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## Some Thoughts on Terminology and Discipline in Design

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### Abstract

In this speculative paper, I will argue that the design community should attempt to develop a "dictionary" of the language of design, along the same lines as the Oxford English Dictionary was and is developed: as a catalogue of the living use of terms. I will sketch an outline of how such a project could be started quite easily with modern technologies. I will then consider one word in particular – "discipline" – as an example of the need for such a dictionary, by examining the various senses of the word and how even just reflecting on that can illuminate issues of clear communications.

### Keywords

Terminology; Lexicography; Semantics; Dictionary; Communication; Language.

Design is an emerging discipline "at right angles" to many of the traditional ones. If one imagines vertical towers standing for the conventional disciplines, then design is a horizontal structure that cuts across all the others. It grew from, and still largely exists as, a collection of sub-disciplines: graphic design, architecture, engineering design, industrial design, fashion design, interaction design, etc. Because of this, each sub-discipline evolved its own narrative – including a terminology – that allows its practitioners to communicate and collaborate. This is perfectly natural. However, this also means that we can expect mismatches between the languages used in different sub-disciplines. As a result, we see substantive difficulty when different kinds of designers try to engage in collaborative or cooperative research, practice, and teaching.

The design discipline, as an entity distinct from its progenitors, will have to grapple with this problem of communication. In this paper, I will consider one aspect of this problem: I will discuss the notions of terminology and definition, suggesting that it is in the interest of the Design Research Society to establish and maintain a "dictionary" of terms, to stimulate the evolution of a "common language" for design. I will also consider the specific term "discipline," and suggest that discipline, of a sort, is essential in designing.

I understand that this is a contentious matter within the design research community, and there is no intention to raise the ire of its members here. Instead, my goal is to help improve communication between design researchers for the sake of advancing the discipline of design effectively.

There would be several benefits of such an undertaking. It would provide a vehicle for design researchers and practitioners to work together, thus helping

us understand the particular needs and practices of our colleagues in different design disciplines. It would be a research vehicle to study concepts of designing as practiced in different disciplines, possibly to synthesize a common body of knowledge. It could help transfer methodological expertise between design disciplines. It could also be very useful in design education by providing a terminology of important terms and possibly even inform curriculum development by developing conceptual hierarchies of dependencies between terms.

## **Terminologies and Models**

A model is “an imperfect representation of a thing...” (Gruber, 1992). Models are used to stand for the subject of interest in some activity because the subject itself cannot be used for one reason or another. Models are pervasive in human activity. Our self-image is only a model of our actual selves; Newton’s Laws are only models of certain kinds of physical phenomena; a design is only a model of some artefact; and a sentence is only a model of an idea or fact.

All models are by definition imperfect; they are simulations of other things, intended for specific purposes. One would no sooner use an artist’s rendering of a building to evaluate the flow of air through it, as one would use a computational fluid analysis of the airflow to evaluate its aesthetics. By definition, a perfect model would be indistinguishable from the thing it models.

Terminologies are models too. They are imperfect representations of other things, useful only when used properly. In different design disciplines, terms are used for different purposes and in different contexts, so it should not be surprising that they are inconsistently used between disciplines. Still, words let us communicate about important things, and give us a common base for that communication to happen effectively.

Furthermore, our understanding of things (which is also only a model) changes over time. This means that the mapping between terms and the things they can denote and connote (i.e. a terminology) must be fluid enough to accommodate this natural and generally evolution.

In the rest of this paper, I will assume that achieving a common but flexible language in design is a worthwhile goal, because a common language will help develop a common understanding of design across its sub-disciplines and therefore help establish design as a distinct and unique discipline.

## **Developing Terminologies**

Small or very specific terminologies are reasonably simple to set up, but I am not interested in such systems because they are unable to represent the richness of natural languages; so, I will limit my discussion only to languages, like natural languages, that are rich enough to use in design.

There are two basic ways to develop a terminology: a prescriptive way, and a descriptive way. I will illustrate the difference between them by example provided by Simon Winchester (2003), in which he explains the difference between how the English and French dictionaries are defined.

The French dictionary is overseen by the Académie Française, a group of experts that act as an official authority on the French language. The Académie examines changes to the living French language, and decides which changes, if any, should be embedded into the "official" version of the language, based on their understanding of linguistics and their philosophical underpinnings. This is a prescriptive approach, and not unlike the development of many "standards" (e.g. per the International Standards Organization).

The English dictionary as established by the Oxford English Dictionary (OED) is based on the ongoing analysis of written usage from the living language. In this case, words are defined based entirely on actual usage, and not at all on the basis of the expertise of a small group of individuals. This is a descriptive approach.

The prescriptive approach is generally useful in situations where there is either (a) a crisply defined set of goals for a terminology against which particular terms can be validated, or (b) a well established philosophical, cultural, or historical precedent to delegate decision making to an authoritative body.

