Architectures of Information

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Andrea Resmini

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A New Spirit

- 1 The Swiss-French architect Charles-Édouard Jeanneret, Le Corbusier, wrote “*Vers une architecture*” in 1923. The book, one of the most successful and controversial pamphlet in the history of architecture and the manifesto of Modernism, was a collection of essays and articles coauthored with purist painter Amédée Ozenfant, most of them originally published on their cubist periodical *L'Esprit nouveau*. It was a passionate invite to architects to embrace the machine-inspired beauty of modernity and turn it into a novel idea of architecture. Only by leaving palaces¹ behind and becoming “a mirror of the times” would architecture fulfill its role, the creation of a “human milieu” (Le Corbusier, 2007, *Introduction*).
- 2 According to Le Corbusier, architecture was stagnating and perpetuating ideals stemming from a “cursed enslavement to the past”, turning “eyes that do not see” to the industrial allure of modern life. While social and economic structures were being redesigned by machines, architects were “lost in the sterile pochés of their plans”, suffocating in the routine of “(h)ouses (built) like tabernacles”.
- 3 Le Corbusier saw beauty in the calculations of “(a)nonymous engineers, greasy mechanics”: mathematical, pure, and natural. Airplanes, ocean liners, bridges, grain silos: constant praise of engineering work flows through the book². These, Le Corbusier says, are architectonic examples of beauty architects are incapable of producing. Hence, they do not see the house as the machine for living in it is supposed to be, producing stiff, out-of-time bourgeois mansions instead of giving their clients what they need: “(b)aths, sun, hot water, cold water, controlled temperature, food conservation, hygiene, beauty through proportion.” (Le Corbusier, *ibid.*, pp. 151-156).
- 4 The book is not only an endless string of invectives: with its “three reminders” to architects, surface, volume, an increased attention to the plan as the originator of space,

and with a new attention accorded to regulating lines, light, and order, it clearly spells out the elements of Modernist poetic. And yet, after ninety years, the single most powerful statement that still emerges clearly from “*Vers une Architecture*” is that “(u)n esprit nouveau souffle aujourd’hui”, “(t)here exists a new spirit”, and that this spirit was a spirit of change.

Information Architecture Today

- 5 When dealing with a contemporary assessment of information architecture (IA) we must be clear that we are still building up that necessary body of knowledge the field has been discussing for more than ten years (Haverty, 2002; Resmini et al, 2009). The Journal of Information Architecture³, founded 2009, has surely helped, but academia is slow in the uptake (Dade-Robertson, 2011). The surge of scientific interest that IA enjoyed in the late 1990s and early 2000s was mostly coming from the area of library and information science, from which Lou Rosenfeld and Peter Morville originally hailed. When crisis hit in the mid 2000s, no solid, widely shared foundations to promote IA in its own research space were yet visible or exploitable.
- 6 As a result, a rather large fraction of the current scientific literature on IA is either produced within the boundaries of other disciplines, with all negative consequences that usually carries along in the heavily compartmentalized academic discourse, or sadly out of touch with much of what has happened in the practice in the past 6-7 years⁴ and with the new, multi-disciplinary framings coming from architecture (Norberg-Schultz, 1971; Ferschlin & Gramelhofer, 2004), urban planning (Lynch, 1960; Jacobs, 1992), cognitive science (Johnson, 1987; Dourish, 2004), design and systems thinking (Meadows, 2008), new media (Norman & Lucas, 2000; Manovich, 2001; Tryon, 2009) that are reshaping the theory of IA. While happening on the borders of academic territory, conversations about labeling, websites, and hierarchies have been replaced by conversations around sense-making, place-making, design, architecture, crossmedia, and embodied cognition (Hinton, 2009; Klyn, 2012; Fisher et al, 2012).
- 7 I maintain the reason for this change in focus and scope rests on the paradigm shift that in the 2000s took us from Postmodern to Pseudo-modern (Kirby, 2012), and on radically altered systemic circumstances: technological, such as the general availability of broadband and mobile broadband in most of the world (Lomas, 2012; ComScoreData, 2012); economic, such as the creation of large ubiquitous service ecosystems (Norman, 2009) and in the transfer of much control into the hands of consumers-producers (Jenkins, 2006; Kirby, 2012); social, as people adopt, use and transform these systems (Shirky, 2008) and their meanings to serve ever-changing objectives, thus reinforcing the mechanism (Sterling, 2005).

