5.4 Natural Language

Perhaps our deepest and richest repository of natural design patterns, is our own natural language. Words refer to the things of life we engage with and talk about. Our cultural associations with the words originated from those life experiences, our common words having extremely ancient roots, carried forward for thousands of years. Their meanings are continually being refreshed with new experience too. Our common words very often actually directly name the recurrent natural patterns of relationships we thought were important enough to name and attach our values to, and with the impact of words like "storm" or "mine" or "heavy". So our great familiarity with language is at the same time a great familiarity with our ancient experiences. By both naming the thing and conveying the associated values, the package of understanding of the world that comes with words can also be mined for more of the particulars of the natural patterns of relationships referred to as what we experience, a repository of designs one already knows a good bit about.

Modern people seem to have less need for understanding where the meanings of our words might have come from, of course. Our world is changing again, and requiring us to rapidly expand our understanding of how to relate to nature again, after a long period when it might have seemed we were increasingly in control. So the way language refers back to its roots in recurrent natural patterns of design will likely find fresh new use for us.   It'll enable us to become more knowledgeable designers, and be more aware of the important differences in relationships that give a world the living quality our work and designs both need.

Simple and obvious examples of natural designs like "rock" as being one thing and "fire" as being quite another, or "butter" and "love" as quite different aspects of nature too. When taken out of the sentences we usually find them in their individual meanings suddenly shine through. That opens doors to our great cultural histories, letting us recall and refresh the deep meanings of our experience with the recurrent natural designs they refer to. Now that we have the tools of pattern language to work with, we can look much more deeply into those meanings than before. When we find good examples of the experience named we can recognize how the forces of the circumstance are balanced or the options at play, and better those forces in the designs for how to respond to them.

Other words like "door" or "bridge" have tremendously varied designs, meanings and uses. You might pause and searching through as many as come easily to recall the diverse images of actual and metaphorical bridges and doors and their mostly ancient roles in and meanings for our lives and cultures.   What keeps apart or connects separating things, like private and public spaces or other important things, are rather complex and important

parts of life. The greatly varied use, one might note, doesn't seems to indicate indefinite meaning. It more seems to indicate the universality and varied use of a particular central meaning, as organizing principles that apply in very many contexts.

The general practice using words as a guide to recurrent designs of nature is to 1) think about a word or phrase of interest out of context first, then 2) look for the experiences and subjects associated with it, 3) examine the life circumstances and working relationships involved as a pattern 4) and identify the recurrent natural design that might include the variations, i.e. the universal part, that the word seems to be referred to. For example you might be thinking about your dog wanting to go out, and wonder about the real meaning of "leash", and come up with a new way to understand the complex service it provides as you're walking your dog. Doing just by contemplation does tend to work better for evocative words, such as Harasawa et all. (2014) referred to as "*center words*", having rich and varied associations.

To expand your ability to discover meaningful associations with natural designs from our words there would be various ways to search the web for them, sometimes literature, etc. You can also look specifically for what I'll call "*working words*", no not very evocative, but actually referring to the ways things work. One example with some feeling to it is the name of Fig 1. "Flowing connection", to name and partly describe how patterns should connect their serving and served connections. Alexander (2002) names a variety of natural design patterns with what mostly seem to be "working words" in naming his 15 principles of design. Group techniques for stimulating free association can help too. One like the 3Step method (Henshaw 2013) was designed to free the thinking of a group about what's happening in their own environment, and help them identify the active forces that would need to be responded to when designing a pattern for working with the environment for their purpose.

When you find an especially interesting recurrent pattern of design in nature this way, you can record what you found using a design pattern template. Either formally or informally, that at least documents the image and threads of connection for the future so you could go back to studying it where you left off. That's essentially what I did in developing the design pattern for "Mining Connections for Living Quality" (Table 1.). I used "living quality" as a "center word", and did various searches for its root meanings in natural language. That led me to thinking about the connections between a design and its serving and served networks, sorting through various imaginary ways living quality in the relationship might be designed for. Then I recorded the methods I seemed to find successful in finding them.

The most surprising thing is how surprisingly fruitful these methods can be even for common utilitarian words too. Simple examples might include common object names, picked at random in this case, like "road" or "hat", etc.,. Because such common words are likely among our most ancient, and have so many uses, exploring them produces more of a tapestry of meanings for the natural design they refer to, like: "hit the road" or "the road to ruin", "road to heaven" as well as "road home", "off the road", the "easy road" or the "long road" etc. Fairly quickly you get the idea we're not really talking about asphalt.

You can often speed up the process of understanding old words by looking for the root meaning common to all those and other uses, and look in an an old dictionary. When I notice that pattern of evocative uses for 'road' I looked it up in Webster's 1903 Unabridged Dictionary[4]. There you find the first two meanings: "*that on which one rides or travels*" and "*journey, or stage of a journey*". It appears the reason all those different important meanings are connected to the same humble word is that there's seems to be an important common natural design and life experience being referred to. In this case the root meaning of "road" seems to be complex, as both something that guides a travel AND requires important choices to be made along the way (Fig 9.).

Using other kinds of dictionaries would bring out other meanings, such as by searching for compound words with common roots, or common prefixes or suffixes[5]. That turns out to be a great way to discover the amazing increase in complex meanings found in western languages that emerged as Latin developed. These ways of searching for words with deep meanings associated with naturally occurring patterns in could also help expand a search for either images or good names for patterns of design being worked on, such as Hawasawa et. all. (2014) or Hamner & Mirakhorli, (2014).

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[4] ARTFL online Webster's Unabridged 1903+1828 dictionary
http://machaut.uchicago.edu/?action=search&word=road&resource=Webster%27s
[5] OneLook dictionary: "states of being" in "*ence" words http://www.onelook.com/?w=*ence&scwo=1&sswo=1
road & road words http://www.onelook.com/?w=*road&ls=a http://www.onelook.com/?w=road*&ls=a

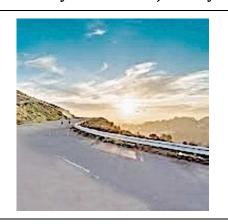the way taken on a journey

Fig 9.   The path of discovery

It can also be used to access our accumulated cultural experience with natural designs to find related living examples of design patterns to learn from.   The basic strategy is to 1) generalize the pattern to find new examples for, then 2) follow the words associated with it to instances at other scales, in other places, in other uses or times. If done for finding other living examples for a design pattern you are working with, you'd start looking in similar contexts for where commonly associated words are also found used in similar ways. Then you'd look in other places, as you might looking at the forces balanced by a "bridge" while looking for naturally occurring examples of bridges displaying pattern solutions like a bridge pattern you may be working on.   Any "transition" or "transformation" is a "bridge" of a kind, for example, opening up a tremendous variety of forms of bridges very particular to the environment they are found in.

One runs across these structural design connections unexpectedly sometimes, having begun a search from some starting point and following a trail of words with connecting or contrasting meanings. As you go you'd look for the naturally occurring design patterns the words refer to, mentally diagramming ones in one circumstance with the ones found in others.   As discussed in Section 5.3 almost any design pattern one works on has something to do with "homes" for example, and so also with "enclosures", "separations", "breaks", "continuity", "flows", "resilience", "development", and all the many other common words associated with fairly universal terminology for the designs of natural systems, given ingenious, diverse and complex meaning in nature.