I believe the prescriptive approach is inappropriate in design. While there are many experts in specific design disciplines, there is neither an authoritative body to which all designers would surrender control of the language of design, nor a crisply defined set of goals for a common language of design.

The descriptive approach, on the other hand, builds consensus by extant work of practitioners. It puts control of the language into the hands of its users – in this case, into the hands of design practitioners and researchers.

Therefore, I propose that the descriptive method of the OED is well suited to build a consensus and a common language of design.

The OED was originally devised by delivering slips of paper to individuals all over the English-speaking world, with the instruction to look for cases of word usage in the written literature. When an interesting example of word usage was found, these individuals were to record the citation of the source, and the actual text containing the word of interest. No interpretation of the word was to be made at this point.

These slips of paper were then returned to Oxford, where they were collected and sorted. When sufficient examples of a particular word were available, a group of lexicographers would analyse the examples and build or refine the word's definition – in possibly many senses – in reference to its usage. The notion of sense is particularly important, because it provides the means to capture the variability of word usage.

In this way, the OED reflects the living English language, and adapts to new words and new usages of old words in a relatively simple, if onerous, way.

To this day, the OED is maintained following this general method, although taking advantage of many modern technologies that were unavailable when the OED was originated. I note, however, that the OED is finding it more and more difficult to keep up with changes to English, which are increasing ever more rapidly. I do not think this would be a problem in developing a design

dictionary because the lexicon will not be as extensive, but it is difficult to say with certainty at this time.

I note as an aside that this could help explain why different people can have such widely different ways of thinking about “definitions.” If the language(s) to which one is accustomed arose in cultures where language is defined prescriptively, then it could be quite natural for them to rail against “definitions” in disciplines like design. Similarly, if one’s culture includes a descriptively defined language, then this may explain in part why they are more open to “defining” terms. Of course, this is only conjecture, and I place no value judgement on this effect here. I note it only as a possible partial explanation to the tension that seems to underlie so many discussions in design research around the notion of definition.

The discipline of lexicography is far more sophisticated than I may have implied here. There are well-established methods for developing dictionaries – many of which are based on the OED approach of using a corpus that fairly represents the domain about which the lexicon is being created – for example, Hartmann (2003) and Bejoint (2000). Obviously, construction of a design dictionary should be carried out with the assistance of lexicographers familiar with the methods that would be required.

## **Developing a Design Dictionary**

Assuming the arguments so far are generally acceptable, we may now consider how to apply the OED method to develop a dictionary of the language of design. The basic method of the OED is to first gather raw data – examples of word usage – then develop definitions of words by analyzing the examples, and building the definitions from that analysis. It is important that the examples be from the written literature, because examples are essentially self-documenting.

The Web can be leveraged powerfully here, in three important ways. First, we can search the Web for terms far more effectively than we can search hardcopy documents. This means that individuals and groups can quite rapidly search for and find many examples of word usage in the design literature. This can substantively expedite data collection.

Second, web-based forms can be used by anyone to submit more data gathered from hardcopy sources. This information will immediately be available in electronic form. This is trivial to implement with modern web technologies. However, it will have to be part of a larger framework to facilitate the dictionary’s creation, so its design will require special attention.

Third, web technologies exist to facilitate the asynchronous collaboration needed to conduct a detailed analysis of the data. There are many content management systems and *wikis* that could be used for such an undertaking, but none have specific functionality for this task – which is not surprising, of course. Such systems provide the means for non-located people to work together by providing a shared workspace and the tools to maintain shared documents consistently.

I have been working on a new wiki, especially designed to support research activities. I am currently developing some aspects of the wiki, called Xiki

(<http://deseng.ryerson.ca/xiki/>) specifically for lexicography. When sufficiently mature, Xiki could provide a good implementation vehicle for a design dictionary.

An important point of the kind of exercise I am suggesting is that for both pragmatic and philosophical reasons, all analysis must be done in an “open and transparent” manner. Philosophically, such openness is necessary because the artefact being developed is a model of something held by the design community – its language – so any work that could influence its use or development must be done in full view of its users. Pragmatically, it is very beneficial to help ensure (a) the legitimacy of the exercise and (b) the greatest amount of input from the design community. Openness in such a project is therefore absolutely essential. For this reason, a wiki designed to support this kind of undertaking would (a) be “world readable” so that anyone could follow progress, and (b) include facilities to let anyone comment on the work, both specifically and generally. Most wikis are able of providing these two features.

