ARCHITECTURE IN FORMATION

ON THE NATURE OF INFORMATION IN DIGITAL ARCHITECTURE

Edited by Pablo Lorenzo-Eiroa and Aaron Sprecher

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ROUTLEDGE

ARCHITECTURE IN FORMATION

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On the Nature of Information in Digital Architecture

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Routledge, Taylor and Francis, New York

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INTRODUCTION

Architecture in Formation comprises a dialog among architectural theorists, historians, and experimental architects based on the many and complex relationships between information processing and its representation. This collection of historical examinations, critical essays, and design projects provides a cross analysis that aims to re-conceptualize the current state of the discipline of architecture as it has become, of late, increasingly structured around advances in computation.

We follow the trajectory of a critical, alternative axis deviating from the way digital technology has usually been understood since its widespread adoption in the 1990s. While previous trajectories privileged a visual logic, thus repressing digital architecture to a merely representational role, we emphasize the architectural specificity of a disciplinary potential, which recognizes the role of computation in actually processing the relational capacity of systems and structures. Our ambition is to produce both a historical venture against the mere actualization of technology and an intellectual understanding of the digital project through the more generalized notion of *Information*. However, we are not proposing to dismiss visual and formal logic. Rather, we hope to foster the integration of these levels of cognition and representation with deeper, usually inaccessible, relational structures.

An architecture of information implies the constitution of a critical, intermediary, and abstract interface-space that is capable of transforming the discipline by mediating the relationships among cognitive structures, codes, information processing, and form. The associated disciplinary shift drives a general movement toward engaging an emergent, formal aesthetic that is based upon profound structuring relationships. In particular, due to the increasing ease of writing and manipulating computer programming codes, the architecture community recently began to question the hidden, form-giving roles of software developers, thereby precipitating a new "deconstruction" of software structures to produce novel, unexpected modes of architectural design. Yet, this questioning also provoked the emergence of a form of structuralism, one that would have to be displaced in order to avoid the idealistic dimension of the architectural object – even as the object itself becomes invisibly embedded into reactive and dynamic systems. Such an object-system, then, would necessarily consider architectural design in terms of latent possibilities.

In this volume, the architectural questions inferred by information structures and interfaces have been framed through our combined dialectical and editorial voices, the result of which necessarily redefines both the limits and nature of the discipline. Specifically, our dialectical positions address the intrinsic, disciplinary notions of representation, information standardization, and formal autonomy, as well as extrinsic notions regarding the boundaries of the discipline. This dialectical approach is investigated in four forms: interviews, curated essays, project essays and experimental projects, the summation of which generates the necessary conflicts, contradictions, and continuities capable of reorganizing certain fundamentals of the discipline as it continues to expand through computation.

With regards to current, alternative scenarios, this collection of essays and projects also aims to critique the current dialectical reasoning that has emerged with the pervasive use of computer codes and information processing. Rather than presenting a counter argument, however, we have sought to organize discourses relative to deeper conceptual and perceptual structures without privileging one for the other, the result of which is the integration of different arguments into a more complex spectrum of architectural

performance. In response, *Architecture in Formation* proposes addressing both of these perspectives with the objective of achieving a potential synergy between the two, especially with respect to the experimental projects featured in this book. Considering this collection of projects and essays, one may well question whether the architecture of these experimental practitioners actually indexes technological or cultural questions relative to architecture. For us, the more interesting problem has been that all of the participants in this book deal with technology in such a way that for any decision they made, there was an associated aesthetic appreciation dependent upon these topological levels. For instance, architects working with visual logic tend to dismiss the underlying structuring of form, which is also structured by technology through representation, while architects merely dealing with relational logic tend to dismiss the autonomy of form once it is constituted, thereby dismissing the quality of the constituted object and its capacity to affect reality.

This book consists of six chapters. Each chapter begins with an interview and ends with an extended critical essay. Together, they frame the chapter's specific discourse inquiring the nature of information. By specifically fostering a progression from conceptual to perceptual structures, each chapter reveals a particular cartography of influences and cross relationships of the featured theorists, historians, and practitioners. This cartography takes the form of a crowdsourcing diagram depicting the informational content of each chapter, thereby offering alternative, formal readings of the chapter. The six chapters are:

Chapter 1, *Structuring Information,* introduces the historical, theoretical, and conceptual backgrounds underlying current architectural explorations of various information systems, codes, and cognitive structures. In this chapter, architectural historians, theoreticians, and experimental practitioners question the multi-layered role of information in architecture – all the way from its most abstract layers to the most concrete ones relating to bodily affection, by reflecting upon the many and complex relationships between information processes and architecture. The resulting discussion forms an initial topological level, which is used to organize the overall structure of the remaining chapters.

Chapter 2, *Information Interfaces,* explores the nature of abstract systems that process data and induce information. This chapter includes an overview of relational systems in architecture – in particular, the mathematical principles and protocols that layer information, even as they simultaneously question the generative capacity of interfaces to translate, mediate, and induce relationships within the architectural project. Primarily concerned with information visualization and representation, this chapter features projects dealing with issues ranging from the multiplicity of interfaces to the manipulation of representational information across various computational platforms. In order to expose the deepest topological levels of this exploration, we have chosen to highlight the works of practitioners who are recognized for their innovation at the level of the architectural interface, i.e. – the system of representation structuring the way we conceive space, by experimenting with the structuring of form relative to emergent representational strategies. These strategies come together to establish a second topological level that apprehends the computer codes and mathematical logic inherent to computational architecture, thereby enhancing our understanding of its relational logic.

Chapter 3, *Responsive Information,* investigates interactive systems in the context of the contemporary production of spaces and environments. This third topological level features experimental projects and essays expressing the potential of responsive systems in terms of their spatial and programmatic organizations.

Chapter 4, *Evolutionary Information,* addresses questions regarding both the use of evolutionary protocols in architecture and the innovations arising out of evolutionary, time-based architectural systems and topologies. In this chapter, we feature experimental practitioners who work with minimal expression in spatial organization in order to redefine novel typological relationships that recognize the presence of the body in order to induce affection. This fourth topological level therefore addresses the architectural conformation of syn-

thetic solutions in order to activate a critical disciplinary displacement relative to both artificial evolutionary processes and architectural systems.

