

A Beginner's Mind

PROCEEDINGS

**21st National Conference
on the Beginning Design Student**

Stephen Temple, editor

**Conference held at the
College of Architecture
The University of Texas at San Antonio
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Situating Beginnings
Questioning Representation
Alternative Educations
Abstractions and Conceptions
Developing Beginnings
Pedagogical Constructions
Primary Contexts
Informing Beginnings
Educational Pedagogies
Analog / Digital Beginnings
Curriculum and Continuity
Interdisciplinary Curricula
Beginnings
Design / Build
Cultural Pluralities
Contentions
Revisions
Projections

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Architecture as an Ill-Structured Knowledge Domain

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Introduction

It could be said that architectural educators are as interested in the architecture of thinking as they are in the thinking of architecture. That is to say, they are as much interested in how students think as they are in what student think; the former being habits of thought while the latter the object of thought. Efforts to codify and institutionalize this object are widespread and largely successful, as evidenced in the relatively consistent curricula of architectural schools. The courses that populate those curricula - history, structures, mechanical systems, and design among other - are the discreet units that constitute, in large part, the overall object of architectural knowledge. However, efforts to codify or institutionalize the habits of thought are few. Still, if asked, educators would likely say that they are primarily interested in teaching students "to think." Yet the characteristics and qualities of that "thinking" as well as the means by which it is taught and acquired have been left largely unarticulated.

This paper attempts to articulate things such as these. It describes the flexible habits of thought conducive to working within ill-structured knowledge domains such as architecture. The paper's argument is founded on Rand Spiro's Cognitive Flexibility Theory, which calls for the "ability to spontaneously restructure one's knowledge.... in adaptive response to radically changing situational demands." and, to achieve this, focuses on the "way knowledge is represented" and the effect that representation has on the conceptualization and utilization of knowledge. (Spiro, 1990, p.165) More specifically, this paper identifies the weak subject/object relationship as the defining condition of ill-structured domains as they relate to well-structured ones. Lastly, this paper proposes, via the postmodern literary technique of complex narrative structuring, that that relationship opens the possibility for an alternate representation of knowledge that amends the role and status of knowledge as a facet of truth to an uncertain object of interpretation, of the educator as the seat of authority to a potentially unreliable narrator and finally of the learner as a passive receiver to active evaluator.

Subject/Object Relationships in Well and Ill-Structured Knowledge Domains

While all knowledge domains -- mathematics, literature, and architecture for example -- exhibit some well and ill-structured qualities, all domains are considered either dominantly well or ill-structured. The difference between the two is their assumed relationships between the learner-subject and the knowledge-object: specifically, the role of the learner-subject, the representation of knowledge-object, and the character of their interaction.

Well-structured domains, such as mathematics and science, assume a strong subject/object relationship between learner and knowledge; meaning a powerful boundary separating subject from object. This boundary is rarely, if ever, transgressed. The knowledge-object is a clear coherent categorical edifice comprised of information that is thought to belong together naturally. Its representation is authoritative and autonomous, hierarchical and consecutive, fixed and static. In this type of domain the learner-subject sits apart from the knowledge-object. That subject's role is largely passive; receiving or partaking but reframing from altering or disturbing the knowledge object. Accordingly, well-structured knowledge domains lend themselves to memorization, repetition and a predominantly procedural application of knowledge.

On the other hand, ill-structured domains, such as literature and architecture, assume a weak subject/object relationship between learner and knowledge; meaning the boundary separating subject from object is blurred and unclear. Indeed, it may not even exist. In this type of domain, the knowledge-object is rendered as a provisional form contingent on the use of the learner-subject rather than as a autonomous categorical edifice. That provisional form is made from the "simultaneous interactive involvement of multiple, wide-application conceptual structures, each of which is individually complex." (Spiro, et al., 1991a, p. 25) These conceptual structures interact in countless ways depending on the variables of a given situation. The role of the learner-subject is to construct and reconstruct the knowledge-object: organize and reorganize its conceptual structures to meet the demands of a particular situation. The representation of the knowledge, then, is hardly authoritative and certainly not autonomous, but rather, conditional and dynamic, useful and flexible.

Architecture is an ill-structured knowledge domain that has well-structured areas, such as structures, mechanical and material systems, codes and regulation to name a few. However, these areas are only well-structured as stand-alone sub-disciplines, sort to speak. When brought to bear on a particular design project, these areas become ill-structured as there is no single procedure that dictates their universal use in any and every project. Instead, their application is negotiated and coordinated with other areas of architecture's domain. Each area of architecture's domain, from site to structure or concept to detail, is intricately interwoven to meet the demands of a particular project and then rewoven to meet the demands of another.

Cognitive Flexibility Theory

This weak subject/object relationship causes difficulty in knowledge acquisition and application because the contingent nature of the knowledge-object resists broad unqualified statements. There is typically no "always" or "at all times" in ill-structured knowledge domains. Instead, there unusually are caveats that limit the jurisdiction and authority of any statement. Also, the eccentric, situation specific variables and irregularities of any context in which the knowledge will be used resist the application of procedural techniques. A typical response to this difficulty is to suppress eccentricity and render the knowledge domain as well-structured (Coulson, 1986). Spiro argues that such oversimplification instills an inappropriate cognitive model that is difficult to latter supplant. Instead, an alternate representation of knowledge is needed to foster a more pliable habit of thought that facilitates knowledge transfer between different or unique situations.

