social

networking and mobile computers/phones in which a designer can deliver a message or product through.

- A greater emphasis on *social responsibility, ethics and environmental stewardship*, requiring the designer to have a more informed view of the socio-political context in which their design will exist (Frascara et al, 1997; Papanek, 1975).

With each of these sources, theory is a critical tool for the designer. Theory helps designers understand this complexity and more importantly explain how it will impact their design problems and solutions. Epistemological theories are required so a designer can explain when to use qualitative or quantitative *research methods*. Helping a client determine long-term communication and marketing *strategies* requires theories about how they will impact product sales. Choosing a *medium or technology* in which to deliver a message requires theories of communications and semiotics to understand how it may be affected and interpreted. Lastly, all design solutions affect the *socio-political and environmental* contexts they are placed within, requiring the designer to have a world-view or ethos based on theories about politics and the environment. In each of these examples, the designer's understanding of the theories being applied have a direct impact on the design solution. For simple design projects, one does not have to be explicit about how their theories impact their design solution and can rely on intuition; but for more complex projects, a designer will be expected (most likely by their client) to explain why a certain world-view or method is used.

Building design theory

This brief examination brings us to two crucial points: first, theory is becoming more vital for design practitioners as their practice becomes more complex; second, as the examples provided above show, many of the required theories originate in other disciplines: sociology, psychology, political science, marketing, communication studies, etc. This second point leads us to a new source of complexity in design: the state of design research and how it informs design practice.

For this, I turn to two papers: "Language definition and its role in developing a design discourse" by Sharon Poggenpohl, Praima Chayutsahakij and Chujit Jeamsinkul (2004); and, "Constructing a coherent body of theory about designing and designs" by Terence Love (2002). These papers are relevant to the discussion about complexity in design because they both present a summary of the state of design research and they both argue that design must develop its own research discourse rather than rely on other disciplines to strengthen its theoretical development. According to Love (2002), there is growing interest "in the development of a unified body of knowledge and theory about designing and designs" (p. 345). This interest is shared by Poggenpohl, Chayutsahakij and Jeamsinkul (2004), who argue that design research and practice would be well served to have its own "core knowledge" which would lead to the development of "an intelligent discourse" (p. 588).

While Love (2001) believes creating a more unified body of theory is gaining interest among design researchers, it has "not yet emerged in spite of extensive research undertaken over several decades, across several hundred domains of practice, and from a wide variety of perspectives" (p. 345). Both list several key reasons for this lack of emergence. According to Poggenpohl, Chayutsahakij and Jeamsinkul (2004) there is a range of "stronger, weaker, or virtually nonexistent discourse traditions" in different sub-disciplines in design (p. 588). Overall, "[d]esign does not have a strong tradition of reflective or critical writing, perhaps because much design knowledge is tacit and formalizing this knowledge through language

is difficult" (Poggenpohl, Chayutsahakij, Jeamsinkul, 2004, p. 588). This is because discourse is "dominated by trade magazines that follow trend and fashion in practice" (Poggenpohl, Chayutsahakij, Jeamsinkul, 2004, p. 588). While Love (2002) does not evaluate the quality of research in design, he does emphasize that it is often "tied" to the subdomain it was created within (p. 346). So, even if we found strong research within a subdomain, according to Love, it is not or cannot be shared with the other subdomains in design. For Love (2002), this inability to share research between subdomains feeds into what he sees as a fundamental reason design has not seen a unified body of theory emerge: "a lack of philosophical foundations" (p. 346). These foundations include: agreement upon "core concepts and terminology" in design to clarify "the scope, bounds and foci of fields of research and theory-making about designing and designs"; greater investigation into epistemological, ontological issues in design; and lastly, better "integration" of design theory and "other bodies of knowledge" (Love, 2002, p. 346).

Poggenpohl, Chayutsahakij and Jeamsinkul acknowledge there are critics of the creation of a unified body of theory. They argue these critics disagree because "design is necessarily a synthetic discipline" and, therefore, can rely upon research from research-based disciplines such as "human-computer interaction or social science" (Poggenpohl, Chayutsahakij, Jeamsinkul, 2004, 589). While they agree that design is a synthetic discipline, they disagree that this means it cannot have its own internal discourse. More importantly, they argue "a lack of a specific design discourse with ongoing development, argument, criticism, research findings, etc. hampers development of design as a discipline and prevents design from contributing its knowledge more broadly" (p. 589).

