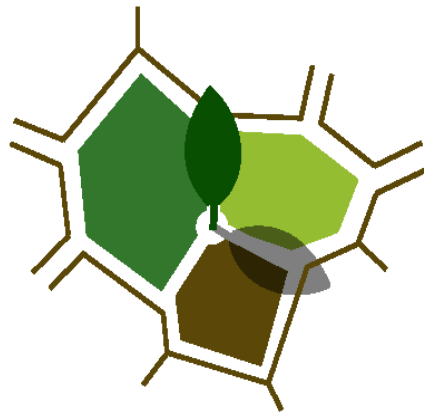



The Use of Pattern Languages



E. Christopher Mare
Antioch University Seattle
Whole Systems Design
“Design Languages”
Autumn 2002



Before entering a discussion into the use of, specifically, *pattern* languages, it will be informative to first qualify and understand the reasons for using languages in general. Any language is essentially a *communication system* – meaning an organized arrangement of elements with the purpose of exchanging *meaning* amongst its users. As a system, the elements are integral parts whose various structural interrelationships *define* the meaning. The communication system could be composed of information embodied in symbols, signs, archetypes, gestures, or sounds – whatever – as long as these components can be organized and expressed in one arrangement to effect one meaning, and then re-organized and expressed in another arrangement to effect an entirely different meaning, then a language structure is in place. The practice of using languages is *linguaging*.

Linguaging implies cognitive abilities. Cognition is the capability of an ‘autonomous unity,’ an ‘organic whole,’ to purposefully interact with its environment in such a way that feedback can be meaningfully processed regarding ongoing fluctuations in that environment. As conditions in the environment change, the cognitive ‘autonomous unity’ will then modify its behavior to adapt to those changes. By this definition, any living system – from a prokaryote to a eukaryote to a multicellular to a metacellular and beyond – possesses cognitive abilities of some kind, and thus has the potential to engage in the use of language.

As an example, an amoeba may have a whole repertoire of postures, movements, shapes, colors, smells, or otherwise chemical messengers that re-present its ongoing relationship and status within its circumambient environment. This is its ‘body language.’ As long as any organized combination of these various messages can be deciphered and interpreted by an interacting organism so that that organism’s behavior is modified thereby, then meaningful co-communication has occurred. By extension, the particular structural collection of communicative messages used by the amoeba to express its varying conditions is its ‘language.’

Maybe; but surely, in *Homo sapiens* the evolution of linguaging has reached an entirely new domain. Due to the conspicuous growth of a ‘neocortex,’ a biological-mental organ capable of abstract and time-independent symbol generation, this species has developed linguaging to the point of not only being able to communicate *actual* conditions in the internal or external environment, but to communicate *possible* conditions, or *desired* conditions, or even to *deny* present conditions. This symbolic abstracting ability is what sets *Homo sapiens* apart from the rest of its biological inheritance; it is, in fact, this species’ defining characteristic.

With *Homo sapiens*, the various languages that have arisen are direct expressions of diverse cultural worldviews. Each language is a reflection of a different environmental (or just plain mental) context. This is vernacular: diverse cultural linguistics rooted in distinct biogeographical living situations. The languages employed and internalized by diverse cultural groups contribute to the shaping of their environments as much as the environments contribute to the shaping of their languages – they are *mutually* conditioned. The language becomes a ‘lens’ through which the world (inner *and* outer) is perceived and shaped. Ongoing use of the language continually, subconsciously reinforces the particular worldview that is a reflection of that language. So we see that languaging is a technique for exchanging a pre-conceived, pre-determined, and collectively shared cultural apperception of reality; yet each particular language is just that: just *one* possible way of describing and defining reality. Each language used, therefore, can only represent part of the whole; each is effective in the particular context for which it has relevance and from which it has developed.

To support these ideas, consider the English language for example. English is a complex variation of the so-called “Indo-European” family of languages, with many cultural overlays. It is structurally arranged in a linear progression: one word follows another to form clauses, then sentences, then paragraphs. Each word is an isolated entity in its own right and has a distinct, non-negotiable meaning. The position of the word in the sentence and the structure of the sentence itself convey the intended message. English has the basic structure of ‘subject-verb-predicate;’ thus languaging in English continually reinforces a perception of reality in which an isolated and discrete subject (usually ‘I’) is interfacing with an isolated and discrete object (often ‘it’) through the active medium of the verb. Further, languaging in English continually reinforces the perception that reality is unfolding linearly over time: context is *created* by the sequencing of wordage. Users of English are unwittingly and subconsciously supporting and re-creating a culture with these same characteristics: this culture is predominantly *left-brain* oriented: rational, logical, analytical, individualistic. For that reason, English is pre-disposed to facilitating a reductionistic, atomistic, scientific-materialist *Weltanschauung* – and for that reason English is the world’s ‘lingua franca,’ the universal language of business.

In contrast, consider a language like Chinese. There, symbolic ‘ideograms’ are used in a matrix to convey meaning. The ideograms are impressionistic images, representations of conceptual thought-forms often originating from actual conditions in the environment. These ideograms can have a variation of definitions *depending on the context*; so, context is implied first, as a given, and then appropriate ideograms are employed to describe perceptions occurring within that context. Languaging in Chinese is primarily *right-brain* oriented, meaning: intuitive, symbolic, systemic, sinusoidal; it will continually reinforce a cultural worldview in which individual entities have little discrete existence outside of their context. Similarly, time is perceived as unfolding in ‘blocks’ or ‘segments,’ each with its own characteristic flavor and purpose. Also, Chinese is read from right to left; thus orientation in space must be perceived

differently than in the West. For all these reasons, Chinese is a more effective language for apprehending fundamental, primordial principles of Nature, and for expressing an 'ecological' worldview of systemic wholeness: The understanding comes not so much from analysis as from identification.

