Information Architecture in the Age of Complexity
by Andrea Resmini

EDITOR’S SUMMARY
While the distinction between complex and complicated may seem negligible, the key is understanding that complexity applies to a system that cannot be simulated, modeled and predicted. Website architecture within the Internet environment may be just such a system with evolving underlying technologies and demands, and handling their complexity is the information architect’s challenge. Complexity is added by the undercurrent of social, cultural and economic influences, infusing pervasive layers of extra meaning, often indirect and detached from the immediate content in a postmodern sense. Progress has moved to postdigital, where the focus is on the user, not the technology, generating pseudo-modern cultural products dependent on user interaction. The result is a new need for place and meaning that supports the user’s cross-channel experience. Resulting websites, still complex, may elude modeling, but with new meanings and structures emerging from a new style of usage, they can still be designed.

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Information Architecture

In my undergraduate and graduate courses, a sizable fraction of the time is spent working on hands-on projects, and in the past two years these projects have largely become cross-channel projects [1]. We tackle transportation, healthcare, student services, media-oriented services, all of them from an ecological perspective where the single device, channel or platform plays second violin to the overall user experience.

The initial reaction of many of my students to the one-page project briefs I hand over is a plain and simple, “This is way too complex.” I usually spend a little time there being the pedant old guy in the room and explaining that there is a difference between complex and complicated. I write the two words on the whiteboard (how is that for pedantry?), and proceed to lecture them on the fact that what they are actually trying to tell me is that the project brief they have in their hands seems very complicated to them – complicated as in “not easy to understand or analyze.” Which is to be expected, of course. And yes, I argue, you can find similar definitions for complex in the dictionary, but the word has now so many attachments to the theory of complexity, we cannot really use it technically that way anymore. So, what does complex mean, Mr. Pedant? Well, I’ll tell you what I tell my students: I don’t know.

The Complicatedness of Complexity
In his discussion of Robert Rosen’s [2] definition of complexity, Tim Gwinn offers the following example of what complex means in Rosen’s terms:

Consider the categorization of certain highway vehicles as “oversized.” This means that they exceed some defined legal dimensional (size) limit. (...) Vehicles that are not categorized as oversized are constrained to specific well-defined limits of certain size characteristics. Conversely, a vehicle that has been categorized as “oversized” may exceed the legal limit by a little or a lot, and may do so in one or more size characteristics. [3]
In what sense is this example complex? Are we just trying to dodge a curveball here? Well, no. It just happens that there is more to that “I don’t know” above than might be apparent at first. Logic is our friend here, and Rosen is just what we need. What is he trying to tell us?

First of all, the example reminds us that complexity is not an intrinsic characteristic, but rather that it works by comparison. Here, we can easily see how one set is quickly singled out: all vehicles under certain size-limits are part of one grouping. This group will also be a fairly homogeneous set, at least as far as size goes.

But what about the remaining vehicles – the other set? Its boundaries are overly fuzzy, and it is evident that exceeding the limits by a few inches in length is totally different from exceeding the limits a couple of yards or miles in all directions. If we assume the upper limit to be 18 feet in length, anything from a car to a battle cruiser to a generation ship might be in that second set. In terms of categorization, this set is still a group, but it only works in comparison to the other one. It’s a complex set, not easily known.

In theoretical terms, this comparison can be translated into one between a real-world system and its model. From that comparison, Rosen works out a working, negative definition of complex. A system is “simple if all its models are simulable. A system that is not simple, and that accordingly must have a nonsimulable model, is complex.” [2, p. 292]

If modeling is the act of establishing congruence between the elements and entailment structures of two systems, the object and its model, complexity is simply what belies modeling. Behavior in a simple model (and hence in a simple system) can always be correctly predicted: not so in complex systems [4].

Phenomenological descriptions of complexity, those that deduce general laws from what’s observable, offer remarkably similar takes. For Neil Johnson a necessary attribute of complex systems is the presence of many interacting parts or agents, with no general rule for how many is “many” [5]. Again, another way of “I don’t know”-ing without saying it directly, but one which takes us directly to the role of information architecture in all this.

The Information Architecture Lens

While Morville & Rosenfeld could argue in 1998 that the web was the unifying factor for many different technologies and wildly diverse types of content [6], we cannot do so anymore. The web is but one piece of a larger mechanism now: our perspective moves away from the single artifact and considers the ecology, this complex, information-based, distributed beast being disseminated, split up and reconnected over an arbitrary number of different interacting channels by an ever increasing number of actors.

Information has gone mobile and has bled into physical space. Handling complexity is now the relevant task. The role of information architecture is to answer this need.

There is a shift here from Rosenfeld and Morville’s concept of merging aesthetics and mechanics to design websites [6] to R. S. Wurman’s making the complex understandable [7]. The two goals are not mutually exclusive, of course, and I suppose it would be hard to tackle the second without tackling the first.

Regardless, in this perspective mobile itself is not the revolution: it’s an enabler. The revolution is what mobile access to information is allowing us to do, how it allows the digital to seep into physical space, how it turns receivers into writers, constantly weaving new subjective narratives.

This new power is what cross-channel is all about, and there is no way we can wish away the complexity this new world brings along. Even those who still fail to see why these new developments should be relevant, maybe because “my clients don’t do cross-channel,” are coming along for the ride. The world has moved on. So have we; so has information architecture. Handling complexity is now the relevant task.