Agents of Change

- 8 Information has gone fully mobile, and constant access through both personal mobile devices and public ambient systems has drastically changed the patterns of consumption and production established in the 90s. Smartphones first and tablets second have especially transformed our relationships with information (Mueller, H., Gove, J. L. & Webb J. S., 2012).

- 9 Information is also being embedded in physical space, augmenting our in-place experience of a certain location (UrbanFlow, Layar, Shadow Cities), providing us with forecasting or planning abilities (GPS, Google Maps), or adding a variety of in-context social capabilities through map-like applications (Path, FourSquare, StreetView). We have unexpectedly created an uneven but very real version of what we believed “cyberspace” ought to be (Institute for the Future, 2009). Rather than jacking-in⁵ via cortex-level implants or through sophisticated cyborg apparatuses, people in 2013 can access “cyberspace” anytime and for any purpose via run-of-the-mill consumer electronics, from the privacy of their homes, in the quiet of a mountain top, and amidst the confusion of airports, bus stations, and crowded streets. The closest we have come so far to mainstream direct bodily augmentation, the recently announced Google Glass, still configure a model where one or many information layers are superimposed over our view of the world, rather than a full-scale sensory replacement.
- 10 It is important to note that mobile itself is not the revolution, but rather an enabling layer that makes the revolution possible and provides new niches of opportunity (Kauffman, 2012). The revolution is in what constant, mobile access to connected and manipulable information allows us to do: how it allows what is digital to modify our use and perception of physical space (Dourish, 2004); how it modifies our sense of place (Tuan, 1977) simultaneously turning distances into semantics (Höök et al, 2003) and reinforcing the very idea of being in-context through the use of geolocation and map-based approaches (Norberg-Schulz, 1971; Hinton, 2009); and finally, how it turns passive receivers into wranglers constantly weaving new subjective narratives (Sterling, 2005) that potentially span all of “cyberspace”.
- 11 The downside of this being “always on” is fragmentation, a general sense of non-belonging, and loss of meaning (de Ugarte, 2012).
- 12 In 1998, in their seminal book *“Information Architecture for the World Wide Web”*, Peter Morville and Lou Rosenfeld could argue that the Web was the unifying factor that could bring together many different technologies and wildly diverse types of content (Rosenfeld & Morville, 1998). This was the context in which classical IA (Resmini & Rosati, 2012a) operated: even if computers had ceased to be cumbersome presences, computing still remained an activity with precise boundaries in space and time: usually at a desk, either in the home or the office. Once tasks were accomplished (browsing websites, searching for information, sending or receiving email, writing documents, playing), the computer was usually switched off. When people moved away from the desk or room, computing did not follow.
- 13 This is also somewhat reflected in the oxymoronic, disconnected nature of the World Wide Web as it comes out of Rosenfeld and Morville’s book: while they certainly stress the importance of hypertextuality, it is immediately apparent, especially in the 1998 edition, that a “website” is an artifact that lives a rather self-contained existence and that is designed in isolation. This is of course no theoretical or practical shortcoming: this was the reality of the design of online communication in the late 90s.
- 14 But as much as for the architects of the 1920s, things have changed for information architects. If “(o)nce there was a time and place for everything” (Mitchell, 2003, p. 237), in 2013 the Internet has become so pervasive it is both much more than a medium, and one piece in a larger mechanism. Today “things are increasingly smeared across multiple sites and moments in complex and often indeterminate ways” (Mitchell, *ibid.*) and focus has

moved necessarily away from the single artifact to consider the product or service ecosystem (Norman, 2009; Resmini & Rosati, 2009) as a complex, cross-channel (Resmini, 2012) information-based beast. Some parts of it might not be online, and some might not even be digital at all.