Strengthening design theory through definition

Clearly, the task of unifying design theory has its own complexities—both in defending the endeavor and in the foundational goals necessary to complete it—but as argued above, if design practice seeks to manage complexity, it must do so with a body of theory and knowledge of its own. To minimize the complexity in this task, the remainder of this paper will investigate the first philosophic goal that both papers argue for: "clarifying definitions of core concepts" (Love, 2002, p. 346).

One could argue that this is a primary philosophic goal since one's definition of design will inform the next two goals: epistemology and integration with other disciplines. This is a point not lost on Poggenpohl, Chayutsahakij and Jeamsinkul (2004), who see the task of definition as central, impacting design in mundane yet highly practical ways, from effective "tagging" of research (p. 579), to wider foundational implications such as: "how the design profession envisions itself—as a craft or a discipline; how curricular programs in design need to change or not based on its accepted definition; what other disciplines can hope to learn from design and its research; how design research can improve knowledge and performance in design practice" (p. 590).

While the following exploration of definition will be relevant to all core concepts in design, this paper will focus on the term that defines the field itself: design. Focusing on the definition of design is valuable not just because of the reasons listed above and the obvious fact that it names the field as a whole, but because it is also a highly ambiguous term. According to Love (2002), design has "different meanings in different domains, [is] used in different ways by researchers in the same domain, and [is] found in the literature referring to concepts at different levels of abstraction" (p. 347). This ambiguity results in theories and research where accounts of design are "contradictory," causing confusion about which findings are actually applicable from one domain to another (Love, 2002, p. 347).

While there are a myriad of reasons for this range of opinion, two are particularly significant: the dramatic change in the field of design in the last one-hundred years; and, the ambiguity of the word itself. First, the practice of design has seen dramatic change in the last one-hundred (or more) years—from an applied art at Bauhaus in the 1920s, to an attempt at an applied science at Ulm in the 1960s. Even the last thirty years has seen a shift from a more scientific approach to design to a more generalized notion of design that is not necessarily scientific, but understood as a type of planning (Buchanan, 2001). The second significant reason for this ambiguity is the many overlapping meanings of the word design itself. Design has a range of meanings from the abstract to the specific. To demonstrate how confusing using the word design can get, John Heskett (2001) provides the following sentence:

> *Design is when designers design a design to produce a design* (p. 18).

He then explains how all four uses of design are each a different sense of the word:

> The first usage is as a noun, connoting the field of design as a whole in a very general manner, as in the phrase: "Design is important to national economic competitiveness." The second usage is as a verb, meaning the action or thought involved in the act of designing. The third also is a noun; this time connoting a plan or intention. Finally, the fourth usage again is a noun, this time meaning the finished product. All the usages have very different meanings, yet even people professionally involved in design continually slip between them, seamlessly moving from one meaning to another without distinction (Heskett, 2001, p. 18).

Few other disciplines are the victim of such a high number of multiple meanings or polysemy. While almost all words in our language are polysemic, design is particularly polysemous, and to make matters worse, the many meanings are very closely related. A very common error is to equate the noun design, used to describe the discipline or field of practice (ie. "architecture is a subdomain of design"), with the more general verb design, used to describe planning or scheming (ie. "that football play was by design") (Bamford, 1990, p. 6).

This ambiguity begs the first question when defining design: which sense of the word are we using to define the *discipline*? Or, is it even one of the definitions given in Heskett's quote? If it is another definition, how does one formulate a new definition? How does one develop arguments for a definition and how are these arguments evaluated? As these questions suggest, the process of defining design is complicated. The difficulty for designers is they lack the philosophical background to navigate these questions, which according to Richard Buchanan (2001), is the source of the discipline's difficulty with definition:

> Efforts to establish a new field of learning require a definition of the field, and design is no exception. Unfortunately, our community has often foundered on the problem of definition. The literature is filled with contrasting and sometimes contradictory definitions of design, and efforts to define design have often led to acrimony. […] There has been an unfortunate misunderstanding about the nature and use of definitions, and this has caused our discussions to become unproductive and wasteful of time and energy (p. 8).

