

Douglas, Evan. Autogenic Structures. Taylor & Francis, 2009.

Jeffrey,

Thanks for your
Invaluable Contribution
to the culture
of the school.

Your 'gifts'
are huge to all of
us.

Warm Regards

Evan

The Autopoietics of Education

the very outset upon something other than himself; it is that which introduces into his experience contents and forms older than him, which he cannot master; it is that which, by binding him to multiple, intersecting, often mutually irreducible chronologies, scatters him through time and pinions him at the center of the duration of things. Paradoxically, the original, in man, does not herald the time of his birth, or the most ancient kernel of his experience: it links him to that which does not have the same time as himself; and it sets free in him everything that is not contemporaneous with him; it indicates ceaselessly, and in ever renewed proliferation, that things began long before him, and that for this very reason, and since his experience is wholly constituted and limited by things, no one can ever assign him an origin.

Michel Foucault, The Order of Things: an Archaeology of the Human Sciences¹

What is distinctive about them (living systems), however, is that their organization is such that their only product is themselves, with no separation between the producer and the product. The being and doing of a living system are inseparable, and this is their specific mode of organisation.

Humberto Maturana and Francisco Varela, The Tree of Knowledge²

Autogenic Structures, like those seen in this book, conceal their own history. They are *produced independently of external influence*, and are derived *automatically from sources within the same individual*.³ They deflect precedent and chronology and avoid easy categorization within the history of architectural education. However, while these seemingly alien objects appear to have simply sprouted up, Evan Douglass' pedagogical outlook most certainly did not. It is the culmination of developments that began in the early 1970s at The Cooper Union, which broke with the Beaux-Arts tradition of educating students through the assimilation of historical precedent. During the last quarter of the twentieth century, the precedent was replaced by the catalyst as the primary input of design studio pedagogy. As such, over three centuries of interest in the continuity of historically sanctioned architectural principles was replaced by the more ephemeral biological models which disappear once their performative logic is mastered.

The following essay looks at the evolution of Douglass' pedagogy in the context of this shift from a historically rooted educational model to a completely autonomous one, functioning as a time capsule.

Education

For three centuries after Colbert founded the Academy of Architecture in 1671, architectural pedagogy had been based on the study of the past. *Classical rules, and later Modern ones, were largely assimilated through the reproduction of historic monuments of some kind*.⁴ This outlook was radically challenged in the early seventies when John Hejduk introduced a series of studio problems into the curriculum of The Cooper Union which philosophically questioned the nature of archi-



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Order of Things: an Archaeology of the Human Sciences¹

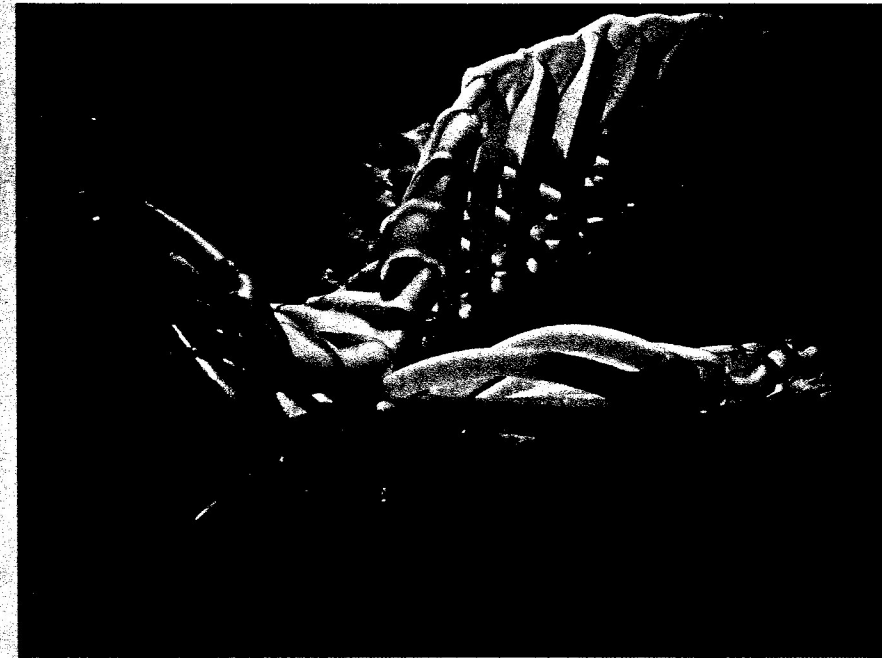
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- 1 Boaz Ram, *Micro-scapes: Reassessing Smart Skins for the Redevelopment of Ellis Island*, Pratt Institute, Fall 1999
- 2 Akari Takebayashi, *Micro-scapes: Reassessing Smart Skins for the Redevelopment of Ellis Island*, Pratt Institute, Fall 1999
- 3 Maoz Price, *Micro-scapes: Reassessing Smart Skins for the Redevelopment of Ellis Island*, Pratt Institute, Fall 1999