- 15 This is a first formidable push towards change. Constantly reshaped and reconnected over an arbitrary number of different interacting channels by an ever increasing amount of actors, ecosystems force us out of the illusion of the Web as a “simpler” world, where the lenses provided by library science or graphic design seemed to be enough (Dillon, 2002). The question then is: under radically altered conditions, has information architecture really changed? If yes, how?
- 16 It certainly has. The practice has certainly changed. When describing his work with American department store giant Macy’s, Peter Morville clearly stressed the value of going beyond the simple challenge offered by the website and clearly connected the different strategies across touch-points and channels, explicitly structuring his IA to be systemic (Morville, 2012). A similar approach can be found in Christian Crumlish’s work at CloudOn (Crumlish, 2013) and in Andy Fitzgerald’s mobile projects at Deloitte Digital (Fitzgerald, 2013). Luca Rosati at the Istituto degli Innocenti in Florence, Italy, and Jason Hobbs at the Johannesburg Art Gallery in Johannesburg, South Africa, have also applied an IA approach to solve cross-channel design issues and to handle indeterminate problems. These examples all vastly exceed in scope and complexity the navigation, labeling and structuring model of classical IA (Rosenfeld & Morville, 1998).
- 17 As for how, this being channel- or medium-specific is probably the largest difference between contemporary IA and classical IA. This is not a difference in nature (Resmini et al, 2012). Rather, it reflects the primary attention to the working practice of classical IA: instead of focusing on the sense-making framing that Wurman originally formulated (Wurman, 1997), information architects chose to define their discipline through the artifacts of the practice. In the specific parlance of the late 1990s, websites. Through the years, what was a perfectly acceptable way to frame a practical problem (what do you do?) became a paralyzing identification between a discipline in the making and some of its deliverables, methods, or tools (you are what you do). IA is labeling. IA is card sorting. IA is wireframes. Boundaries that were incidental and serendipitous were turned into absolutes⁶.
- 18 This was a predicament that was well reflected in IA academic research, where, if possible, things were even more problematic. In a 2001 article for the Bulletin of the ASIS&T, Andrew Dillon’s perspective was still technically-minded and framed by engineering. Dillon maintained that one of the major limitation of IA at the time was that “computers in their various forms can make demands on users that stretch (their) patience and emotional stability”. The architecture of information spaces was plagued by “random glitches, unpredictable crashes, dead links, incompatible applications” (Dillon, 2001). I doubt we would (or should) consider a (software) crash a specific problem of IA today.
- 19 These premises notwithstanding, Dillon anticipated the necessity for an increased “awareness of human need and contextual resources”, with IA countering “the onslaught of technical determinism that pervades the information technology world”. Most importantly, he concluded that “(w)hile the use of the term architecture has both its supporters and its critics, I feel it really can be justified in the information domain and, more importantly, used for inspiration and insight” (Dillon, 2001).

- 20 Sadly, academia has still to catch up. Most of the research in IA still dwells within those very walls (Burford, 2011). With the benefit of hindsight, we can certainly confirm that the lack of any structured progression between 2005 and 2009 has exacted a toll. Opportunities have been lost (Arbogast, 2006) that the publication of the Journal of Information Architecture has only partially started to address. As a community of practice (Hobbs et al, 2010), the IA community has had a limited ability to store and disseminate knowledge without confusing it with opinions and circular discussions.
- 21 In this scenario, without a solid body of knowledge to refer to and with a thousand sketchy individual inductive processes that nobody could prove right or wrong at disposal (Haverty, 2002), when users suddenly started to be able to create their own categorizations and *de facto* build their own architectures, crisis was inevitable.

A Crisis Explained

- 22 The years of the explosion of the Internet as a mature communication channel are the years in which the shift from postmodernism to pseudo-modernism (de Ugarte, 2012; Kirby, 2012) becomes manifest. Unsurprisingly, they are also the years when IA faces its crisis.
- 23 When in 2005 Peter Morville published his second book, *“Ambient Findability”*, he was not only widening, if somehow diluting, the boundaries of IA, but he was also riding a long wave of crisis that would solidly hit the practice between 2005 and 2007, and that had to do with a loss of control, centrality, and certainty brought along by the coming of user-generated content.
- 24 Morville’s ambivalent take on the main “offender”, tagging and folksonomies (Quintarelli, 2005; Vander Wal, 2007), is in plain sight all through the book. “Forget about ontologies and taxonomies. Folksonomies are the future. As David Weinberger puts it, ‘The old way creates a tree. The new rakes leaves together’” (Morville, 2005, p. 139). Not only this reads like an insult in disguise⁸, but Morville elaborates a few lines below that the “metaphor is perfect”, because leaves in a pile, “(t)hey rot”, and beautiful trees of all shapes and colors will feed on them and grow. He then concludes that when it comes to findability, which in the context of the book is often a placeholder for IA, “(folksonomies’) inability to handle equivalence, hierarchy, and other semantic relationships causes them to fail miserably at any significant scale” (Morville, *ibid.*, p. 139).
- 25 This was a view that many held within the community of practice, not just Morville. From a cultural standpoint, the shift from postmodernism to pseudo-modernism involves a change in authorship and participation models in which much control is lost.
- 26 For information architects, still rooted in a modernist framing of absolutes, this was an unexpected turn of events and a blow that shook quite a few walls. Much like the architects Le Corbusier was addressing in the 1920s, they were incapable to see the direction this new wind was blowing. And while folksonomies were a prime manifestation of the crisis within the domain, they were also just a symptom of the larger condition that accompanied the paradigm shift. More radical changes were in store than free tagging.