Some may argue that definition should be left for philosophers due to its complexity but the following quote from Schiappa (2003) reminds us of the central role designers must play in defining design: "definitions put into practice a special sort of social knowledge—a shared understanding among people about themselves, the objects of their world, and how they ought to use language" (p. 3). As designers, we maintain this shared knowledge through communities of research and practice, making us experts on how to define our world. So, if

designers must play a central role in definition, we must clarify the process itself to make it more productive for designers.

A survey of definition

Outside of philosophy and law, definitions are normally quite mundane since the majority of the time we have strong tacit agreements about the words we use in conversation. Edward Schiappa (2003)—the central author used for this summary on definition—notes that definition as a method is not even required for good communication since a shared vocabulary is learned through a variety of social contexts that are far less formal (p. 28). Definition, though, is far from mundane when the use or application of a term is disputed or has large ramifications, for example, in legal or academic communities (Schiappa, 2003, p. 33). Philosopher Trudy Govier (2005) says the following about definitions:

> We look for a definition when we see a claim or argument that is unclear or hard to understand, or when a practical problem whose solution depends on our having an explicit definition. At such points, we begin to wonder what certain important words mean and it makes sense to look for definitions. (p. 95)

The tradition of definition started two thousand years ago with Socrates. As a philosopher, Socrates was interested in seeking and building knowledge, as opposed to opinion, about the natural, psychological and political world. He was interested in an important test of knowledge: the determination of the "essential" nature of concepts, such as "justice" and "courage" (Schiappa, 2003, p. 22). Aristotle continued this tradition with the development of the "standard definitional form involving genus and difference," which bears resemblance to methods used by Socrates and Plato (Schiappa, 2003, p. 23). The genus would establish what *similarities* the thing being defined had to other things, and the difference would be identified through *attributes* which differentiated it from other things within the genus. For example: "A chair is a piece of furniture (genus) used for sitting (attribute)" (Schiappa, 2003, p. 25). This approach has proved so effective that two thousand years later, the creators of the Oxford English Dictionary used it to clarify terms:

> There are rules—a word (to take a noun as an example) must first be defined according to the class of things to which it belongs (mammal, quadruped), and then differentiated from other members of that class (bovine, female). (Winchester, 1998, p. 150)

The longevity and effectiveness of Aristotle's method stems from the fact that he had gained insight into basic functioning of the brain that only recently, through psychology and biology, has been provided a scientific basis. Schiappa (2003) explains the scientific basis for the genus-species method of definition as follows: "[M]uch remains unknown about how the human brain processes sensations ... [f]or present purposes, the most important theory is that our sensory-perceptual activity *forms* experiences through a process of abstraction and categorization" (p. 13) He then links this process to evolution by quoting child psychologist Bowermann: "[t]he grouping of discriminably different stimuli into categories on the basis of shared features is an adaptive way of dealing with what would otherwise be an overwhelming array of unique experiences." (Bowerman, 1976, 105-6). In child psychology, this discrimination process is known as developing "similarity/difference relationships" or "SDRs" (p. 17-18).

For Aristotle, this method of definition was particularly important for knowledge-building because it allowed one to develop principles based on the categorization and listing of essential attributes. For example, one could start the process of defining design by first

establishing the genus which it could belong to: "discipline." A by-product of this first step is also clarifying which sense of the word we are defining; in other words, we are trying to define "design as a discipline." Because "discipline" is a broad genus, the next step would be to determine if a further sub-categorization might be useful. For example, we could divide the disciplines into knowledge disciplines and applied disciplines. Now we have a narrower genus for design: "applied discipline." A final step would be to differentiate design from the many species within applied discipline, so one could say design is a combined applied art and social science. Thus, we differentiate design from engineering which is the application of the physical sciences. While the example definition we ended up with is not important to analyze, what is important is to see how this process has given us useful attributes that could form principles of design. So, if one sees design as part applied art and part applied social science, one could develop the following principles:

- A design researcher could argue that the epistemological foundations of design ought to balance the subjectivity of aesthetic choices of fine arts with the objectivity of empirical science.

- A design educator could argue that design education must include a foundation in the fine arts and the social sciences.

- A design practitioner could argue to clients that the effectiveness of their design is based upon the satisfaction of both aesthetic and social scientific criteria.