tectural pedagogy itself. Three principle studio exercises broke
the symmetry between the past and the future, and disturbed
the linearity connecting the beginning of a design process with
its conclusion.

The first occurred in the *Analysis Problem*, which originated in
Austin, Texas in the mid-50s with the second school of Texas
Rangers. This problem challenged students to spend a week
analyzing works from the architectural canon as a way of learn-
ing how to quickly reduce them to their conceptual essence.
John Shaw, who was active in both the first and second
Ranger schools, described it as follows: *The Analysis Problem*
as it later evolved was seen as an inversion of the design process
in that you start with the finished design and take it backwards

This innovative exercise introduced a procedural isomor-
phism into design pedagogy by getting students to better
understand how an architect makes a building through the
process of unmaking it. At Cooper, analysis grew from a
week-long exercise into an intense semester-long studio
problem. With this degree of added commitment students
began to see architecture as more than merely the result of
a linear process. It was an important step in softening the
rigidity of both historical precedent and the unidirectional
nature of design. For the first time, the study of architecture
didn't strictly lead to more architecture.

The second exercise was called *The Cube Problem*, about
which Heiduk wrote: *It is typical for the architect to be given*

the cube problem. Given a cube of thirty feet on a side, one invents a proposal. Such a proposal leaves room for a fruitful set of solutions.⁶

In *The Cube Problem*, instead of architecture resulting from program, program was born out of an object. This activated the space between geometry and language, allowing the correlation between the two to be more spontaneous. For students, form and program switched places, with form as the limit and program as something mutable, a medium through which the cube and its potential inhabitability could be examined. One could, for the first time, imagine any given geometry producing its own unique architectural program.

The third and most controversial of these three studio exercises was the famous *Juan Gris Problem*, which Hejduk developed with Robert Slutzky. Here students started with paintings and from them extrapolated the space, program, and structure of a building. While the pictorial devices of modern painting had been well theorized in relation to architecture, this was the first time painting and building were so directly collapsed in the context of a design curriculum.

At the heart of these innovative studio strategies was language. Analogy functioned as a ubiquitous bridge, connecting things through various forms of resemblance to the spatial, structural, and programmatic concerns of architecture that were otherwise unlike them. While cross fertilization between architecture and the world around it had already been going on for centuries through some form of analogical reasoning, at Cooper it became an indispensable pedagogical principle that legitimized leaps outside the discipline. By the time Evan Douglass graduated from Cooper in 1983, studios had traveled so far away from architecture proper that Cubist paintings seemed banal by comparison.