Many of the design disciplines are graphically oriented. One could reasonably ask why I am focussing on the written language and not including graphical languages as well. In all the design disciplines of which I am aware, graphics are used to model artefacts being designed. These models are roughly “true” renderings of the artefact (e.g. architectural drawings, CAD models, concept sketches). These models are, in my view, equivalent to single words in a design language. The real language of design involves terms like: *form*, *function*, *behaviour*, *constraint*, *requirement*, *system*, etc. These words represent abstract concepts that are not necessarily evident in a typical graphical rendering. Instead, it appears that the majority of the knowledge we have about design is in written form, as is evidenced, for example, by the number of words published in the proceedings of most design conference as opposed to the number of graphics. For this reason, I suggest focussing on the written word rather than graphical forms of communication.

However, it may be very interesting to associate graphical forms with keywords that are defined in a dictionary; in essence, one could use “tagging” technologies (as in social bookmarking) to relate graphics to terms. While it is not clear to me what benefits might result from such a tagging system, it could be a very interesting research topic to analyse such systems for relationships between images, the terms used to tag them, and the definitions of those terms.

### **A Case in Point: “Discipline”**

To consider some of the implications of the undertaking I am proposing – the construction of a dictionary of the language of design – I will consider a specific word. An excellent word to consider as an example of the difficulty we have in achieving a common language – especially given the theme of this year’s DRS conference – is “discipline.” Because of space limitations, I will use only two dictionaries as source material.

We can begin by considering the definitions of the term available in a typical English dictionary (Discipline, 2005), which is (abbreviated) as follows.

**noun**

1 the practice of training people to obey rules or a code of behavior, using punishment to correct disobedience.

- the controlled behavior resulting from such training
- activity or experience that provides mental or physical training.
- a system of rules of conduct.

2 a branch of knowledge, typically one studied in higher education.

**verb**

train (someone) to obey rules or a code of behavior, using punishment to correct disobedience.

- (often **be disciplined**) punish or rebuke (someone) formally for an offense.
- (**discipline oneself to do something**) train oneself to do something in a controlled and habitual way.

Even from this one entry, the variety of senses of the word are evident. They are all meaningful, even within the discourse of design, but clearly conflict can arise between communicating individuals if each uses the term in a different way.

One obvious sense is “a branch of knowledge.” It is reasonable to assume that we can without controversy say that design is a discipline in this sense. Notice how this sense of discipline relates to the notion of a body of knowledge (that defines the “branch of knowledge”). One might then say that design cannot be a separate discipline until it has its own body (or branch) of knowledge, which also begs the question whether it should be a separate discipline. I believe it should; but only through reasoned dialogue based on solid fundamentals – like a common language – can a proper consensus ever be reached.

One may consider a different definition (Discipline, 2008):

1. training to act in accordance with rules.
2. activity, exercise, or a regimen that develops or improves a skill; training.
3. punishment inflicted by way of correction and training.
4. the rigor or training effect of experience, adversity, etc.
5. behaviour in accord with rules of conduct; behaviour and order maintained by training and control.
6. a set or system of rules and regulations.
7. Ecclesiastical. the system of government regulating the practice of a church as distinguished from its doctrine.
8. an instrument of punishment, esp. a whip or scourge, used in the practice of self-mortification or as an instrument of chastisement in certain religious communities.

9. a branch of instruction or learning.
10. to train by instruction and exercise; drill.
11. to bring to a state of order and obedience by training and control.
12. to punish or penalize in order to train and control; correct; chastise.

Many of the senses in these definitions are with regard to the use of punishment for lack of "discipline." These senses apply, for example, to "engineering design" because licensed engineers are expected to perform their duties in accordance with a code of ethics and established practise. Design engineers not doing so are subject to a variety of punishments. However, not all the design disciplines are so regulated, so when discussing discipline in design broadly, one should carefully avoid associating "discipline" with notions of punishment for the lack of discipline. It does raise the question of whether regulation of designers is needed. Again, whether or not regulation is required is not the point here; rather, I am suggesting that the dialogue would be well served by a dictionary of design terms to facilitate discussion between stakeholders in different design disciplines.

I note that in the definitions from both the dictionaries noted above, there is no *necessary* connection between the senses of discipline as a branch of academic work and as a system of punishment or control. While some may regard low grades in school as some kind of punishment, it can be argued that it is simply an assessment of the degree to which one's abilities relate to a specified standard derived through a consensus of some community. I think it is important that we recognize there being these two senses and that we can choose to keep them disjoint.

The most interesting senses of the word "discipline," I think, are: "activity or experience that provides mental or physical training" (as a noun) and "(to) train oneself to do something in a controlled and habitual way" (as a verb).

Discipline also relates to being trained, which implies learning. Thus, discipline is acquired and not innate. While it is common to think that learning broadens our capabilities – and it does – we can also regard learning as a *limiting* function. Once we have learned to do something in a certain way, we will tend to do that thing the same way forever, or until a "better" way presents itself (and sometimes, not even then). In this way, we will tend to not try other ways to do a thing because we have learned one way of doing it.

