Referential structures in digital representation and those structures that have established contemporary canons have been progressively negated. As a result of this tendency, post-structuralism, as a pendulous reactionary force against structuralism, broke away from deconstruction’s conceptual premise: to produce a full decomposition of any assumed disciplinary fundamentals. Therefore, rather than focusing on a syntax based on structural logics, current digital architecture tendencies hide deep conceptual structures in favor of superficial perceptual structures, relying on the media-based spectacular semiotic effect of the visual that has exhausted its capacity to be critical.

Codes that cipher data and reference identity are bringing back the relevance of structures, displacing the visual paradigm of previous postmodern decades. Moreover, this process is related to the artificial man-made bit of information, as the design of codes reference Kantian logical cognitive structures, presenting an alternative to the simple Hegelian mirroring of biomorphic tendencies in digital architecture.

Each year, digital-architecture discussions bring the latest technological advances in computation, and by informing the discipline, they are expected to renew it. Scientific and technological advances stimulate extrinsic motivations that may internalize transformations in architecture, but their incorporation has to be resolved within intrinsic disciplinary fundamentals. The value of critical theory in art is relative to a pendulous movement that has to be continuously actualized, and this differentiates architecture from science, which can accumulate knowledge (Wölfflin, 1888).

The aim of this publication, and particularly this essay, is to map the potential of architecture to qualify digital space from new internal relationships that identify and displace hidden structures that repress the digital from its potential, holding it back to a naive representational role.

1 Information, Representation, and Performance in Computation

There are several problems in the relationship between information, the processing of this information, the interfaces involved, and their output that are important to develop in the context of this argument and how they are structured in this publication.

1.1 Information Structures

First, is the role of structures that organize and categorize information. The relevance of structural thought in relation to cognition as defined by Kant (Kant, 1781), was attacked by Derrida (Derrida, 1976). While Derrida’s critique is in favor of the dissemination of categorical thought, it has also induced certain formalisms in algorithms, what Deleuze calls difference without concept (Deleuze, 1994) and a problem that is emerging through infoxication—information intoxication. For this reason, structuralist thought classifies types that emerge from changes which ultimately acquire more stability, as it occurs with the sedimented stable structures that become disciplinary canons. What becomes problematic is that deep structures remain untouched unless they are brought to the foreground and become available to work with, so that their homogenization can be resisted.
Within this background presents in regards to the classification of information, is the unavoidable reduction in computation of mathematical binary codes that represent extrinsic information as content. Since information does not exist independent from representation, this brings a problem inherent to structuralism that is the reduction to categories. Although against this reduction is the historical example of Cartesian predetermination contrasted by Leibniz’s differential and infinitesimal calculus that allowed analysis situs. Interestingly poststructuralist concepts such as mapping, suspend reductive reasoning voided from cultural presumptions. These concepts, based on the indeterminacy of topographies and heterotopias, are currently entering computation through topology and non-linear computational systems.

1.2 Information Interfaces

The second question is of the interfaces involved and their striation in the transferring of information. Panofsky described perspective as the system that striated modern space (Panofsky, 1924). Furthermore Derrida’s concept of parergon (Derrida, 1978) questions the context in which it is defined, its interface, as the work is activated and determined by the frame-interface questioning any extrinsic origin. Consequently, if the mediums of representation have such a power to regulate the work, then interfaces are frames and spaces of differentiation that can activate a performative aspect in the work. This problem triggers a formal generative capacity of differentiation in interfaces that originates a continuous loop of responsive and interactive feedback (Figure 1).

1.3 Information Processing and Formal Autonomy

Third, is the relative autonomy that architecture form acquires as a result of this processing of information, a logic that is against the linear resemblance between the indexing of information and the constitution of form.

Disciplinary autonomy never entered digital architecture, since current post-criticality is based on a reaction against previous decades’ asphyxiating disciplinary fundamentals which consequently provoked an expansion, of the now indeterminate, limits of architecture. In favor of such expansion, Bateson’s studies on systemic theories derived from self regulatory mechanisms induced the interdisciplinary, focusing on the reciprocity and feedback of external associations (Bateson, 1979). Although current automated formalisms disregard the self-regulatory quality of systems and aim for a difference that does not recognize multiple levels of change, consequently outputting further homogeneity. The problem is that such difference is not based on a systemic structural change, as are, for instance, computer viruses.

Panofsky’s work may be seen as an effort across artistic disciplines that define its autonomy and relevance to other disciplines. Also, Aristotle’s conception was that art had logic of its own, as it was the implicit syntax in formal logic systems. And Michelangelo has pointed out the possibility of a metaphysics intrinsic to art, as for him, through art, matter may acquire a life of its own (Argan, 1971). These problems present aesthetic and logic questions, the consolidation of a formal logic intrinsic to the conformation of the architecture of the project as a whole.

Information visualization, as mapping, indexing, and processing of information, relates also to the predetermination of structures. The latest work of Ben Fry concerned with responsive non-linear models and interactive graphics strategies, remain structurally constant with differing subject matter, conveying a functional relationship between content and form (Fry, 2007). When form is not given an autonomy, it works merely indexing quantitative information without qualitative relevance, which would eventually induce further relationships.

The information available over the Internet has been striated by Google Inc. as the apparently formless flow of data is structured through its interface-algorithm. If meaning is relative to categories, then the structuring of data sets and its interaction induces content, as it happens, through crowdsourcing. What’s inherent to such striation of
the world may relate to Prigogine’s critique of networked societies, where he denotes the advantages of bifurcation, but warns about potential homogenization (Prigogine, 2000). As an example of this indexing of information and the relative autonomy of form, the city continuously indexes information, a process related to the abstract flux of capital forces in the autonomous field of communicative experiences (Tafuri, 1973). But once these forces sediment, they acquire an independent formal quality that induces other architectures, opening up interactions that displace the previous indexed information (Figure 2).

