Guiding Patterns of Natural Design: Principle Elements

A Pattern Language Approach

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ABSTRACT[1]Why pattern language can be so effective for describing simplifying ways to balance complex relationships, has to do with people first looking for those kinds of solutions. Then a structured practice of recording the essence of the relationship pattern from every view , fits together the parts for an understanding of the whole.   For describing patterns of wholeness in nature, that develop without anyone's observation or intent, and may have interiors hidden from view, you need universal principles or "science" to get a start, like first locating the subject with a search pattern, a piece of boundary or a behavior. Then learning to recognize natural language and other sources as great repositories of natural design patterns we already know, you move your attention back and forth between our explanatory world of ideas and nature's behavioral world of independently organized relationships.   It allows a "dual paradigm" view of causation, for translating between complex behaviors and explanations, building meaning and richness of understanding grounded in nature, to record using a slightly expanded pattern language template. The idea is to provide some sort of "starter kit" for experimenting with this method, to see what works. The easiest place to start seems to be with a word like "home", thinking about what it means as a place where things find their fit in the world, as the fulfillment of a journey, a place to be and to work from.

Key Words: pattern language, natural patterns, knowledge repositories, living quality

INTRODUCTION

1.1 Origins

Alexander's motivation for developing pattern language seems to first appear in "A city is not a tree"(1965), teaching architectural theory at Berkley, with recognizing that "there is some essential ingredient missing from artificial cites" compared with thriving natural cities.   He linked it with a pattern of design that was missing, one of complex overlapping natural opportunities for making connections, what he called "a semi-lattice" form of design.   My own early motivation for developing a language of natural design patterns was similar, having come to study architecture and "environmental design" at Penn[2], in 1971 as a source for understanding what amounts to "wholeness", having come from studying physics[3] and taking an interest in the wholeness of individual events and things and their unique individual differences. It took tome but I later found it was the great success of

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theoretical physics that actually excluded that from the subject of physics a very long ago, describing all of nature in abstract concepts.

My first good hints of how to overcome that came from noticing the patterns of how individual designs developed in architectural design studio.   Studio projects always developed from scratch with everyone working on the same problem, looking for how to start, then building up in complexity and effort with focusing on the project as a whole, to end up having gone in very different directions.   I recall some of my observations being inspired by hearing of Alexander's ideas too, before he developed pattern language. It was something about how environments build up layers of pattern memory of past designs, that remain even when things are removed.   I could see it in how the piles of drawings that always built up during a project tended to constantly reflect all the problems studies and the shapes experimented with.

The direction I took that interest in where the wholeness of individual final designs came from combining that with research I did first in school and then shortly after, on the on micro-climates of passive solar and other homes. The organization of air currents as the sun moves around during a day prompts numerous whole redesigns of the organization of how the energy flows (Henshaw 1979a). That lead to recognizing a general pattern, that all energy uses take place by means of emerging systems of organization, prompting my first attempt to describe its design patterns, as "An Unhidden Pattern of Events" (Henshaw 1979b).   It implies a very concrete need for science to turn to study how individual systems are organized as wholes, simply because that's how nature's working parts are arranged. …………………. *See full draft[4] for continuation*

1.2 Natural design patterns

In the terminology of Alexander's pattern language a "design pattern" is a "simplifying ideal" that can be used to solve similar problems in various situations, As such it is then also something like reference to how it is used in a wide variety of situations.   So, design patterns are not really '*solutions' as* much as '*guides'*, containing information about the various contexts in which they are found. As such they are then also keys to unlocking some of the secrets of the other circumstances in which they are found.

You might use a design pattern to look into the living cultures in the contexts where the solution applies, maybe just to know what makes them tick. You might also use it to help you see what it is that attracted them, or to anticipate the disturbances that might result and need to be responded to when applying the pattern. Perhaps more often you'd just be looking for ideas, to broaden your understanding of a design pattern by looking at how it

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[4] Full Draft http://www.synapse9.com/drafts/2015_PURPLSOC-draft.pdf

applies in other places.   To do that you think of the subject pattern as a "search pattern" used for finding instances of it in various kinds of environments looking for ideas of features to add or to do without.

For a general example, you might search for more meanings for a pattern called "home" and its complex meaning of both "enclosure" and "connector" and look at how those and other aspects are accomplished in various circumstances.   You'd find it associated with how things in nature that develop by growth tend develop homes for themselves as they mature, as a kind of external body of services for and security for what takes place inside, raising those questions for things in your design that you can't do without but are not yet finding their homes in the design. That process brings appreciation for the living qualities of the natural organization you find, like where the individuality of things is used to let them work smoothly together.   Different qualities are found where theories are applied in which every part is treated as identical, creating endless friction and incapable of becoming whole in a natural way.   ………………… _See full draft[5] for continuation_

TWO PRIMARY PATTERNS

2.1 The Natural Process of Design

Stages of Design and Degrees of Effort

1.   The general pattern of design
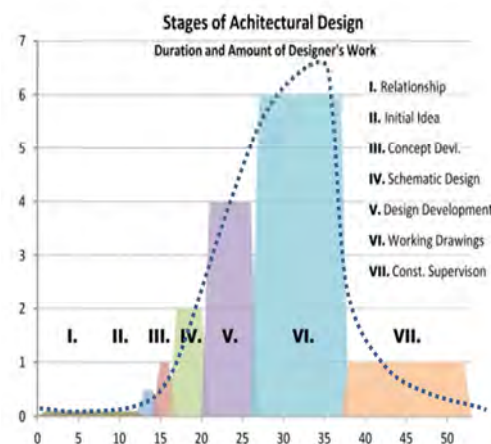
Perhaps the most universal pattern of natural design is one I first noticed as a recurrent pattern of effort in every design studio. Design takes time, and unavoidably follows a pattern of small easy steps escalating to become big very difficult steps, only to reverse course and end in small finishing touches, as it approaches completion… if you have left yourself enough time to do so. As a phrase what one would say is simply that "_designs develop_". More particularly designs invariably climb a ladder of stages that emerge from the one before, with the design of the whole changing form as a whole several times. Natural design processes all have different stages, but the general pattern is the same.

In architectural design offices the stages of design are formalized as a sequence, I. The Client Relationship, II. Concept and III. Schematic design, then IV. Design Development, V.

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[5] Full Draft for continuation http://www.synapse9.com/drafts/2015_PURPLSOC-draft.pdf