This relates closely to my interpretation of the theme of this DRS conference: Undisciplined! I take the word, in the context of this conference, to mean a willingness and ability to look for new ways of doing things, unhindered by convention or what is generally accepted. This is closely related to notions of creativity and innovation, which are both important in design, to one degree or another.

There is, however, a tendency to prefer the familiar, the well understood. This is just human nature. The familiar gives us a sense of security; it is also usually easier to do something familiar. The unfamiliar is usually associated with risk of one form or another, and is also often more difficult, requiring more attention and effort.



To be undisciplined, in the sense in which I take the term with reference to this conference, is to venture into the unfamiliar and to assume the risks that go with it. Of course, there are often greater rewards possible; significant technological innovations, quantum changes in approaches or frameworks, and unconventional presentations can all be very successful – more successful, arguably, than smaller, less spectacular changes that can occur by working with/in the familiar.

We therefore have this friction between our natural tendencies on the one hand, and what we must do to “think outside the box” on the other. The pressures to be conventional can be great, whether they are exerted by our own individual personalities or by one’s employer or by society as a whole. Yet, we should strive to seek the uncommon solutions because those will generally yield the greatest benefits.

I suggest that to be able to maintain this “out of the box” mentality, a great deal of discipline is required – we require discipline to be undisciplined. As the definition says, designers need to train themselves to act habitually as others do not. Designers must be different by intent, and this requires control to *not* succumb to the familiar. Designers must reflect on their own work and know when unconventional thinking is needed, and how to build on that unconventional thinking to produce beneficial results. All this requires discipline. The designer who habitually recognizes the need for undisciplined thinking, and can habitually act and think in an undisciplined way, is more likely to succeed more often.

Of course, there is some “danger” in writing that a good designer must have discipline, because such statements may be misinterpreted: the reader may invoke a different sense of the word “discipline” and thus carry away a different meaning than what the writer intended. This is common in every dialogue except those of pure science. Scientific terms have very precise meanings, and different senses apply only in very different contexts.

I will not suggest here that design should seek to be more “scientific” because the precision of the language of science implies a certain antiseptic quality that I do not think is appropriate in design. Designing is inherently creative, and the ambiguity of language is one inspirational source of ideas. (Example: Jonathan Ive’s distinctive design for the Apple G4 iMac bears a physical resemblance to its inspiration: a sunflower.)

Returning to the definition of “discipline,” one could ask if the sense in which I have used the word above should be the only sense. Of course, then answer is “No.” I do not mean to limit the definition of the term here, but only to underscore how there are more and less appropriate senses to words. Most importantly, being able to catalogue the different senses of terms is, I believe, extremely important. Nonetheless, it seems to be quite rational to take this sense of “discipline” as the common sense (but not necessarily common-sense) way to use the word when we talk about discipline in design.

One mark of a distinct discipline is its own language, as has been very well argued by others, such as Krippendorff (1995). Language is closely tied to consciousness and cognition (Chafe, 1974; Edelman, 1989). A common language does not necessarily limit expression, but it can provide a framework for communicating effectively, which should in turn be very beneficial in the

effort to establish a distinct discipline of design. I believe that one good way of working towards this language of design is to undertake the construction of a design dictionary.

There was a significant thread in the mailing list [phd-design@jiscmail.ac.uk](mailto:phd-design@jiscmail.ac.uk), near the end of September 2007, on this very matter. Authored by numerous design researchers, the messages relate discussions about whether design is or should be a discipline, and on the nature of disciplines. The discussion included a number of exchanges hinging on the extent to which discipline requires one to abdicate individuality and discount ideas that are outside those prescribed by the discipline. However, in all the dictionaries that I have checked – including the two noted above – there remains no necessary relationship between the “good” and the “bad” connotations of “discipline.” On the one hand, I think all those who read the email messages benefited from the discussion. However, I also think much of the discussion could have been better spent discussing concepts that terms denote rather than the terms themselves.

One other issue that I have not addressed here is the variation in definition between different languages. For instance, the English “design” is obviously related to the Italian “disegno,” but “engineering design” is best translated as “progettazione” which in fact is closer to “project management” than “design.” The boundaries between concepts demarked by terms are vague even in one language, and they are made even more vague when considering the differences between languages. These differences mark fundamentally different conceptual paradigms, and it is not clear to me that the paradigm manifested in English is the best one. How exactly a design dictionary should accommodate such differences, I do not know; but I do believe it is a subject worthy of future study.

## Conclusion

Language is a powerful and flexible thing. We should use it to develop ways for designers and design researchers to communicate better, without unnecessarily restricting its use to explore new thoughts and ideas. I hope that an undertaking of the sort proposed in this paper will help achieve this goal.

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