While this example was quite brief and far from exhaustive, it demonstrates the usefulness of the genus/species (or similarity/difference) method of definition. Today, this method of definition is still important for philosophers and, as mentioned, lexicographers. But, other fields such as law and linguistics also use or study definition, which has led to the creation of various *types* of definition, each geared towards a particular purpose. The following is a survey of the three main types:

- An "*ostensive* definition" is one used to describe a thing that can be pointed to, and particularly useful for things that are difficult to explain using words, such as colour but not good for explaining abstract or complex phenomena (Govier, 2005, p. 96).

- A "*lexical* definition" tries to list and describe all common usages of a term (Govier, 2005, p. 96); These are the definitions you would find in a dictionary. This method often uses the etymology (study of the history of words and how their form and meaning have changed over time) to inform the definition of the word being defined.

- A "*stipulative* definition" states what a term ought to mean, and may be adopted as a lexical definition if widely used (Govier, 2005, p. 99). The notion of "ought" is crucial here because it implies stipulative definition is a persuasive act. That is, one must provide reasons to its listeners as to why they should change their usage of the term.

In relation to defining design, each type of definition has varying levels of use value. Ostensive definition is the least useful type because, as discussed above, it does not explain abstract terms very well; one cannot develop a foundation for a discipline by just pointing to a set of objects. Theory requires an articulation of definition that can be scrutinized through written or spoken language. That said, through the process of articulating a definition of design, it is highly useful to point to examples that are the product of design. This is especially important for when explaining a definition to a design audience that largely learns through visualization.

Lexical definition is valuable but, again, limited. In defining the discipline of design, if one simply referred to a dictionary, which of the twelve or so definitions provided does one use to

define the discipline? Even if the dictionary provides a definition explicitly for the discipline, we then need to ask whether the definition is appropriate. For choosing one of the lexical definitions and in determining appropriateness of the definition chosen, one needs a justification or reasons. In other words, there is an element of persuasion involved through articulation, but not based on past usage of the word design, but rather on conceptual and pragmatic grounds. Arguing for a definition in this way means you are now using a stipulative definition.

In fact, this is the limitation of Poggenpohl, Chayutsahakij and Jeamsinkul's approach to definition in their paper. A large focus of the paper is on the organizational aspect of definition—that is, the problem of gathering thousands of word uses and definitions to be used in a design dictionary and then using this dictionary to help stabilize language used in design discourse (Poggenpohl, Chayutsahakij, Jeamsinkul, 2004, p. 582). Their emphasis on the organizational aspect of creating a dictionary demonstrates a possible misunderstanding regarding the types of definition. While collecting lexical definitions and creating a dictionary can serve a purpose within a community, it will not help one through the process of selecting and evaluating one dominant definition (or set of definitions) that a whole research community ought to use. This selection and evaluation process is primary and is where difficult theoretical debates about appropriateness and efficacy take place. According to Govier, dictionary definitions do not suffice for complex or abstract concepts where "fundamental" issues of "theory and value are involved" (Govier, 2005, p. 97). Therefore, if ostensive and lexical definitions cannot resolve the definition of design, stipulative definition seems to be the most appropriate type. Before a final conclusion is drawn, a full exploration of stipulative definition is required.

Exploring stipulative definition

Within stipulative definition, there are two important epistemological debates about *approach* that impact the method we will use: the essentialism vs. anti-essentialism debate and the real vs. nominal definition debate. In exploring these debates I will also introduce Edward Schiappa's approach since it is particularly useful for the definition of design.

An essentialist approach assumes one can define the essential features of a thing such that these features are universally true, with no exceptions. The essential features are also known as the necessary and sufficient conditions. For example, the necessary and sufficient conditions for being a bachelor are being "male" and "unmarried." Being male and unmarried are sufficient because we don't need additional conditions for a person to be considered a bachelor and they are necessary because every bachelor is married and male. Opposed to this essentialist view, are the anti-essentialists of which there are several flavors. The most famous is Ludwig Wittgenstein's theory of family resemblances, which assumes that words such as "game" and "art" do not have such universally true features but rather a patchwork of related resemblances that may or may not fit to each application (Weitz, 2007, p. 190). In the case of defining design, the essentialism debate is very important, since "design" falls into the same category of ambiguous terms as "game" and "art." One could argue that the elusive nature of the term and inability of the community to come to a shared definition is proof that a finite set of necessary and sufficient conditions does not exist. On the other hand, if we take a pragmatic approach to defining design, one could argue for the essentialist approach based on its utility. That is, creating a set of conditions for what constitutes design is useful because it allows the community to develop principles for the discipline, differentiate design from other disciplines, etc. While it is outside the scope of this paper to fully explore all of the arguments within these debates, the salient point is to know they exist. For purposes of this paper, I will use the essentialist position based on the

utilitarian grounds.