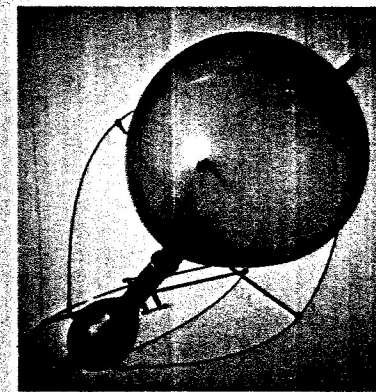
A cursory glance at the school's output around that period shows that buildings were being derived from such diverse subjects as the game of billiards, the paintings of Paolo Uccello and Vermeer, bird skeletons, Bach, Cain and Abel, Emily Dickenson, orthodontic braces, film, bottles, cups, carpentry tools, and musical instruments, to name only a few. In an essay published in 1990 Hejduk claimed that for twenty-one years beginning in 1969, The Cooper Union went through three distinct seven-year pedagogical phases. These included ... painting, the visual, literature, the aural, the sounding, and then the medical or the internalization of space.⁷ It was as if the rich world of art and science that had been influencing the profession for centuries, and which the Beaux-Arts educational tradition had succeeded in excluding, suddenly flooded into the world of design pedagogy for the first time. In this sense, the pedagogical phases which Hejduk outlined can be read as an alternative history beginning with Renaissance painting, continuing through the birth of modern literature in the nine-

belief in this capacity is what allowed architectural pedagogy to radically redefine itself during this period. These three exercises broke with pedagogical tradition, which for centuries predictably based design problems on building precedents and pre-established programmatic requirements, both of which to a certain extent pre-figured the architectural nature of the outcome. All of this loosened pedagogy from its disciplinary moorings and, more importantly, created an atmosphere in which architecture could come from anything.

Teaching

Nine years after graduating Douglass was teaching design at The Cooper Union and Columbia University simultaneously. At Cooper he interrogated the legacy he inherited and, like an alchemist, began mining the principles which bestowed particular generative power upon certain objects and not others. That is why his early studios read like an encyclopedic catalogue of objects and their spatial potential. Inspired by people like Elaine Scarry, Joel Peter Witkin, and Hans Bellmer, these studios largely focused on utilitarian objects as personifications of the hidden fears and desires of their users. Prosthetic limbs, protective body armor, umbrellas, gloves, hammers, pliers, footwear, eyeglasses, and later, pneumatic structures like inner tire tubes and balloons were all pushed to their performative limits and drawn or modeled just at the point of failure. Douglass got students to melt iron tools, surgically unmake garments, and analyze bodies using X-ray and moiré interferometry in order to discover their programmatic secrets. The transgressive hinge was an archeology embedded deep within the essence of matter, and architecture unfolded from the process of exposing it. As such, the latent was radically transformed into the potential, a harbinger of future tectonics and form.

While this was occurring downtown, uptown at Columbia University, under the leadership of Bernard Tschumi, time was supplanting space as primary pedagogical hinge. In this laboratory-like atmosphere Douglass' pedagogy evolved alongside Tschumi's theoretical work on *event space*, Greg Lynn's research on time-based form generation, and Stan Allen's writing on field dynamics. Underpinning much of the architectural theory of that period was Gilles Deleuze and Felix Guattari's *A Thousand Plateaus*, which posited *nomad thought* or the *rhizomatic* as alternatives to the trappings of what the