In regards to the visual interpretation of information, several architects study scientific advances inferring translations into architecture. These speculations may present interesting innovation, but activate representational problems as they rely on an analogous visual resemblance that can imply rather structural differences. The visual provides access to a formal logic, but without questioning our senses, we may only produce difference without concept.

The disregard in the intermediation of interfaces becomes more evident in the automated linear translation to the physical in digital fabrication, which generates an unmediated image of an image, a linearity that Nader Tehrani resisted in his installations. Greg Lynn instigated an architectural specificity related to computer space and representation. Also, Karl Chu attempts a philosophy inherent to computation by means of a genetic morphogenesis in the architecture of systems. This reasoning attempts to construct a logic that avoids confusions among different topological levels of thought (Bateson, 1973), questioning Derrida’s critique on the artificial boundaries among disciplines.

But there might be a synthesis between abstract information and form as opposites, which resides in the structuring of codes that are common to both realms, enabling a vectorial diagram. There is a deeper common metaphysical project, implicit since the renaissance in architecture, that computation is part of. The floor plan constituted the logos of space, an organizational matrix that is not visual, as it may only be experienced. Within digital representation, the shift from the horizontal plateau of the drafting table to the vertical computer screen displaced the tectonics of the floor plan, activating a picture plane relationship that assimilated architecture with the tectonics of cinema where depth and not the vertical defines space. This promoted the exchanging of a structural logic for a perceptive logic.

Figure 2. Analog and digital interfaces: Infrastructure that affect environmental forces using instability to induce landscape opportunities in an ecology of natural feedback exchanging information and energy.
Codes and algorithms may be associated with what ensures a structural continuity in the underlying logic of control that organizes Palladio’s floor plans. He bases his structural reasoning in mathematics and proportions. But algorithms do not allow for specific relative topological displacements that in the case of Palladio’s Palazzo Chiericati, transform the departing type from an original centralized nine square grid into the same displaced organization becoming a layered space, critiquing the departing scheme in an intrinsic to architecture operation (Figure 3). What this reading resolves is an implicit logic in variation series forging changes that are able to transcend the departing structure (Lorenzo-Eiroa, 2008).

Algorithms are based on tree-like structures: the computation of solutions to a pre-given set of problems that if no attempt is made to question their source structure, fail to develop a specific consistent logic and to resist linearity in the relationships that they array. As a matter of fact, recent neurosciences research estipulate that the human brain calculates known solutions to given problems evolved from successful experiences that are determined from external adaptive responses and internal recorded memories. Consequently this processing may be related to certain structuralism that emerges as a limit in reasoning that if not recognized, constrains specificity, non-linearity, and ideas.

2. Anticipating Cartopological Space

The outlined questions and the ones in this publication provide a context to the development of an architecture specificity within the digital.

The autonomy of the vectorial surface acquired by the dissembling of the object towards the expanded field was resolved in the canonical thickening of the ground as an inhabitable surface that recently provoked spatial warping (Vidler, 2000). Yet, current models assumed too promptly the presence of a different type of space derived from such expansion, a “topological” space dominated by continuity, non-Euclidean geometry, and increasing ranges of indeterminacy driven by the logos of the site, which conceptually negated referential structures and Cartesian space.

As a solution, the mathematically striated computer logos and its visual translation as measured perspectival space, is first brought to the foreground and then confronted through the topology and layering of parametric surfaces (Figure 4).

This proposition considers surface-matrices as interfaces among software in which transformations are encrypted and accumulated in a layered process, distinguishing degree change from conceptual difference (Figure 5). This process forces a formal disjunction between information and its visual translation, resolved in an autonomous formal configuration that is subsequently considered conceptually independent to that previous informational moment, resisting automatic predetermination.
Relative forces through topological bi-continuous and rheotomic mathematical surface-space intend to displace the referential absolute, stable Cartesian frame-space of its own representational system. The enfolding of contemporary canons to revisit architecture limits proposes the institution of a state of suspension that demands the recognition of a hybrid transitory space—therefore a space suspended between a potential topological surface-space and its referential Cartesian coordinate system, a space defined as Cartopological (Figure 6). This formulation is the base for a manifesto to suspend the continuous state of pendulum revolution in architecture history: a non-dialectical, a-historical synthesis that is able to attack a long lasting metaphysical project.

**Figure 5.** Analog surface-matrix algorithm that computes digital strategies among interfaces as it indexes information in multiple topological and typological levels.

**Figure 6.** House I, Cartopological space-diagram by Pablo Lorenzo-Eiroa, Buenos Aires, 2009.
References


Credits

Figure 1. Perspective diagram by Pablo Lorenzo-Eiroa, New York, 2007.
Figure 2. Mississippi River Delta, Arch 177, The Cooper Union and diagrams by Pablo Lorenzo-Eiroa, New York, 2006.
Figure 3. Palazzo Chiericati diagram by Pablo Lorenzo-Eiroa, New York, 2008.
Figure 4. Topological surface and Möbius surface enfolding, diagram by Pablo Lorenzo-Eiroa, New York, 2010.
Figure 5. Surface-matrix interfaces by Pablo Lorenzo-Eiroa, New York, 2008-2010.
Figure 6. House I, project diagram by Pablo Lorenzo-Eiroa, Buenos Aires, 2009.