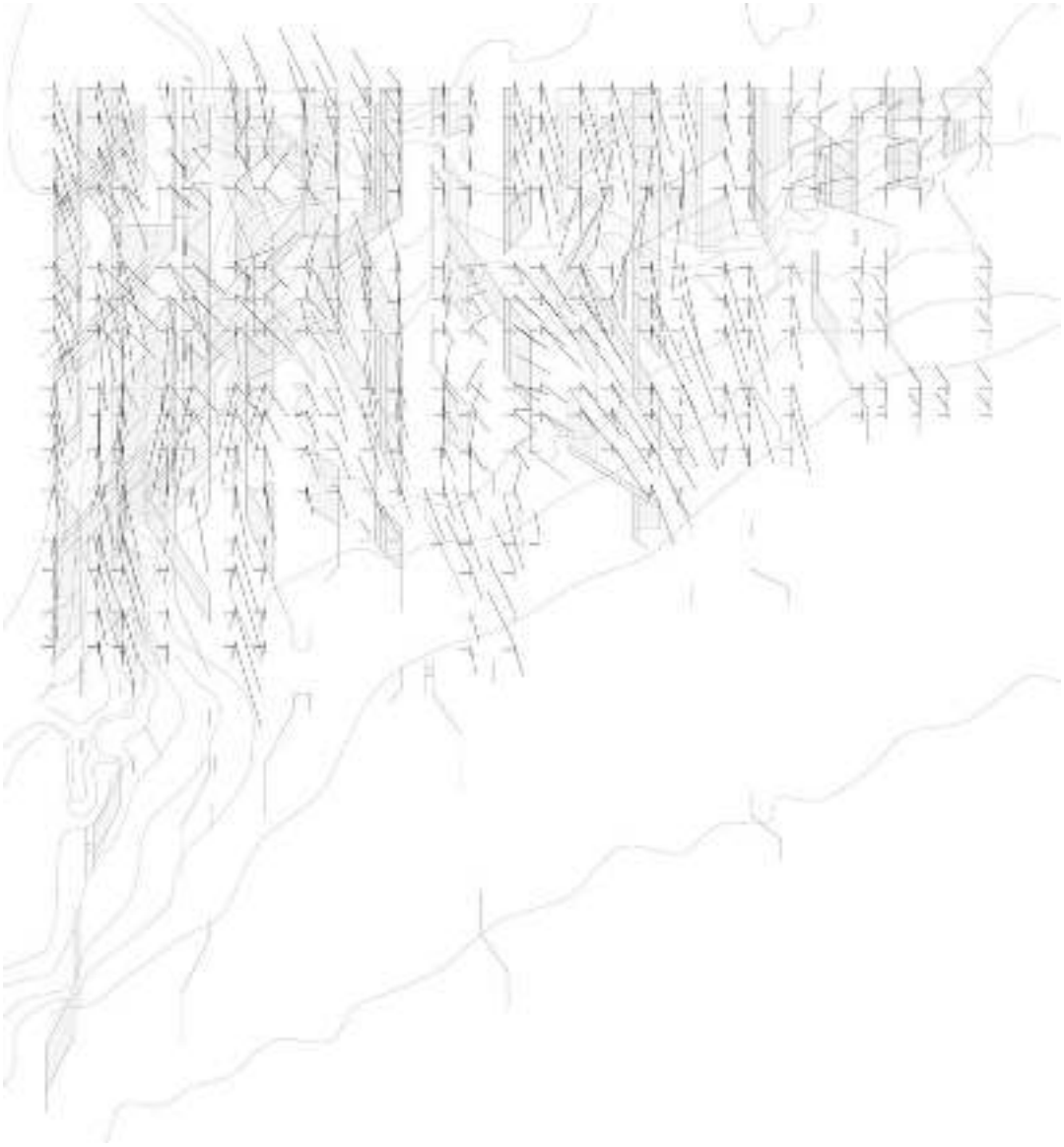
Chapter 5, *Extensive Information,* focuses on the extensive aspects of information systems through an investigation of the various processing logics derived from forces acting upon materials – even as these systems challenge categories and intuitive assumptions. Together, considerations of material actualization and digital fabrication mark a movement away from merely speculating upon the physicality of objects, and toward exploring the informational systems acting at the core of material formation. As part of the discourse of this fifth topological level, the notion of material physicality is considered in the context of organizational structures – some of which resist the separation between deeper levels of content and their material expression, and some of which activate a higher level of abstraction by resisting the linear understanding of forces, organizations, and materials.

Chapter 6, *Information Affect,* extends the preceding discourse on materiality, while also scrutinizing the role of deep structures – both relative to the output of information, and within the context of spatial perception. This sixth and final topological level features architectural experiments founded upon the many connections between information and affect, i.e. – between the architectural object and its influence upon the subject. Accordingly, considerations of relational structures are displaced in order to privilege the performative aspects of form – maybe even motivating formal excess.

Each of the above chapters comprises multiple topological levels of discourse. Together, the six chapters develop a series of progressive layers modeled upon Gregory Bateson's and Michel Serres' understanding of reality, which considers reality in terms of multiple topological levels of information. Thus, this book is organized according to a series of categories that extend, enrich, and redefine the relationships among information processing, image and non-image, form and system on multiple, but incremental, topological levels. These levels are organized to critically structure the way architecture deals with information by presuming to build up a body of knowledge, which temporarily reconfigures the limits of the discipline. The resulting topological levels can then question more conventional architecture strategies in wide-ranging ways – from deep structures concerned with concepts, to structures concerned with perception; from the structuring of information relative to systems of representation and the structuring of relationships, to bodily affection; and from even deeper structures dealing with the constitution of an autonomy that transcends the mere linear indexing of information, to the crossing of information that explicitly recognizes transdisciplinarity in adaptive architectural solutions. Additionally, the topological levels of each chapter sometimes coincide across various essays and projects, and sometimes overlap across chapters, thus putting into question the nature of digital architecture in terms of its similarities and differences among the many practices and critical positions shaping the field today. Fostering a progression from conceptual to perceptual structures, the structure of this collection reveals a cartography of influences and cross relationships among the featured essays, projects, theorists, and practitioners. This cartography activates formal problems that go beyond the initial assumptions established by the chapter divisions.