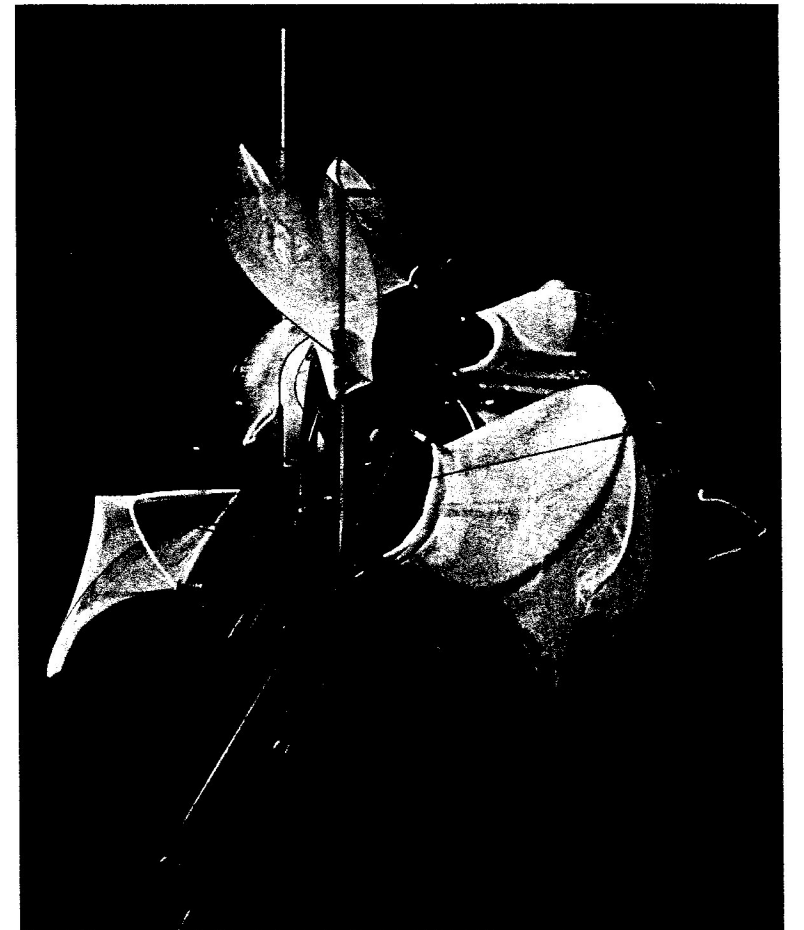
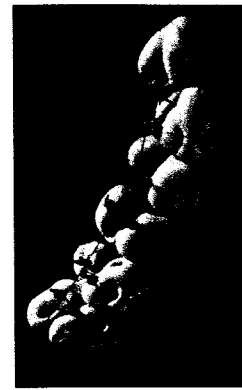
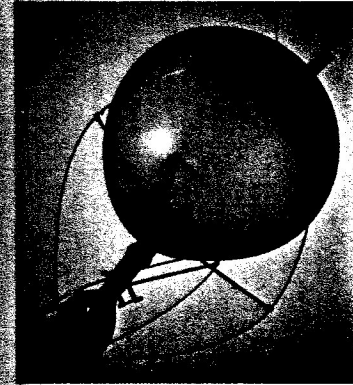


...ture, and finally into modern medicine. What tied a novel, or a body to architecture was a fundamental metaphysical capacity of space to preserve meaning, translated from one medium to the next. Hejduk's capacity is what allowed architectural pedagogy to redefine itself during this period. These three exercises with pedagogical tradition, which for centuries based design problems on building precedents established programmatic requirements, both of which to a certain extent pre-figured the architectural nature of the work. All of this loosened pedagogy from its disciplinary constraints and, more importantly, created an atmosphere in which architecture could come from *anything*.