The second key debate within stipulative definition is between those that consider definition to be "real" or "nominal." For Plato, a "real" definition was a search for the Ideal Form, that is, a definition that describes the "true" and "universal" nature of a term (Schiappa, 2003, p. 36). This view depends on "metaphysical absolutism: the belief that things have independent, "objective" structures of essences that are knowable "in themselves" (Schiappa, 2003, p. 36; quoting Barnes, p. 79-83). While this approach may seem appropriate when trying to define physical phenomena like "tree" or "planet" which necessarily involves identification of properties that are *objectively* perceived, the approach quickly becomes complicated when defining social or metaphysical concepts like "justice" and "good." What are the essential characteristics of "justice" that we can objectively perceive? Even with the definition of "tree," a real definition is problematic because it is unclear how one can determine which characteristics are objectively essential. According to Schiappa, the essence of a thing depends on one's interest/context, therefore, one cannot search for the "absolute" essence of a thing. For example, a lumberjack may define a tree with an emphasis on characteristics that allow him to distinguish trees from things he cannot chop down, while a chemical engineer may define trees according to its molecular makeup. In other words, "[a] thing-as-experienced may have as many essences as we have interests" (Schiappa, 2003, p. 41). Based on this major critique, philosopher Richard Robinson, along with most modern philosophers, objects to the notion of "real" definitions because they are "at best a mistake and at worst a lie" (Schiappa, 2003, p. 48; Robinson, 1950, p. 170). Robinson uses the word lie because a real definition gives the "false impression" that definition is a matter of correcting "knowledge of facts" rather than a process of isolating characteristics that are relevant to a given purpose (Schiappa, 2003, p. 48; Robinson, 1950, p. 170). To resolve this confusion, Robinson and Schiappa argue that all definitions should be viewed as nominal— that is, arbitrary yet dependent on context. For Schiappa, one way of resolving this confusion is to rephrase the definitional question:

> Instead of posing the questions in the time-honored manner of "What is X?" ..., I suggest that we reformulate the matter as "How ought we use the word X?" given our particular reasons for defining X. Specifically, I advocate that we think of one appropriate form of definition as "X counts as Y in context C." (p. xi)

Reformulating the question in this way does three very important things. First, the use of "ought" rather than "is" makes it clear that definition is a matter of persuading others to adopt a new usage of a word rather than a search for the essence of a thing. Second, clarifying that we are defining a word within a specific "context" makes clear to those engaged in the discussion that context matters, both in terms of how the definition is formulated but also in how it is evaluated. Thirdly, notion of "we" emphasizes the very social nature of the process of definition.

Although stipulative definition is persuasive in nature, this does not mean the process must be a one-way argument where the definer proposes a definition of design and the audience simply agrees or disagrees. If we return to the ancient Greeks, a key aspect of their process of definition was coming to a shared understanding of more than just the term being defined. This dialectical process is illustrated through Plato's dialogues where an interlocutor leads a discussion with one or more people. The discussion often revolves around clarifying important moral concepts such as "justice" and "the good" (Schiappa, 2003, 31). The role of the interlocutor is to help the discussants clarify their often tacit and vague notions of the concepts in question. Definitions are proposed and through scrutiny in the form of argument and examples, the interlocutor shows the discussants that their tacit notions require adjustment. This adjustment leads to a new definition which then bears more scrutiny. Much

of the discussion involves clarifying not just the one term in question but a whole constellation of related terms. Discussion usually opens with a great deal of disagreement and confusion, but through the course of clarifying what each discussant means when using each related term, disagreement often turns to understanding (or, at least, an understanding of the complexity of what at first seems simple). This back-and-forth, give-and-take process is called dialectic. Poggenpohl, Chayutsahakij and Jeamsinkul (2004) note that the process of dialectic can be difficult in written form:

> Speech is less calculated and more spontaneous with the speaker observing (or listening) whether the response from an audience demonstrates understanding. There is a turn taking that allows repair and clarification. In contrast, writing is discontinuous; misunderstanding may reveal itself only over time and through response (p. 583-584).