With respect to establishing a specific, ideological position, this book attempts to develop a critical questioning of form and information through its collection of interestingly heterogeneous voices. As a result, some essays and projects developed themes we had suggested, while others explicitly problematized these themes. We hope the reader finds the resulting book to be effective at productively juxtaposing the work of the world's leading architectural practitioners, theorists, and researchers, who are undertaking today's most innovative design research and experiments.

fig 1
Parametric negative-dialectic information exchange between a natural pseudo-Cartesian rock formation and an artificial topo-logos. Groundscraper for Punta del Este, Uruguay. Eiroa Architects-BA, Pablo Lorenzo-Eiroa 2009-2011.



FORM:IN:FORM ON THE RELATIONSHIP BETWEEN DIGITAL SIGNIFIERS AND FORMAL AUTONOMY

— PABLO LORENZO-EIROA

Architecture in Formation aims to consolidate, reorganize, and critique what has constituted a revolution in the discipline over the past ten years. This revolution is based on a growing recognition to acknowledge deeper structures in architecture. Information technologies presented a new paradigm to architectural representation through the possibility to work directly with deeper relational structures such as computer codes. This revolution is reacting against late post-structuralisms that rely only on visual judgment without acknowledging deeper relational structures. This transformation is built from a renewed advancement in digital architecture representation and architecture organization, motivating a fully integrated systemic approach ranging from bits, to codes to the structuring of relationships. Although, this cultural transformation seems to be propelled once more from a historical cyclical purge reacting consistently between two opposing forces.

Media communications have advanced a sensibility and education based on the understanding of a visual logic that was highly beneficial to architecture – a visual arts discipline based on formal logic. Media has separated visual appeal and affection from the underlying protocols engineered to manipulate mass behavior. Therefore the visual is no longer a paradigm for reference, as underlying codes have now become referential. Instead of replacing visual logic for a new relational logic, an alternative axis must depart from understanding of critical relationships across perceptual structures and deeper conceptual structures. Late post-structuralist tendencies have progressively hidden *conceptual* structures in favor of *perceptual* structures rather than focusing on syntactical organizational problems that investigate alternative displacements of disciplinary fundamentals. Disciplinary fundamentals of architecture, including both representational structures and syntactical structures that organize space, must be acknowledged and then displaced. If architects do not recognize the underlying logic of the interfaces and displace the given source codes of algorithms to create their own, their work is trapped by a predetermined set of ideas, cultural projections, and aesthetic agendas contained within those interfaces. Similarly at the architectural level of the project, if architects do not displace the logic of systems from which they work, and further do not recognize implicit emerging spatial typologies or underlying relational structures, their work becomes trapped by predetermination.

However, before explaining this new structuralist movement promoted by information technologies, it is interesting to first question its emergence relative to a historical cycle. It seems necessary to critique the

historical cyclical pendulum between contrasted positions predestined to continuously renew the discipline. Any reactionary force is equally problematic and presents a temporary balance without critiquing the problems that provoked such reaction. The content and structure of this book addresses a criticism of this historical cultural cyclical reaction. Therefore this emerging new structuralism is understood as a revolution, but is also aimed to attack deeper levels of this assumed historical process.

A New Structuralism as a Continuity from Post-Structuralism

The pendulum reactionary force of post-structuralism emerged in the late 1950s against the previous abstraction and predetermination of structuralism. Since the 1990s it has been deviating from deconstruction's conceptual premise of 1968: to develop a full decomposition of any assumed disciplinary fundamentals. Disciplinary fundamentals have been progressively disregarded instead of being revolutionized. This necessity to acknowledge deeper fundamentals correlates with the emerging new structuralism manifested by the possibility to work directly with computer codes.

Structures are transcendental common relationships among cultural objects and constitute the basis of occidental culture. Structuralism has been criticized for generating *categories* that reference conventions, which obscure real differences. This is the first problem to identify in information technologies, since the processing of information enhances an emerging structuralism that has to be acknowledged but also resisted. In Deleuze's idea of *difference without concept* (Deleuze G. 1994) differentials are understood as real differences, as he notes the value of the curvature in itself, independent from other assumed referential categories. Intellectuals like Foucault argued for both structuralist and post-structuralist theories, and each discipline would have to address the tendency of known *types*, that if not frontally displaced, continue to prescribe order.

12
13

Post-structuralism initially emerged as a reaction to the homogenizing quality of structures, but also defined experience negating relational logic. Alois Riegl establishes the conceptual categories "optic" as psychological and "tactile" as empiric that synthesizes as haptic (Riegl A. 1901). The concept of haptic relates to the idea of *affection,*[1] a post-structuralist concept that for Deleuze is independent of the subject, an apperceptive experience of the body (Deleuze G. 1970). There is no argument against such a position that relies on the reality of the object independent from intellectual interpretation. But induced by media, architecture is eroding its disciplinary knowledge and its capacity to stimulate experience as a physical spatial affection that is de-sensitized due to the disjunction between subject and place.

This position is critical of inconsistent late post-structuralist formalisms that disregard deeper relational logics without accounting the indexing of systems that constitute form, problematically ensuring stability at deeper levels. But this position is also critical of what a new structuralism is activating, understanding information visualization as a process of representation of external content, which does not recognize the autonomy of form once it is constituted – negating any artistic empowerment. This position defines an architecturally based formal expression aimed to work with structuring relationships but also to recognize an empowerment that leads to affection. Therefore, achieving higher levels of architectural performance by thinking of this emerging new structuralism as a continuity from the previous series of post-structuralist displacements. This concept presents a background for the first manifesto:

There is a necessity to rethink the relationship between post-structuralism as a critique of determination and a new structuralism as a continuity, disclosing deep structures to the foreground addressing their role in qualifying affection.

1 Affection (*affectio*) is said directly from the body, while the affect (*affectus*) refers to the mind. Concept used by Spinoza and Deleuze as an empowerment, an external body that acts over our body and not a simple modification. *Aesthetics* has been often referred to merely questions of perception but such artistic fundament has been integral to conceptual questions in the work of many artists.