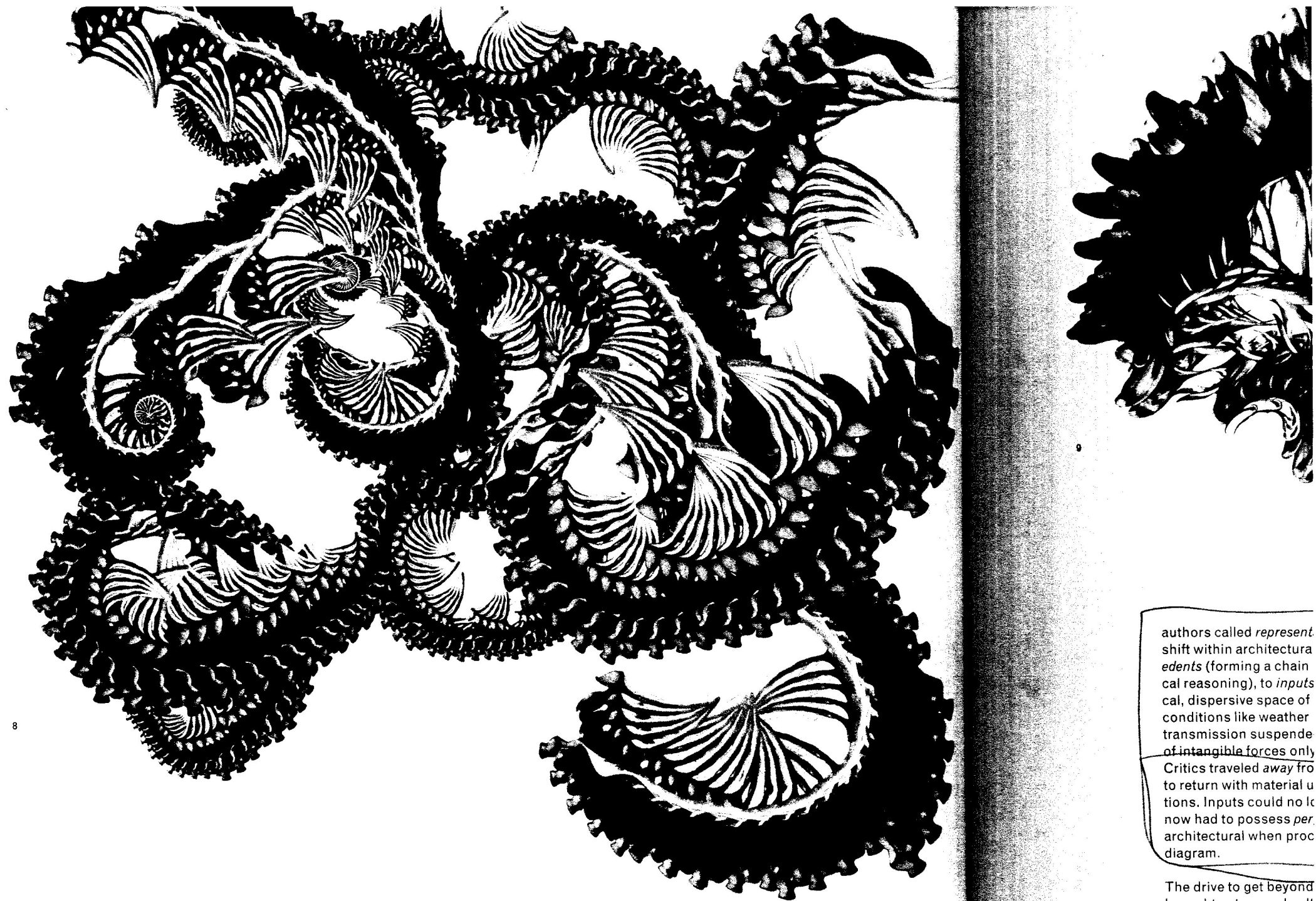
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4 Adrian Wu, GSAPP, Columbia University, Spring 1998
5 Kyeon Park, *Micro-scapes: Reassessing Smart Skins for the Redevelopment of Ellis Island*, Pratt Institute, Fall 1999
6 Hize Maing, GSAPP, Columbia University, Spring 1998

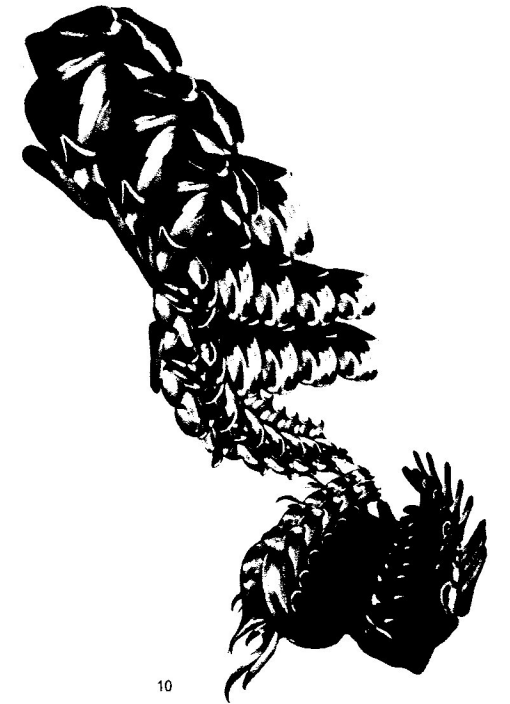


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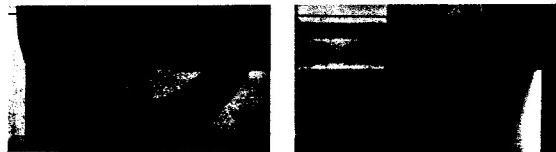