Spiro's Cognitive Flexibility Theory (CFT) addresses two needs that arise in ill-structured domains: more pliable habits of thought and a concomitant representation of knowledge. CFT strives to develop in students the intellectual skills and dispositions to "represent knowledge from different conceptual and case perspectives and then, when the knowledge must later be used, the ability to construct from those different conceptual and case representations a knowledge ensemble tailored to the needs of the understanding or problem-solving situation at hand" (Spiro, et al., 1992, p. 58). According to CFT, these skills and dispositions are as much, if not more, a product of the form as the content of the knowledge. In other words, the formal characteristics of the knowledge-object and its associated relationship to the learner-subject has a significant influence on the character of the cognitive structures created and determines to a great extent how flexibly that knowledge will be applied. CFT, then, is fundamentally *form* based rather than *content* based. CFT asks for changes in knowledge representation – in the formal qualities of the knowledge-object - not the knowledge content. By redressing the form of knowledge, CFT acknowledges and takes advantage of the weak subject/object relationship in ill-structured domain. For example, with CFT, Rand proposes the use of hypertext to make evident the content's interconnectedness of content. (Spiro, 1990, p.172) Hypertext technology resists the hierarchical and consecutive ordering of the well-structured knowledge-object; favoring instead multiple pathways more indicative of the complex knowledge use. The resultant knowledge-

object is distinctly different from that found in well-structured domains: it is one in which the learner-subject is an active architect of the knowledge-object and the content is pliable material available for the making.

CFT is especially useful in the context of novice or introductory learning where there is a tendency to oversimplify and reduce the complexity of ill-structured domains. These contexts are particularly interesting because there is some justification for simplification. As William Perry's seminal scheme shows, typical students enter college with some form of "duelist" view of knowledge. (Perry, 1990, p.31) Such a view suits the strong subject-object relationship of well-structured knowledge domains: knowledge resides outside the learner as an authoritative autonomous object that clearly defines right from wrong and true from false. Learners such as these are uncomfortable with the inconsistency of ill-structured domains and are easily overwhelmed and discouraged by its complexity, especially when revealed too quickly. Therefore, reducing complexity or simplifying the knowledge-object is reasonable, perhaps even necessary. It is worth noting that non-structured knowledge is not an option here. Knowledge acquisition and application must be structured in some way; otherwise it is just raw, unorganized data. The question, then, concerns the qualities and characteristics of that structure or, put more specifically and in regards to introductory college learning, how does one craft a knowledge-object that at once instills a cognitive model appropriate to ill-structured domains and initiates a more advanced view of knowledge while not intimidating and discouraging to the introductory learner?

Complex Narrative Structuring as Model

This paper proposes to use the postmodern literary technique of complex narrative structuring of the type found in novels such as John Barth's *Giles Goat Boy* and Mark Z. Danielewski *House of Leaves* as a model for such a knowledge-object; specifically, the form of the introductory textbook as a representation of knowledge appropriate to an ill-structured knowledge domain. These novels share a narrative architecture that blurs the traditionally strong boundary between subject and object (reader and narrative). In doing so, they diminish the authority of authorship, undermine the autonomy of the narrative-object and reposition the reader relative to the object. They do so by surreptitiously extending the boundary of the narrative into those parts of a novel that traditionally are not, such as the publisher's disclaimer and author's letter (as in *Giles Goat-Boy*) or the footnotes and the general form of an academic text (as in *House of Leaves*).

The publisher's disclaimer and author's letter in *Giles Goat-Boy* allege that the book is, in fact, not authored by John Barths but was delivered to him by a man named John Giles or perhaps Giles John (Barths is supposable unsure), who, in turn, claims that the story was written by a computer as a work of non-fiction. The publisher's disclaimer also includes letters from several editors of the publishing house. Some of these editors advocate for the book while others against it. All, however, are affected by it. One editor, for instance, revises his life's work, as does Barths, based on the Giles tale. The *House of Leaves* follows suit. It takes the form of an academic essay describing and commenting on a documentary film. The essay is allegedly authored by a blind man but was found and brought to the publisher by an unfortunate (as it turns out) character named Traut. The footnotes and preface of *House of Leaves* includes Traut's ramblings as well as editor's notes claiming to be unable to authenticate many of the sources cited in the academic essay. Like the editors of *Giles Goat-boy*, Traut is affected by the documentary film, as was the blind man. Both haunted by a creature from the documentary.

This occupation of traditionally non-narrative elements frames the narrative-object in such a way that its relationship to reality is uncertain. As Peter Eisenman said when referring to the novel, confusion is created "as to who the author is... [or]... what is the object? ...there is some doubt in our minds about this structure that has been created. We question reality." The reality

in question is not whether fiction is being read – a book about a goat-boy could hardly be taken as true – rather questioned is the location and nature of the boundary separating fiction and non-fiction, subject and object, truth and non-truth. This boundary, as found in the traditional narrative-object, is clear and predictable. This clarity and predictability places the reader in a passive and detached relationship to the traditional narrative-object. This not to say that the reader is not engaged when reading the narrative-object, but that the reader does not have to work to understand the form of the narrative-object. By blurring the boundary between subject and object, *Giles Goat-Boy* and *House of Leaves* requires the reader must reconsider that form and with it the reader's role and the status of both the object and its authorship.

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