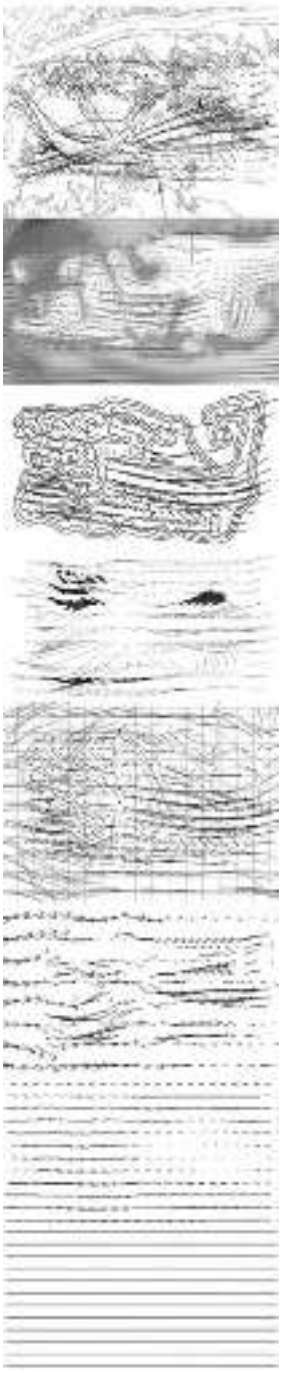
Form:In:Form

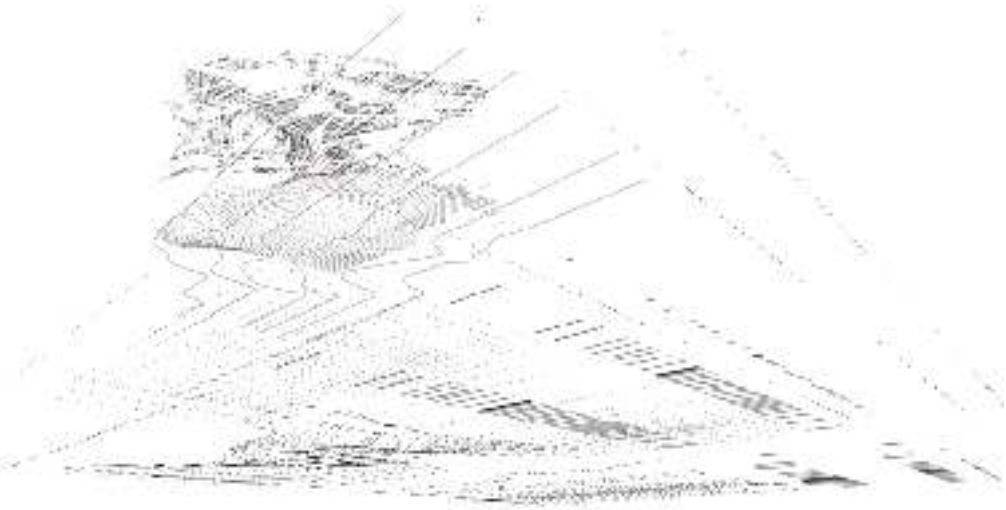
Information technologies enable the communication between computer interfaces. According to von Bayer, information theory bridges all forms of knowledge through binary translation (von Bayer H.C. 2003). Information theory investigates this form of communication through mathematics. Computer interfaces calculate, organize, and transfer sets of data that communicate a message that, translated through interfaces, conveys information. A bit is the minimum unit of data signal. Signs organized through code sequences represent the content, message, or information. Even if a code may change the signal remains the same, as the relational logic of the code acquires importance and relevance over the binary sign. Architecture form, and as a consequence architectural space, is standardized, homogenized, and parameterized through information processing. As a result of the possibilities of information technologies, architecture is now an integrated informed organic system: a responsive interface that organizes information forming spaces-environments.

Any language mediates reality, and determines the way that we think. Wittgenstein's *Tractatus Logico-Philosophicus* (Wittgenstein L. 1921) reveals the problematic relationship between language and the world, demonstrating the limits of representation. For Husserl, mathematics as a formal ontology replaces reality, thereby constructing a set of independent conditions (Husserl E. 1929). Charles Sanders Pierce's linguistic representation can be understood through his triadic signs: Icon (likeness), Symbol (convention), and Index (actual connection) (Pierce, C.S. 1893–1913). Pierce understood logic as formal semiotics. Ferdinand de Saussure defines the Sign (the basic unit of language) as the relationship between the Signifier (sound-image) and the signified (the referent, the meaning) (De Saussure F. 1916). Jacques Derrida's critique of Saussure's equation is that structuralism disseminates categorical thought, since for Derrida a sign is understood as the creation of signifiers, an artificial construction independent from what it is being named (Derrida J. 1982). Georges Teyssot's recent understanding of Saussure's sign qualifies the slash that prescribes the relationship between Signifier and the signified as a curve, a topological relationship in the algorithm "sign=S/s" conveying a bond for signification, as in poetry (Teyssot G. 2010). Roland Barthes declared the end of authorship when he defined language as a system of predetermination of content (Barthes R. 1977). Alain Badiou questioned any existing information outside a system, since there is no language that is complete (Badiou A. 2005). And the problem is that even though Chomsky's linguistics influenced the way architects understand formal systems (Chomsky N. 1957), from the relevance of syntax that open up semantics, his ideas did not enter representation relative to information processing. Conrad Fiedler opposed the Kantian idea that art was a lower form of cognition, since artistic form constitutes an autonomous logical system which its purpose is not to mean through translation or representation (Fiedler C. 1949).