From Hip-hop to Reality TV

- 27 When American DJ and producer Afrika Bambaataa released his single “Planet Rock” in 1982, featuring a distinctive and catchy sampling from European avantgarde-pop group Kraftwerk, he had a hit single in his hands, but he also had an artifact that explained the new irreverent and recombinatory logic of Postmodern perfectly. The whole hip hop music scene of the early 1980s is a very good example of the central role played by citationism, intertextuality, irony, and pastiche within early postmodernism (Bertens, 1994; McGuigan, 2006).
- 28 Very much alike, the deluge of reality tv shows and their cultural derivatives⁹ is an expression of the rapidly decreasing centrality assigned to the Author that marks Pseudo-modern. 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” (Kirby, 2012)¹⁰: while Postmodern narrative, with its over-conscious sense of self and history and often overused blending of styles, times, genres, still remains an authorial affair¹¹, Pseudo-modern “fetishes the recipient of the text to the degree that they become a partial or whole author of it” (Kirby, 2012).
- 29 A sense of detachment is also another primary aspect of Postmodern that Pseudo-modern rejects, favoring a visceral, raw, uncut, first-person immersions within what appears to be, thanks to careful directing and editing, the unfolding stream of events¹². Detachment is a consequence of acute self-consciousness: David Mitchell’s “*Cloud Atlas*”, or Umberto Eco’s “*The Name of the Rose*” resort to playing with layers of narrative into narrative to regain a pristine voice¹³: most often, citations or parodies provide a simpler and generally very successful way to achieve the same effect (Rombes, 2009). The “*Shrek*” movie franchise is a good example: detachment, irony and re-composition (de Ugarte, 2012)¹⁴ are central, necessary elements of the storytelling mechanism that fuels the green ogre’s adventures. At the same time, it is the “loops” we already know from a thousand other retellings that make the story an interesting read, albeit a very different one from that of the tradition.
- 30 From this specific point of view, Postmodern is irremediably an old media phenomenon concerned with books, films, music, and the television screen, fundamentally addressing culture as a “spectacle before which the individual (sits) powerless” (Kirby, 2012). Postmodernism paints a picture where Twitter, Facebook, Instagram, Path, and any service that relies on user co-production (Sterling, 2005) have no place. Pseudo-modern cultural products, on the other hand, “cannot and do not exist unless the individual intervenes physically in them” (Kirby, 2012)¹⁵.
- 31 Pseudo-modernist narratives jump this chasm. In them, just like on Facebook, “content and dynamics are invented or directed by the participating viewer or listener” (Kirby, 2012). But the nomenclature is off, as these participants are not simply viewing and listening, or browsing through a website, they are actively contributing to the creation of the final artifact. These are the “wranglers” Sterling was talking about (2005), co-producers of content, and a very different “user” from those IA was addressing in the early years of its Web-related heyday¹⁶.
- 32 So it does not come as a surprise that IA as a construct faced a thorough moment of crisis with this paradigm shift. User-generated content and structures such as folksonomies,

pseudo-modernist artifacts, challenged the postmodernist framing that the generation of the 1990s was applying, unaware. The very idea of IA was questioned and its death, due to impeding uselessness, proclaimed (Porter, 2006).