Dialectic is not only significant here for its relationship to Poggenpohl, Chayutsahakij and Jeamsinkul's description of oral speech acts, but more importantly, it points to a method to be used for not only forming a definition but also achieving consensus among a group of users.

A second point regarding the social nature of definition, actually directs us back to lexical definition and the role it plays in conjunction with stipulative definition. One of the traps of stipulative definition is that it cannot simply ignore conventions of language users when making a stipulation. Ignoring convention is called the "Humpty Dumpty theory of definition", which comes from Lewis Carrol's *Alice in Wonderland*, where Humpty-Dumpty "says that he can make words mean whatever he wants them to mean" (Govier, 2005, p. 99). Although it is certainly possible for one to define words however one wants, the value of doing so is very limited, since one will have no way of sharing this knowledge with others. Govier (2005) explains: "If a person defines words arbitrarily with no attention to public conventions, other people will not understand them and the *words will have no use"* (p. 100). She continues by reminding us of a fundamental value of words in language:

> Words in a language are public instruments for communication in that language, and a stipulative definition is useful only if it sets out predictable and comprehensible standards of use that are workable for the purpose at hand. (Govier, 2005, p. 100)

Seeing words as public instruments is valuable because all the reasons given for defining design at the start of this paper revolved around a community of language users: designers. Since one cannot define design in a bubble, lexical definitions or a record of previous usage must be a type of definition employed (although not central).

While this summary covers the key debates regarding definition, it is by no means exhaustive. The most important point this summary can demonstrate is that definition is full of complexities. Due to the great difference in purpose of and method used between a) type of definition, and b) definitional approach, it is essential that prior to all formal discussions about definition, discussants state their purpose and approach upfront. If this is not done and discussants jump straight into the process of definition with no knowledge of these dilemmas, it is likely that these dilemmas will cause great confusion and even great conflict about the proposed definitions without the discussants understanding that their differences lay in more fundamental issues than a simple difference of opinion regarding proposed definitions.

Based on the summary above, I propose that designers approach definition from a pragmatic perspective, seeing definition as a proposal for new usage that must be negotiated by designers according to the purposes of definition that they collectively

determine. This community of designers could be small (a school faculty determining a definition or vision of design for curriculum development) or large, in the case outlined by Love, Poggenpohl, Chayutsahakij and Jeamsinkul (determining a common usage for a community of researchers). This approach assumes that definition is nominal and, therefore, avoids metaphysical dilemmas about the "true" or "real" nature of design, and instead evaluates proposed definitions based upon practical ends, such as the development of clear connections between other disciplines. Within this approach, several methods can be employed to form and then evaluate the definition. The species/genus method of definition is valuable for differentiating design from other activities and then establishing logical consistency between a constellation of terms required to understand the phenomenon of design. The etymological method helps provide an understanding of how and why the word has changed. The lexical method is used to avoid humpty-dumptyism that increases the chances others will take up the novel definition. Finally, the ostensive method can help one illustrate one's definition by pointing to examples.

Future directions

"What is design?" As this paper demonstrates, this question is highly complex. It is fraught with as many linguistic and theoretical difficulties as the age-old philosophical question: "What is art?" But, due to its relatively recent emergence as a discipline and limited discourse, there is only a fraction of the literature. This confusion poses problems for the teaching of design and for the sharing of knowledge about design. In fact, the ambiguity is so great, some argue that one cannot even call design a discipline; and as long as design remains as ambiguous as it is today, creating a body of theory unique to it will prove very elusive and, without which, complexity will be even more difficult to manage.

While Love, Poggenpohl, Chayutsahakij and Jeamsinkul make strong arguments for the need to build stronger philosophic foundations in design and, specifically, clarification of key terms through definition, these are only four voices. There are others who have written on this same issue (Buchanan, 2001; Bamford, 1990; Friedman, 2003; Galle, 2008; Owen, 1998) but the list is short and little progress has been made in the last ten years. Hence, there is still a need for greater research into establishing reasons for why focusing on the process of definition is *valuable* for design researchers, practitioners and educators. Many designers simply don't think a general definition of design is attainable even in small contexts (let alone the larger community as a whole) and even worse, they do not see the process of definition as being beneficial. Hopefully, through this paper and similar efforts by others, we can generate a greater, more informed and productive debate about the definition and foundations of design and how this impacts the research, teaching and practice of design.

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