A vectorial line drawn in the computer screen is not a line. It is rather a series of computed codes that simulate a three-dimensional beam of light projected into a two-dimensional screen. The image of this line is therefore a representation of an external binary calculation from its means of constitution. Since there is no information without representation, the reduction into codes results in a structuralism that replaces architecture. While interfaces process information, at the same time they re-structure extrinsic content to fit its medium, activating a topological loop that in the end informs reality. Computer Signs (binary codes) represent information that is actualized through Interfaces (computer languages are mediums that activate symbolic form) that inform Form (index), activating a responsive loop between information and representation where interfaces as signifiers induce form through binary codes, activating the topology: *form:in:form*. But the actualized signifier acquires a certain autonomy independent from the indexed set of codes, inducing further relationships.

fig 2
Infrastructure proposal that affects environmental forces to induce landscape opportunities in an ecology of natural feedback, exchanging information and energy. Mississippi River Delta 2006, ARC 177 Students Elan Fresler and Cooper Mack, the Cooper Union and parametric diagrams by Professor Pablo Lorenzo-Eiroa.





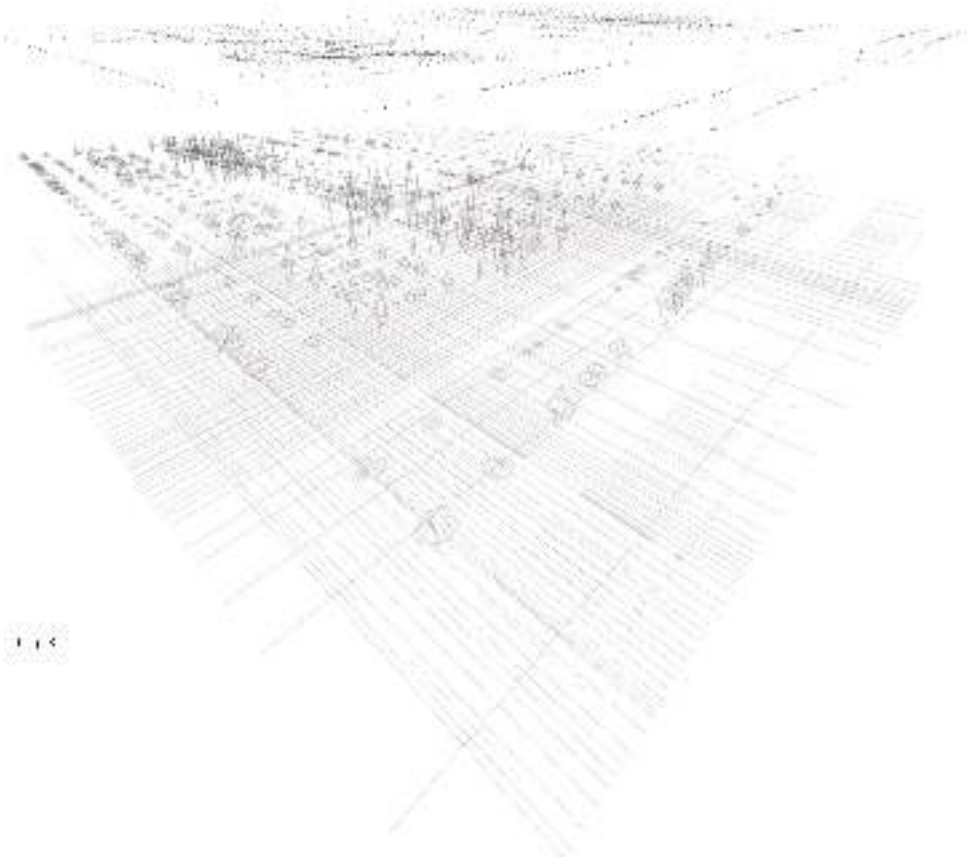
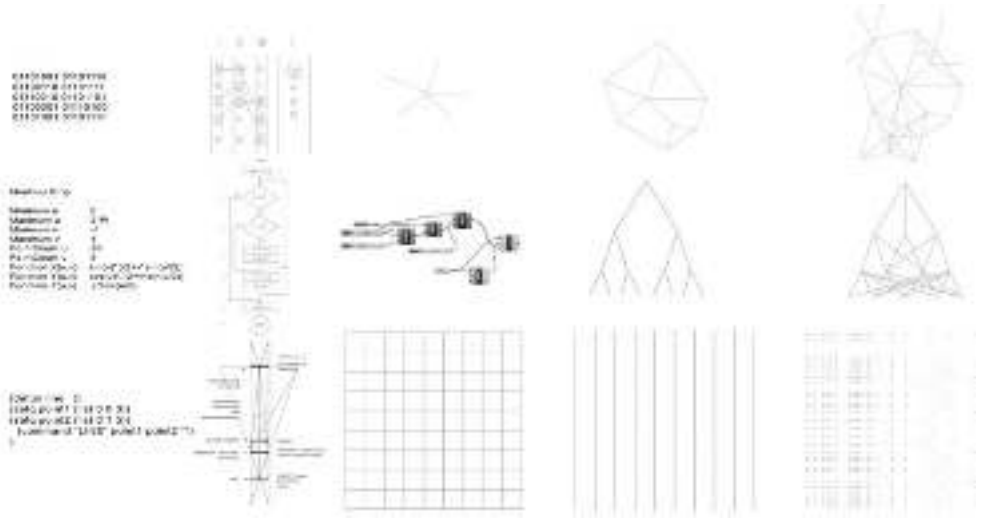


fig 3
Each interface builds topographies of information intended to be addressed within the logic of the project. Artificial ecology of natural sedimentation that promotes landscape interventions to connect Buenos Aires and Colonia. Ecoinduction for the Rio de la Plata, Buenos Aires, Eiroa Architects-BA, Pablo Lorenzo-Eiroa 1999-2011.

fig 4
Representational structures, interfaces, and organizational types. From left to right and top to bottom: binary code, genetic diagram, radial organization, bypassed radial organization, network structure. Mathematical scripting, flow diagram-algorithm, grasshopper visual algorithm, bifurcating structure, lattice structure. Parametric script, perspective-interface diagram, grid, striation, logarithmic grid. Diagrams by Pablo Lorenzo-Eiroa.