authors called *representational thinking*.⁸ This accelerated the shift within architectural pedagogy from the use of studio *precedents* (forming a chain of resemblances governed by analogical reasoning), to *inputs* (structured around the non-hierarchical, dispersive space of difference). In a post-precedent era, conditions like weather patterns, crowd behavior, and virus transmission suspended students within an ahistorical array of intangible forces only accessible via mathematical analysis. Critics traveled away from architecture and its analogs in order to return with material unconstrained by hierarchical conventions. Inputs could no longer be merely *like* architecture, but now had to possess *performative* characteristics that *became* architectural when processed through the apparatus of the diagram.

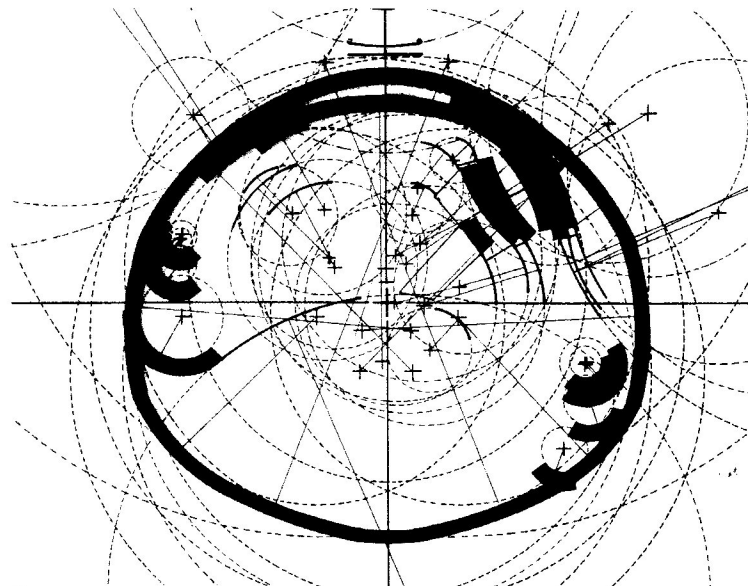
The drive to not borrow the representational not that had

replaced language as the principle means of accessing nature, with measure as the mediator of all pedagogical inputs and their architectural potentials. The shift from Cooper to Columbia involved a change in outlook from a Renaissance understanding of analogy to a Modern one. If at Cooper *geometry and number offered the metaphysical justification for a transfer of proportional systems from the human body to architectural form*, at Columbia architecture was based on *the examination of the role of the processes inherent within [both] nature and artificial creation*.⁹

In this almost scientific environment Douglass became increasingly interested in the empirical principles of material. The enigmatic density of lead, plaster, and extruded section gum-rubber gave way to the transparency and ephemerality of nylon, paper, latex, and other membranous materials, which



11 12 David Danlewich,
Inner Tire Tube Problem,
The Cooper Union, Fall 1995
13 Lorna Guerra,
Inner Tire Tube Problem,
The Cooper Union, Fall 1995