Having made this generalized distinction between English and Chinese, and their associated families, it is now possible to delineate two basic categories of human languages: 1) ideographic languages, and 2) discrete linear languages. Each of these techniques of languaging, these complementary modes of apprehending and communicating perceptions of reality, will be effective in applications for which it is characteristically suited, and will not be so effective in applications for which it lacks relative suitability. As a general point of departure, an ideographic language is effective for communicating symbolic meaning and the process relationship between archetypes; it is not so good, for example, at formulating detailed lists of contents. A discrete linear language, on the other hand, is effective for analyzing and communicating the detailed functions of individual cases set apart from their context, yet can become cumbersome if attempting to communicate with the subconscious. Each of these modes of perceiving has its time and place, its beneficial purpose in the symbolic reconstruction of reality that is languaging.

With all the above in mind, it is now possible to enter a cursory discussion on the use of, specifically, *pattern* languages. Having been born and raised in the ambiance of discretely linear English, speaking about using a "Pattern Language" may seem, at first glance, awkward or incoherent – flimsy. How could one possibly envision or create a language based on patterns?

To start with, focus more on the right side of the brain. While 'right-side' – 'left-side' is slightly arbitrary, since 'whole-brain' is always operative (more or less), there is an empirically demonstrable polarity of reference when one side is compared with the other. The right hemisphere is co-related with Yin – receptive, intuitive, symbolic, systemic, time-independent, primordial – the polarity of Spirit involuting into Matter. This hemisphere will not language with words, but with images, and with networks of images: one image stimulates a connection with other images which in turn constellate into a meta-image. They are all interconnected and interrelated and re-present assimilated associations of experience – the way the world is experienced as fitting together into a coherent, living, working, organic whole. By organic I mean 'organismic' – of or relating to an organism. This metaphor is apt because a pattern language is meant to be a *living* language.

Now, apply this mental image-making capacity to an actual design challenge. Start with the 'whole' – the largest supra-system within which the scale of the design challenge has meaningful relevance. Meaningful relevance cannot be defined *a priori* but must be determined in each particular case. In all cases, the largest supra-system will be 'the Universe,' yet in most practical applications it will be more expedient to start with a subsystem of the Universe.

For example, if I wanted to envision a pattern language for ‘ecovillages,’ I would start the language at the scale of ‘ecovillage.’ If I needed to provide a context for the pattern ‘ecovillage,’ I would cogitate on the next most immediate system level that included ‘ecovillage’ as a subsystem. I would then evaluate whether this next most immediate super-system is in turn yet another subsystem for a still more-inclusive super-system. Eventually I will reach an identifiable *supra*-system level at which further differentiation will not contribute any more to meaning. Then it is at *that* system level that the language will begin. This very act of systemic differentiation is creating the holarchical network structure of the language as it proceeds; and differentiation, discrimination, and making logical connections between the patterns is the work of the *left* side of the brain – thus pattern languaging is inherently a *whole brain activity*.

Now it is time to ramify in the other direction, toward increasing diversity, detail, and differentiation: What are the relevant subsystems that comprise an ‘ecovillage?’ The choice of relevant subsystems will depend on the intended application of the language. These are also further patterns in the language, and these systems will in turn be found to be comprised of various less-inclusive subsystems, etc. Eventually it won’t make any more sense to keep differentiating into subsystems. In all cases, the final, theoretical culminating subsystem will be the electron (or is it the quark these days?).

The initial branching pattern of the structure of the language will be found, upon closer inspection, to be interlaced with many cross-referencing inter-connections. These lateral inter-connections are same-scale phenomena, distinguishable aspects of an identifiable whole, influencing one another by heterogenic association. The cross-referencing patterns are very important because they give the language breadth along with its depth: they provide multiple channels for expressing nuance.

Once this whole language-making process is carried to its logical or inevitable conclusion, the resulting simulacrum is like a web, shaped into a three-dimensional pyramid. On two-dimensional paper, the language will look like a network of symbols, representing the patterns, some organized into thematic clusters, others standing more or less on their own, all with mutually-supporting interconnections among the symbols. In book form, the language will appear as a series of patterns in a row, from One to somewhere before Infinity.

Once constructed, the pattern language can be used to holistically comprehend the elements, associations of elements, and process relationships between elements, in the complex organized whole for which the language has been devised. I would say that this quality in particular – the ability to apprehend as a whole all the functional interrelationships in a complex web – makes the use of a pattern language particularly applicable and efficacious in any complicated ‘design’ challenge. Perhaps discretely linear English is better left for the ‘planning’ professions?

Just remember when constructing a pattern language: this will be a living language: it will never be perfect or complete. As a *process* language, it will be continually evolving,

adapting, and refining itself through experience, cognitively processing feedback from the environment, modifying its internal conditions to adapt to and equilibrate with fluctuations in external conditions, forever pressing forward to a time-independent state of equifinality.