- 33 The first tentative steps to fully embrace the complexity of pseudo-modern came with those who tried to recompose the fracture between the classical top-down taxonomic vision and the new bottom-up emergent structures (Campbell & Fast, 2006; Quintarelli et al, 2007). No single truth was to be attained in the process, no supreme order identifiable through the “calculations” of engineers, but rather a multiplicity of voices that prefigure many possible orders. In the age of Facebook, there can be no “unique” homepage or timeline, as we are all constantly remediating our sources and producing our own tailored version of services, conversations, and reality. This is precisely why IA, in its broader a-specific “sense-making” reframing, becomes central for managing the changes introduced by the paradigm shift¹⁷.
- 34 The primary artifact of IA, unlike other fields of design, is abstract: it is this “sense-making” – the arrangement and organization of the information structure that in its truest form exist primarily as the actors’ conceptual model. Physical elements of the IA such as navigation, or search, are akin to signs in a way-finding system: parts that participate of the whole, but that even when fully collected still fall short of “being” the whole¹⁸. The design artifact here is the specific journeys, the specific structures, that the actors in the system structure for themselves, as they orientate through a service or series of connected services. It is a process of sense-making and place-making in digital and physical space, where the transience of artifacts and their continual flow create states of uncertainty and imbalance for the actors in the system that need to be counteracted to prevent a degradation of the user experience¹⁹.
- 35 This is a logical and pragmatic response to the intellectual dilemmas brought forth by the paradigm shift: in true pseudo-modernist fashion, individual perspectives are valuable not because everything is valuable, but because they embody possible individual resolutions that can be either rendered resilient through persistence or proven to be transient, improving both the process and the artifacts via a bottom-up approach that epistemologically prioritizes the results over the creators, the tools, and the deliverables.
- 36 The decoupling from the traditional artifacts of the practice introduces two important consequences in contemporary IA. The first one is a conceptual shift towards indeterminacy, complexity, and abstract thinking (Fenn & Hobbs, 2012); the second one, brought along by the increasingly hybrid digital / physical nature of cross-channel information spaces, is a reinforced attention to the creation of a sense of place (Cresswell, 2004; Höök et al, 2003; Resmini & Rosati, 2011) and of meaning (Norman & Lucas, 2000; Fisher et al, 2012).

Artifacts

- 37 To better illustrate the change, I will briefly discuss three interventions: Jason Hobbs’ work with the Johannesburg Art Gallery in Johannesburg, South Africa; Luca Rosati’s work at the Istituto degli Innocenti in Florence, Italy; and my work within the ISET²⁰ project for the transportation system in Gothenburg, Sweden. Their diversity in object, scope and approach perfectly illustrates the multiple facets of contemporary IA.

The Johannesburg Art Gallery

- 38 Jason Hobbs' work for the Johannesburg Art Gallery²¹ (JAG) in Johannesburg, South Africa, is exemplary of how IA can be used to approach wicked problems. The JAG collocation in downtown Johannesburg, close to Joubert Park and in a particularly troubled and unsafe neighborhood, has made access and visibility an issue, and turned these into a systemic shortage of funding, attention, visitors, and resources.
- 39 Asked to provide solutions that could make JAG a viable proposition that could engage local, national, and international support again, Hobbs framed the problem space as part of the larger problems grounded in the social reality of Johannesburg, one that the traditional siloed approach offered by design (graphic, visual, industrial, architectural, digital) could not solve. Local, patchy interventions were just weakening any chance of producing positive change (Hobbs, 2013). Systemic issues called for a systemic and cross-channel approach, as defining the problem and its boundaries is also defining its solutions (Meadows, 2008).

Figure 1: The Johannesburg Art Gallery, floor plan

- 40 IA provided the foundational basis for understanding the JAG ecosystem, under the assumption that the team operated within a multi-disciplinary framing, and that results configured a vast amount of data the only way to make sense of was through an emergent process of sense-making and meaning-making.
- 41 Throughout the course of the project, Hobbs found himself constantly pushing away from the idea that the global IA that was taking shape resulted necessarily in deliverables such as wireframes, site maps, or taxonomies. According to Hobbs, "the IA deliverable (we were creating) was the synthetic resolution of the problem ecology as expressed in

deliverables that strived to describe it” (Hobbs, 2013). Similarly, Hobbs “fought the idea that the design solution would be a website, or an addition to the gallery. (...) (T)he design solution is the resolution of the problem. The design *artifacts* can be either a website or a new room”. To Hobbs, this is also the key for civil and ethic engagement through IA, and a key reframing of its meaning. Rather than solely deriving its value and purpose from the delivery of a measurable business outcome to stakeholders, IA derives relevance from making sense of abstract complex problems. This, then, can be turned into business, cultural, or artistic value.

Figure 2: The Johannesburg Art Gallery website

Figure 3: The Johannesburg Art Gallery, entrance from Joubert Park

The Istituto degli Innocenti

- 42 Luca Rosati's work at the Istituto degli Innocenti, a an institution founded in the mid-15th century for the care of children and still active in Florence, Italy, follows in the steps of the theory of pervasive IA for cross-channel user experiences exposed in Resmini & Rosati (2011a). Rosati adopted a systemic approach to weave a number of separated and largely juxtaposed resources belonging to the Istituto into a cohesive whole through consistency and correlation.

