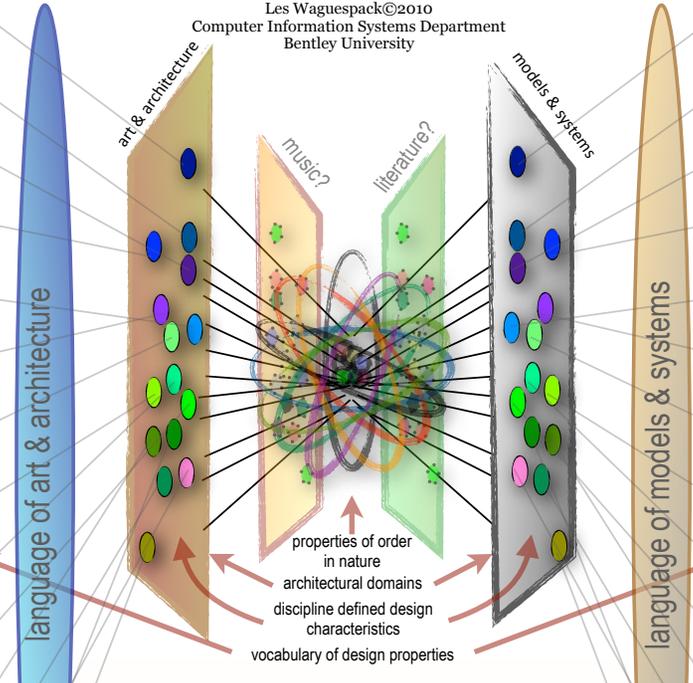


Thriving Systems Theory

translating Christopher Alexander's theory of the "nature of order" found in beautiful art & architecture onto the domain of models and systems.

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This research began as a sabbatical in 2006 in search of design principles to assess the quality of object-oriented models. What has always appeared to be a qualitative exercise mirrors closely the challenge of assessing quality in art and physical architecture. Christopher Alexander's work defining elemental qualities in architecture inspired the challenge of finding corresponding expressions of quality in models of systems, particularly information systems. Alexander's theories have been the principle impetus in the emergence of patterns as a fundamental and pervasive systems engineering concept. The translation of Alexander's properties from the physical domain to the conceptual domain of models and the ensuing qualitative validation of same evolved into the monograph depicted in the cover below published by Springer in 2010. The translated properties coincide with several traditionally recognized factors of quality in systems, but not all! The translation reveals several properties that fuse elements of human perception not found in common definitions of software or systems engineering quality. In collaboration with colleagues, Bill Schiano and David Yates, the research has mapped the presence of these qualities in software systems accepted as paragons of system quality, the Apache suite. The research continues to consider whether the properties indeed represent expressions of a fundamental order in nature which explains quality in other system domains lacking only the relevant vocabulary to express them. Thriving Systems Theory may represent a nascent unifying theory for understanding, describing and assessing quality!



A balanced range of sizes is pleasing and beautiful.

Background should reinforce rather than detract from the center.

Good design offers areas of focus or weight.

Outlines focus attention on the center.

Looping, interconnected elements promote unity and grace.

The proportional use of space and pattern creates harmony.

Simple forms create an intense, powerful center.

Texture and imperfections convey uniqueness and life.

Repeating various elements creates a sense of order and harmony.

Similarities should repeat themselves throughout a design.

Use only essentials and avoid extraneous elements.

Organic, small-scale symmetry works better than precise, overall symmetry.

Empty spaces offer calm and contrast.

Unity is achieved with visible opposites.

Designs should be connected and complementary, not egocentric and isolated.

- Levels of Scale
- Positive Space
- Strong Centers
- Boundaries
- Deep Interlock and Ambiguity
- Gradients
- Good Shape
- Roughness
- Alternating Repetition
- Echoes
- Simplicity and Inner Calm
- Local Symmetries
- The Void
- Contrast
- Not Separateness

- Stepwise Refinement
- Modularization
- Cohesion
- Encapsulation
- Composition of Function
- Scale
- Correctness
- User Friendliness
- Extensibility
- Patterns
- Reliability
- Transparency
- Programmability
- Identity
- Elegance

elaborate: develop or present (a theory, policy, or system) in detail.

modularize: employing or involving a module or modules as the basis of design or construction.

factor: express as a product of factors.

encapsulate: enclose the essential features of something succinctly by a protective coating or membrane.

assemble: fit together the separate component parts of (a machine or other object).

focus: (of a person or their eyes) adapt to the prevailing level of light [abstraction] and become able to see clearly.

align: put (things) into correct or appropriate relative positions.

accommodate: fit in with the wishes or needs of.

extend: render something capable of expansion in scope, effect, or meaning.

pattern: give a regular or intelligible form to.

normalize: make something more normal, which typically means conforming to some regularity or rule.

expose: reveal the presence of (a quality or feeling).

generalize: make or become more widely or generally applicable.

identify: establish or indicate who or what (someone or something) is.

coordinate: bring the different elements of (a complex activity or organization) into a relationship that will ensure efficiency or harmony.

Representative images depicting Alexander's properties of quality in art & architecture that observers experience as beauty.

Alexander's properties translated to properties in the domain of models & systems; and actions that strengthen them.