E01

fig 4

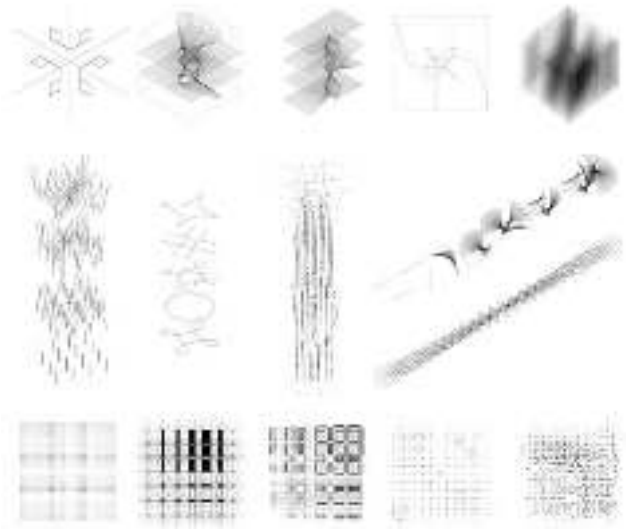
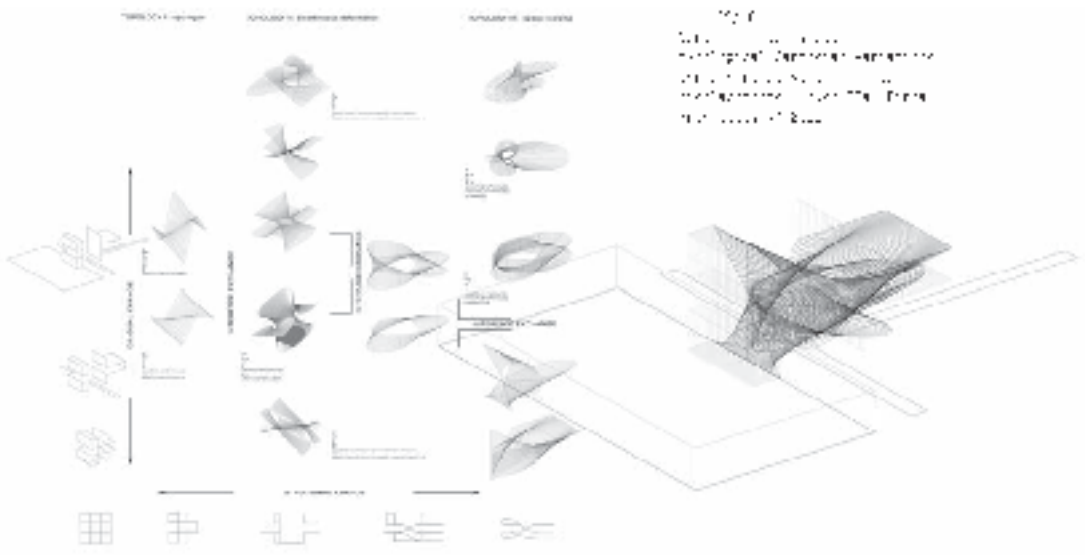


fig 5

fig 5
Topological displacements overcome the predetermination of implicit representational structures and organizational structures. Cartesian departing structure and representational system transcended by inducing continuity among the three axes. A departing nine square grid structure is displaced by progressive non-determination, activating spatial affection. Design II students Che Perez, Henry Barrett, Johae Song, Phong Nguyen, Kristinn Vidarsson, Binham Li and Cory Hall, The Cooper Union, Head Professor and Coordinator Pablo Lorenzo-Eiroa, with Assistant Professors James Lowder, Lydia Kallipoliti and instructor Katerina Kuourkuola 2010-2011. Graduate and Undergraduate computation design seminar students Harry Murzyn and David Varon, The Cooper Union, Professor Pablo Lorenzo-Eiroa.

The implementation of structuralism expands a technological-mathematical paradigm diminishing artistic philosophy and aesthetic theory. One of the fundamental innovations in art was the abandonment of abstracted representation in favor of concrete art. In this form of art, content is not seen as extrinsic but rather as generated by coordinating the set of conditions that index its formal logic, thereby opening up cultural problems and inducing relationships once it is constituted. In this sense, there is a unique art intrinsic to each medium, material, communication, technique, reality, context, frame that is only possible at a certain moment in time. Computation eliminated this dimension in art, and the current digital revolution is contingent upon this recognition. In information visualization and information mapping, formal strategies often are conceived independently from the data they are representing. In this reversible paradigm, form is unmotivated from its capacity to induce cultural change. These representational strategies have yet not accounted for the fact that a map is a deterritorialization machine that by describing a territory implicitly recreates it.

Architecture has motivated a self-referential modern consciousness since the Renaissance, problematizing representation. Algorithms are now critiqued for predetermining form, but historically speaking, perspective has been striating Western modern space since the Renaissance with similar consequences (Panofsky E. 1924–1925). Brunelleschi's perspective produced a parametric space and was critiqued by many architects. Andrea Palladio critiqued perspective's artificiality, proposing a frontal layered space that interrupted its cone effect. Panofsky's perspective analysis identifies the ambition for a structuring of space and objects through mathematics, as the tiles in the floor in Ambrogio Lorenzetti's *Annunciation* of 1344 diminish parametrically. Lorenzetti brings the deep structure of the interface, perspective, to perform at the same level of the narrative of the painting. The vanishing point indexes the presence of God mediating between the Angel and Mary, coordinating multiple



topological levels and therefore to moves a higher artistic signification. Las Meninas by Velazquez of 1656 periodoxically displaces the linearity of perspective by the artist, placing himself inside the painting, building up a topological space with the viewer. Modernist architects used axonometric projection to resist perspective subjectivity, and proposed a parametric mathematical projection model where XYZ induces a universal machine object-space. John Hejduk displaced this homogenizing parameterization in axonometric projection as a main generator in the logic of his diamond houses. Those who are recognized now reality is artificially structured by representation. Thus by displacing the structure of the medium, these artists and architects creatively proposed a cultural project questioning representation and any linear implementation of the dominant technological paradigm. Digital representation created a revolution in architecture comparable with perspective in the Renaissance but its structure has not been displaced, neither has it been questioned culturally within the discipline.

Opposingly, computation induced several displacements to the discipline that were not culturally questioned. Dynamic digital representation produced a cultural isotropic space and a dynamic architectural object, negating gravity and as a consequence, the ground condition was progressively displaced and recently has been ignored in architecture. Site-specific interventions motivated different architectural relationships with the ground surface searching for a topo-logic of spatial differentiation. Surface modeling extended this disciplinary cultural process into the progressive autonomy of the surface from the ground. Nurbs-based geometry enabled the possibility to work with various and degree curvature, which then facilitated the manipulation of complex topological surfaces that ultimately informed spatial topology.