It’s not the website or the single artifact: it’s the system, the architecture.
This environment is where information architecture really comes into its own, in the structuring of the pervasive layer of meaning that spans across channels [8]. So, yes, you may find that your clients are not considering the social, cultural and economic changes that come with being constantly jacked-in to what, to all effects, has become cyberspace. Nonetheless, these changes already affect how we perceive, research and practice what we do.

Postmodern, Pseudo-modern, Postdigital

To fully appreciate the pervasive layer of meaning, it’s useful to look at changes in what we perceive. Let’s start by looking at the postmodern condition.

In Cinema in the Digital Age [9], Nicholas Rombes emphasizes how parodies and citations are now most often known and learned before, or instead of, the originals they refer to. If you or your kids have seen the Shrek movies but your direct knowledge of the Brothers Grimm’s fairy tales is somewhat lacking, you know what he means. And this reversal is by no means limited to “that really ancient stuff,” as my 12-year-old daughter trenchantly addresses anything before 2006. If you are a Quentin Tarantino fan and loved the dance competition scene, chances are you don’t know how that was a direct homage to Jean-Luc Godard’s Bande à part’s [10] own dance scene. Secondary narratives turn primary, create new story arcs and produce new meanings: Pulp Fiction is laden with circumstanced references and citations most of us will never grok [11], but we certainly can enjoy Vincent and Jules underworld’s romp.

This evolution is what the postmodern condition is all about: the pastiche, the detachment, the irony. But it is also a world where Twitter, Facebook or Path have no place. In The Death of Postmodernism and Beyond, Alan Kirby writes

Somewhere in the late 1990s or early 2000s, the emergence of new technologies re-structured, violently and forever, the nature of the author, the reader and the text, and the relationships between them. [12]

As a result, as much as postmodernism expressed continuity with modernism and even Romanticism by “fetishising” the author, current culture “fetishises the recipient of the text to the degree that they become a partial or whole author of it.”

This new direction is a full speed 180-degree turn, handbrake and all, and it goes hand in hand with the “death” of the designer in the most radical user-centered practices. It also illuminates the other side of the coin, the more technology-centered idea of this being a postdigital world, a world where the focus is shifting away from computing per se. In his 1998 seminal piece for Wired titled “Beyond Digital,” Nicholas Negroponte wrote

Is digital destined for the same banality? Certainly. Its literal form, the technology, is already beginning to be taken for granted, and its connotation will become tomorrow’s commercial and cultural compost for new ideas. Like air and drinking water, being digital will be noticed only by its absence, not its presence. [13]

Postmodernism is eminently an old media phenomenon. Books, films, the television screen. Culture, says Kirby, is a “spectacle before which the individual (sits) powerless.” Now we have pseudo-modernism, where

…content and dynamics are invented or directed by the participating viewer or listener (although these latter terms, with their passivity and emphasis on reception, are obsolete: whatever a telephoning Big Brother voter or a telephoning 6-0-6 football fan are doing, they are not simply viewing or listening.) [12].

As much as user-centered artifacts or current social media, pseudo-modern cultural products “cannot and do not exist unless the individual intervenes physically in them.”

Designing for Complexity

Strangely enough, Kirby clearly sees the Internet, the web, as the one bounded artifact where pseudo-modernism is better represented. Only, there is no such thing as a separate web. Information has gone mobile and has bled into physical space: cross-channel ecology is where pseudo-modernism meets postdigital [14], producing a new need for place and meaning.

The role of information architecture is to answer this need.

The closest we get to this important recognition is in the outline to an
article on *The Guardian* online, “Welcome to the post-digital world,” written by Simon Jenkins [15], which rolls out as a faint echo to the Institute for the Future take on cyberspace [16] but brings the idea of connected complexity up front: “The web is not a destination in itself but a route map to somewhere real – we’re coming together again.”

So if this is the role of information architecture, designing cross-channel user experiences in this postdigital conundrum of complexity we find ourselves in, why are we reframing [8] it more strictly (or broadly, depending on your point of view) as a design discipline? Or, as Dan Klyn argues, an architectural practice? [17]

I’ll tell you what I tell my students: because this is design of information spaces as architectures, places “for human beings to live, work, and play in.” [18] We can see it more clearly now that complexity has forced us out of the world wide web, a “simpler” world where the lens provided by library science or graphic design seemed to be enough.

With Europeans averaging 25.9 hours per week online, including an incredible 39 hours for the United Kingdom, in 2012 and numbers growing fast [19], cyberspace time is quickly approximating the amount of time we spend at the workplace. We normally do not “own” these new “digital dwellings,” in Andrew Hinton’s words, as we used to “own” the website or the employer “owns” the office: they are the product of complexity and emergence, with users pushing “toward spontaneity, ephemeral or temporary structures of meaning, and constant change.” [20]

While they cannot be modeled, they definitely should be designed and weave their stories. In time we, the users, will create our own architectures of meaning out of them, as we have been doing since the times of cave paintings. Old structures will be changed, new structures will be created, and different meanings will emerge. Complex, yes. Complicated? Not necessarily.

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**Resources Mentioned in the Article**


Resources continued on next page
Resources Mentioned in the Article, cont.


[10] A rather low-quality TV-capture can be seen here: www.youtube.com/watch?v=47XH-h_hMME.