Figure 4: The Istituto degli Innocenti (Rosati, 2012)

- 43 The Innocenti hosts the National Center for Analysis and Documentation on Childhood and Adolescence, a library, a museum, and the archives of the Ospedale degli Innocenti. These structures have always performed as autonomous, unrelated elements pursuing different strategies with different means, both online and offline. Rosati, while respecting their individual goals and specificity, set out to establish a different, holistic model that could produce a better, less fragmented user experience for both staff and visitors (Rosati, 2012).
- 44 Rosati suggested a systemic approach and the adoption of the thesaurus originally designed for the archives in the late 1990s as the foundational layer to homogenize the language used throughout the various channels. The thesaurus became the a-specific ordering principle that could be expanded to all touch-points in the system, breaking the silo effect and effectively transforming any visit, irrespective of its starting point, in a possible exploration of a multitude of personal paths within the ecosystem of the Istituto.

Figure 5: Individual elements weaved into a pervasive strategy (Rosati, 2012)

- 45 As Rosati states, “the goal was to show how truly diverse channels and contexts could be successfully correlated into a working ecosystem that relies on a common underlying IA. At the Istituto, the IA is the one element that creates experiential continuity, simultaneously reinforcing the brand and the global goals of the institute in both digital and physical space” (Rosati, 2012).

The Personal Travel Manager

- 46 ISET, Innovation for Sustainable Everyday Travel, was a cooperative project between a large number of public and private partners²² in the Gothenburg region, Sweden. Its global goal was to produce a better, co-modal, sustainable traffic and transport environment for the city and its surroundings through digital innovation.

Figure 6: The urban area of Gothenburg in Western Sweden.

- 47 Mid-project, I was tasked with the conceptual refactoring of a multi-purpose mobile travel planner mainly aimed at commuters. The app had been thoughtfully designed on the grounds of a thorough research phase, had been implemented in alpha status, and tested with a smallish group of car commuters living in a medium-to-high income neighborhood. Results were poor and the test group seemed to find no real practical use for it.

Figure 7: One of the high level customer journeys created during refactoring

- 48 Interviews and user data suggested that the primary factors for using one's car instead of relying on public transport were found to be control and risk reduction: co-modal transportation, with its web of collaborating systems (parking lots, bike paths, buses, trains), means an immediate loss of control, and a perceived increased risk of being late or stuck along the way. The uneven way information was distributed along the journey, especially in negative spaces, was a factor, and the app did nothing to ease or solve these issues. It offered complete minute-by-minute start point/ end point planning of itineraries, but commuters, who rarely deviate from routine and are knowledgeable of their surroundings, did not really need that.
- 49 So a decision was taken to make the app a piece of the larger cross-channel strategy involving the other ambient information providers within the urban transportation open ecosystem²³, with the design goal of respecting these other information sources in the system (for example, by not duplicating or second-guessing information available elsewhere), in order to structure an ecology of seamless co-providers. Attention was devoted to maximizing users' choices allowing them to go beyond simple satisficing or a plain bad commuting experience.

Figure 8: The personal travel manager as part of the ecosystem

- 50 The travel planner was turned into an ecosystem-aware information broker, a personal travel manager that integrated seamlessly with the many other touch-points commuters would find along their way when using co-modal transportation. Its role became that of the glue that ties all different pieces of the journey into a consistent experience, always discreetly providing clues on what already happened and anticipating what is going to happen next via proactive warnings, changes in status, or intelligent re-routing in case of disruption. Destinations were known, so request for user input after setup were reduced to a minimum.

Broad and Deep

- 51 While all of these projects and interventions would definitely qualify as IA work even from the standpoint of artifact-centered classical IA since wireframes were sketched out, taxonomies were re-built, interviews were conducted, and solutions were delivered, they clearly describe a completely different take on the field that goes way beyond what the theory and practice considered in the late 1990s and early 2000s. They also show strong ties to design and architectural practices that were definitely not part of the original framing.
- 52 Information architecture has changed. There is plenty to suggest that it has left any diatribe around “big” and “small” behind (Morville, 2000) to go “broad” and “deep”. And while academic research still has not completed the transition, contemporary practice seems to be very well aware of the challenges ahead, and works of IA that tackle complexity and place-making in a postdigital²⁴, pseudo-modernist sense just like Hobb’s and Rosati’s are becoming more and more commonplace.