The interdisciplinary incorporation of animation-based software enabled the possibility of manipulating form in relation to its topological history. But these capacities also provoked problems, as anthropomorphic

architecture has been informed by elastic geometry tools for character animation.

The computer screen has shifted the horizontal surface of the drafting table defined by XY and Z as extrusion, to the vertical. The computer displaced the tectonics of the floor plan, activating XY as a picture plane and Z as depth, assimilating architecture with cinema in which depth and not vertical extrusion defines space. This new relationship promoted a late-post-structuralism based on a perceptive-visual iconographic logic that replaced structural reasoning. Contrarily, algorithms are now breaking with the visual logic, bringing back a mental pensiveness across the parametric project based on structuring relationships. Visual algorithms were successful in developing interfaces to mediate between abstract computer codes, bridging scripting and the relational logic implicit in algorithms. This process brought computation a step closer to a formal logic by visually structuring relationships by layering information.

Computation, mathematics, and form have independent cognitive principles but are based on common metaphysical organizational structures including bifurcations, grids, networks, and other relational typologies. Formal invention must deal with the mechanisms of information processing in order to displace the prescriptive logic of interfaces and to activate a cultural discourse intrinsic to architecture.

Computation and Authorship[2]

Software interfaces and codes constitute implicit frames where artistic expression begins. If the mediums of representation have such a power to regulate the work, then *interfaces* are spaces of differentiation. As such, interfaces can activate a performative aspect in the work, triggering a formal *generative* capacity. Part of this problem is how a project starts, as the first sign in a project may already be structured by systems of representation.

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It is quite clear that if architects do not break or displace the given source codes in order to create their own, then their work is trapped by the predetermination of a set of ideas contained within those interfaces. While many architects try to address non-determination, formal excess and "random" computing processes present a trap for the activation of personal aesthetics. While the underlying logic of the interface remains untouched, the designer confuses visual noise with predetermined organization. This statement questions authorship in the design process – if structure is predetermined by the interface, the designer is merely interpreting a variation that completes the implicit combinations that the metaphysical project of the interface proposes, placing the programmer as the author. It seems that this trend will eventually affect legal authorship as certain programmers may claim copyrights over the geometry produced within interfaces, thereby opening up a full set of issues for the practice of the discipline that will become increasingly problematic in generations to come.

This problem of predetermination can be *explicit* or *implicit*. Predetermiation has become increasingly significant as architects have changed models of drawing *through* software in favor of computational algorithms. When computing algorithms, scripts, or connections in relational software a predetermination is *explicit* as the designer edits given codes or creates his/her own codes addressing means to organize information and processes that compose the form of the project. This explicit structure must be challenged for the design to acquire autonomy independent from its initial parameters. Architects that develop their own script partially resolve some of these questions, as far as they are able to distinguish what is computable from what is not and if they are able to displace the reversible logic of algorithms linearly structured through bifurcations.

However, when an architect draws "freely" using computer interfaces, this predetermination is *implicit* in the way the interface prescribes parameters. Subjective aesthetic agendas are filtered through the

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Authorship relative to computation was one of the first problems the author raised in the ACADIA 2010 conference at the Cooper Union that he co-chaired. Mario Carpo's *The Alphabet and the Algorithm* published in 2011 refers to similar problems.

parameterization of tools, visualization, interaction, and the form of the interface. Although, a posteriori visual judgment is always necessary for a critical displacement, and this cannot be computed in advance, giving relevance to drawing. Reversible logic is part of computation's deterministic project, however, architectural form acquires a relative autonomy independent from this processing of information. Once form is constituted it acquires a set of syntactical relationships, and at this point it is necessary to address a post-deterministic process aimed to surpass the initial machinic parameters, engaging a non-reversible logic.

This recognition can enable solutions that open up possibilities for new forms of representations. By progressively displacing the structure of the interface, these interfaces can revolutionize into new paradigms of representation, activating the second manifesto:

In order to avoid any semantic representation of extrinsic content, it is imminent to activate a topological loop between representation and actualization, acknowledging the parameterization of the interfaces that striate the logic of what constitutes the work.

Architecture, in its fullness, may be possible at that time when the interface operates at the same conceptual level as the architecture that it structures, building up an autonomy, a single reality, only possible within the framework of the discipline – specific to its intrinsic knowledge. This autonomy has not yet entered the digital.

The Role of Relative Displacement

The predetermination of interfaces can also be related to the predetermination of typological organizational structures that prescribe space. Topology has become the most critical project against the predetermination of linear structures. For Nietzsche, topology implies a genealogy, a displacement of "relative forces" and the typological, a variation in absolutes values (Deleuze G. 1962).

Typological organizational structures such as bifurcations, networks, grids and other common organizations need to be displaced and transcended for new models to emerge, avoiding the totalitarism of categorical types that if not acknowledged remain implicitly untouched. Any formal process should overcome the arbitrariness of the point of departure. Therefore, progressive topological displacements must seek for that break in a conceptual differentiation, aiming for a structural change typologically significant to transcend the simple variation of the form of their initial implicit or explicit structures. This reading proposes a series of implied conclusions for a critical understanding of the relationship between typology and topology and the possibility of a criticism to overcome their predetermination. Eisenman's formal methods in the 1970s developed an increasingly complex diagram from basic displacements, however the origin, or the first organizational structure while it is being displaced, it is not transcended throughout the process. Alejandro Zaera-Polo described Eisenman's process as a machinic diagram (Zaera Polo A. 1997) where computed solutions open up non-critical relationships like those emerging in the Berlin Memorial. Gregg Lynn's animate form theorizes relative topological variations claiming that any solution in the series is equally valuable (Lynn G. 1999). Preston Scott Cohen's Tel Aviv museum overcomes aleatory *machinic* variations by the displacement of generic structures in the building, since its topological transformation arrives to an indexed Lightfall which recognizes the presence of the subject.