Ghosts and Machines

- 53 A few final considerations. In Masamune Shirow's cyberpunk manga franchise *Ghost in the Shell*, the protagonist, major Kusanagi, is a cyborg with an attitude. Set in 21st century Japan, the series follows the exploits of an anti-cyberterrorist police section called Public Security Section 9. The title is again a postmodernist homage to Gilbert Ryle's famous critique of the Cartesian dichotomy between body and mind. For the British philosopher, "gross errors" contributed to Descartes' illusionary depiction of the mind as being something separated from the body and that we can discuss in abstract, a "ghost in the machine" (Ryle, 2000). For Ryle, mental processes, the ghost, cannot be investigated in isolation, separated from physical processes, the machine.
- 54 Similarly, the cyborgs of *Ghost in the Shell* are a way for Masamune to explore the thin line between human and non-human: what really makes a human being a human being when the differences between the two are becoming more and more a matter of philosophy rather than physiology? What exactly does "human" mean, when minds can be copied and hacked and the body replaced? In the end, there is no definitive answer, but a strong hint that major Kusanagi, trapped within her own self, is asking the wrong questions. There is no ghost, there is no machine. There is just a different being²⁵.
- 55 This is the crucial change information architecture is going through.
- 56 Information architecture has long been concerned with the *ghost*. A ghost of rationality in which interactions were carried out in precise quantities in the disembodied world behind the screen of a computer, and where the *machine* existed as a separate and inessential entity. A Modernist logic working within a Postmodernist world. The World Wide Web was the niche of opportunity that the Rosenfeld and Morville generation turned into enablement. The results of their contributions have produced new enablements and evolved the ecosystems they have been part of. Computing happens everywhere, all the time, and the world is now our screen (Hinton, 2013). Technological, economic and social modifications have moved us into a different state, one where a pseudo-modernist logic has become the dominant paradigm and where we are fully embodied beings that straddle the digital and the physical world.
- 57 It is a postdigital world, where sense-making walks hand in hand with place-making, and where we are concerned once again with meaning and not with technology. Being digital is just another part of being, and it should not be otherwise. This is information architecture's new niche of opportunity.

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NOTES

1. "Palaces? They were fine for the grand dukes back then" (Le Corbusier, 2007, p. 150).
2. The similarities with the idea that "designers need to be coders" that has been a common tenet within the industry in the past 2-3 years is far from striking. For a more structured overview of the topic of designers / coders, see Shiffman D. (2008). *Learning Processing*. Morgan Kaufmann.
3. *Journal of Information Architecture*. <http://journalofia.org>.
4. With practitioners being requested to design non-website information-based artifacts, either digital or physical. See Bussolon & Potente, 2009, and Rosati, 2012.
5. Even though the expression goes all the way back to Robert Silverberg's 1970 novel "Tower of Glass", William Gibson made it famous in "The Winter Market", a short story in his collection *Burning Chrome* (1986), where he wrote: "She couldn't move, not without that extra skeleton, and it was jacked straight into her brain".
6. In a similar vein, one could maintain that photography is nothing more than films and printouts.
7. Emphasis mine.
8. After all, what is the utility of a pile of leaves apart from reminding information architects of the proverbial haystack in which things get lost forever?
9. The "shaky camera" style employed in movies such as *Cloverfield* (2008) or the "found footage" style of movies such as "Chronicle" (2012) are a clear transposition of reality tv shows styles into filmic language.
10. In earlier articles Kirby refers to the phenomenon as digimodernism. See Kirby, A. (2009). *Digimodernism*. Continuum.
11. Quentin Tarantino's 1994 movie *Pulp Fiction* or Christopher Nolan's 2000 *Memento* are for example prime examples of postmodernist cinema.
12. The "raw and uncut" nature of reality tv being of course a precisely organized and extremely artificial construct, an architected narrative where filmic or tv language is used to turn boring "reality" into gripping storytelling.
13. As Umberto Eco very eloquently noted in his Postscript to the Name of the Rose, "Is it possible to say 'It was a beautiful morning at the end of November' without feeling like Snoopy? But what if I had Snoopy to say it? If, that is, 'It was a beautiful morning ...' were said by someone capable of saying it, because in his day it was still possible, still not shopworn? A mask; that was what I needed."
14. In English as de Ugarte, D. (2012). Pseudo-modernism and the absence of narrative. <http://english.lasindias.com/pseudo-modernism-and-the-absence-of-narrative/> (Translated by S. Herrick).
15. In this perspective, convergence and crossmedia / transmedia (Jenkins, 2006; Iacobacci, 2008; Jenkins, 2011) still delineates a largely industry-driven model of audience involvement where control remains strongly within corporate hands, at least for the tv broadcasting and film industries (Tryon, 2009).
16. It might be worth noting that user-centered design, very often considered a foundational part of information architecture and not one of many possible methodologies that might be employed, involves considering the users as integral to the development process in terms of

needs, wants, and limitations, but says nothing about them as producers or co-producers of the informational content of the final artifact or system.

17. With larger ethical and cultural implications I will not discuss here. For a legal perspective, see Klang, M. (2006). *Disruptive Technologies*. University of Gothenburg. For a contrary perspective on Internet culture, see Carr, N. (2011). *The Shallows*. W. W. Norton & Company.

18. For this definition I'm profoundly indebted to Terence Fenn and Jason Hobbs and our team work on the Architectures of Meaning workshop at Pervasive 2012.

19. This is a characteristic of cross-channel user experiences entirely absent from the more passive, unidirectional crossmedia and transmedia experiences.

20. More on ISET can be found at <http://web.viktoria.se/iset/>. The project ran 2009-2013 and was funded through grants provided by Vinnova, Region Västra Götaland, and the Sjuhärad Association of Local Authorities.

21. Hobbs coordinated a multi-disciplinary team comprising research staff and students from the Faculty of Arts, Design, and Architecture (FADA) at the University of Johannesburg, gallery staff, stakeholders, and marketing and architectural firms. The author of this paper contributed to the proposal for a cross-channel information architecture for the gallery.

22. Including among others the Chalmers University of Technology, the City of Gothenburg's Public Transport Authority, the Swedish Transport Administration, Telenor Sverige AB, the University of Borås, Viktoria Swedish ICT and Västtrafik, the local bus and train company.

23. As opposed to closed ecosystems such as those from Apple or Amazon, where control is in the hands of a regulating entity or company, an open ecosystem sees a rather large number of players participate and compete in offering alternative services and resources. In this case, means of transport and transport-related facilities.

24. The way I intend postdigital here is heavily influenced by my current research on place-making. In the art world where the term originated, it simply identifies a renewed interest for the human side of human-computer relationships. I use it with a Negropontian slant, "the digital revolution is over", and usually imply the added notion that physical and digital are becoming, for all design purposes, indistinguishable. For a better perspective on postdigital, see Pepperell, R. & Punt, M. (2001). *The Postdigital Membrane*. Intellect.

25. In the 1995 anime movie, whose storyline revolves around the Puppet Master, major Kusanagi ultimately bonds with him (?) to produce a new, self-aware sentient being.

ABSTRACTS

The paper maintains that in the epistemological shift from postmodernism to pseudo-modernism, technological, economic, social, and cultural elements of change have thoroughly transformed the scenario in which information architecture operated in the late 1990s and have eroded its channel-specific connotation as a website-only, inductive activity, opening the field up to contributions coming from the theory and practice of design and systems thinking, architecture, cognitive science, cultural studies and new media. The paper argues, through a thorough discussions of causes and effects and selected examples taken from the practice, that contemporary information architecture can be thus framed as a fundamentally multi-disciplinary sense-making cultural construct concerned with the structural integrity of meaning in complex, information-based cross-channel ecosystems.

L'article soutient que, dans le cadre du passage du paradigme postmoderniste au paradigme pseudo-moderniste, l'environnement technologique, économique, social et culturel a profondément modifié l'architecture de l'information depuis les années 1990. D'une approche essentiellement centrée sur la conception de sites web, le champ s'est ouvert à des théories et des pratiques professionnelles intégrant le design, la pensée systémique, l'architecture, les sciences cognitives, les études culturelles et les nouveaux médias. S'appuyant sur des exemples précis, l'article affirme que l'architecture de l'information contemporaine est un cadre fondamentalement multi-disciplinaire qui appréhende les objets culturels dans leur complexité, par rapport à leur sens global et comme des écosystèmes informationnels transmédiés.

INDEX

Mots-clés: architecture de l'information, expérience utilisateur, transmédia, pseudo-modernisme, postnumérique

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AUTHOR

ANDREA RESMINI

Jönköping International Business School