This solution attempts to resolve the implicit project in the implementation of the relative, which its ultimate aim is to displace absolute values. This is the argument for the third manifesto:

The implicit project in parametric variations is to resolve within relative topological displacements such a structural typological change that is able to critique and transcend the departing implicit or explicit organizational structure.

Revolution or Progress? Technology as Culture

There are many unresolved questions in contemporary digital architecture that are the result of a linear implementation of information technologies without a cultural dimension.

Architecture as a cultural discipline has based its advancement on a continuous state of revolution. Heinrich Wölfflin described the group of architects that reacted to the Renaissance as Baroque, defining a historical oppositional structure which would cyclically repeat from one revolution to the other (Wölfflin H. 1888, 1929). This relationship differentiates artistic disciplines from science, which base their advancement on continuous progress. Today, in redefining the digital project, architects working directly with information codes must first identify this contradiction in the current digital architecture revolution. Digital architecture has been redefining its *project* as a progressive infinite continuous force, asserting a continuous actualization of architecture's avant-garde by indexing the most recent technological innovation. Digital architecture is aiming for a certain stability in this process, providing a false idea of continuous revolution replaced with a sense of progress, where cultural values, such as aesthetics, became equally informed and exchangeable with technological innovation. This provides the initial argument to the fourth manifesto:

Architecture must stop defining its avant-garde renewing itself cyclically by actualizing technology. Architecture must invert this relationship to actively inform technology from a cultural position.

In:Formed Ahistoric Architecture

Architecture has relegated its cultural *project* to technology. There are several consequences and the main one relates to the role of the history of the discipline. Recent generations may consider architectural history irrelevant. This is quite verifiable in the current state of architecture discourse, where innovation is referenced by an advancement over previous digital form generation or digital representation techniques without addressing a cultural displacement that would activate content in the work. The implicit condition is that computation has induced an *ahistoric architecture*.

If architectural canons can be related to cultural constructions that become active by formal logic then this implies the possibility of an incorporation and accumulation of meta-architecture history implicit within computation. What is implied for architecture knowledge is that if computation is successful in incorporating all possible strategies, techniques and philosophies of form within architecture history, these would be implicit in the structuring of form programmed in the latest release of computer software. This assumption is the implied fundamental that is manifested in current technologically informed avant-gardes: there would be no need for a historic precedent since the departing structure of the software would have these characteristics implicit in the interface.

Several architectural canons were informed by representational techniques. Architecture cannot be tested solely by addressing formal principles through computation, and canons were also informed by other questions. Algorithms are informing architecture, but computation is often more useful rather as a catalyst to guarantee the calculation of a consistent systematic formal logic across a project. This machinic logic ensures systematic order and the un-motivation of the designer's personal socio-cultural projection that is often seen as a constraint to emerging conditions intrinsic to the architecture of the project. If there is any relationship between formal advancement, representation, and architectural canons it has been through digital representation during the last twenty years, setting up precedents for an *ahistoric* architecture.

The issue is whether computation will catch up with implicit cultural demands. This dilemma may present a possibility that inverts the equation and places culture as an implicit force informing technology

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by sensing and anticipating cultural challenges. Computation not only informs implicit formal processes, but classifies and creates signifiers – re-defining architecture. Software then becomes a meta-ahistorical de-territorialization machine that encompasses the discipline by finding novel means to constitute form.

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An organism is a system. (…) It is a river that flows and yet remains stable in the continual collapse of its banks and the irreversible erosion of the mountains around it. One always swims in the same river; one never sits down on the same bank. The fluvial basin is stable in its flux and the passage of its chreodes; as a system open to evaporation, rain, and clouds, it always – but stochastically – brings back the same water. What is slowly destroyed is the solid basin. The fluid is stable; the solid which wears away is unstable – Heraclitus and Parmenides were both right. Hence, the notion of homeorrhesis. The living system is homeorrhetic.

Michel Serres on the organism as an information system, Hermes, 1982

ARCHITECTURE IN FORMATION: ON THE AFFLUENCE, INFLUENCE, AND CONFLUENCE OF INFORMATION

— AARON SPRECHER

Toward an Informed Architecture

With the advent of modern science and the perception of natural phenomena in terms of uncertainties, the discipline of architecture has undergone a similar shift – from a stable, idealistic expression of the real world, to the unleashing of performative systems that reflect its instabilities (Blackmore J. 1995). This perennial interest to transform the fixity of the architectural model into a system of potentialities has generated many theoretical assumptions that often referred to the nature of living organisms as a source of information processing (Wiener N. 1954). Just to name a few, Patrick Geddes' "Life-conserving Principles" (1915); Frederick Kiesler's "Correalism and Biotechniques" (1939); Richard Neutra's "Survival Through Design" (1954); Superstudio's "Microevent/Microenvironment" (1972) and Markos Novak's "Transarchitecture" (1995).

Their theoretical assumptions share a conception of architectural performance seen in terms of the capacity to reflect and draw from the complexity of the natural organism. While they have emerged in different contexts of knowledge, these assumptions have in fact generated an approach to architecture that is intricately associated with its capacity to stream and generate information. The affluence, influence and confluence of information are three notions associated with the exponential role of technology in today's architectural production. Their respective attributes have generated an anxiety that no longer arouses from the will to represent our reality but from the desire to literally generate it. It is here proposed to review some arguments about the reasons why architecture always cared to integrate the spheres of information.

As the French philosopher Michel Serres asserts, the living organism acts similarly to an open system that can only be assessed rather than defined because of its recombinant qualities (Serres M. 1982). It renders a reactive system in quasi-equilibrium where the intense affluence of information, influence of systemic parameters and confluence of knowledge incessantly erode, reform, and transform its existence. This consideration of the living organism as an information system provided a breeding ground, almost literally, for visionary researchers who did not hesitate to assess the architectural object as a responsive, reactive and mutative organism. In the past 30 years, architects such as Greg Lynn, Karl Chu, and more recently Francois Roche provided the research community with remarkable results on the potential to embed evolutionary principles at the core of the object. At the same time, critical theorists such as Georges Teyssot, Antoine Picon, and Mario Carpo engaged with defining the consequences of the increasing influence of information technologies on the

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