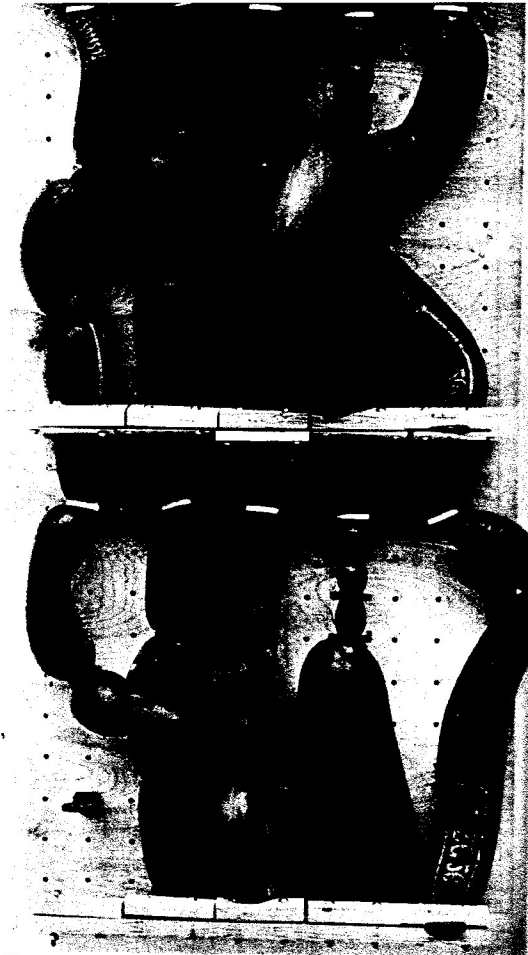
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flight. After experimenting with countless materials Douglass' pedagogy took a critical turn when, in 2000, he concentrated his attention on the use of neoprene. Its plasticity, lightness, and dimensional stability made this sheet-foam product the perfect all-purpose medium for exploring the range of topological variations upon which his studios began to focus. As a material, its sponge-like and scaleless nature allows it to absorb and articulate a limitless amount of difference. At this level of differentiation the input becomes irrelevant and gets internalized almost to the point of obsolescence; instead, attention is fixed on the process and its progressive potentiality.

Process

At the beginning of this process students are asked to develop morphological units by deforming successive pieces of this

neutral material. This requires the production and evaluation of micro-variations in each nine square-inch surface that an untrained eye would miss entirely. The process of choosing a variant or a tendency to work with in the first unit takes place in a vacuum. What starts out as hesitant quickly becomes assertive when students begin to realize that the criteria for each new unit in the system are embedded in the ones they have already made. At this point *questions and answers enter into a tautological balance*.¹⁰ By a very strict accountancy, students decipher within the closed language of the unit system a plenitude of rules which enable them to move forward. Creases, curves, and folds imply their own connectivity to other creases, other curves, and other folds. Eventually enough units are produced that an emergent tendency is identified. Like the growth of a crystal from an initial seed, students begin directing the placement of additional units toward this emergent trajectory,

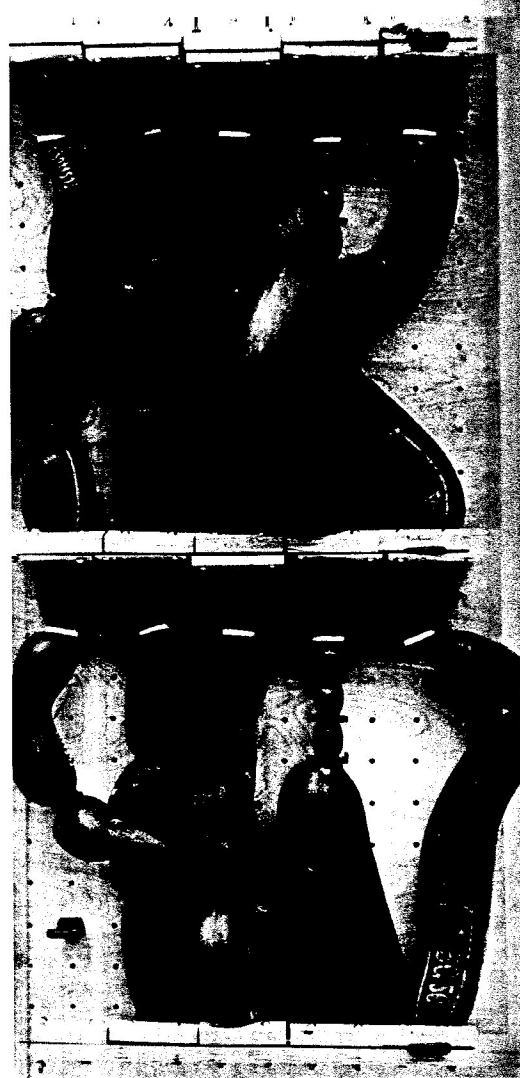


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which perpetually threat system with the already *Perforative-Ecoadaptation*, *Interface*, and *Ectodyno-* to establish a language a parallel channels of lang conventional notions of which they are struggling against one another and the known, it will overwh Reciprocally, if the neop there too comfortably, it association and deflect a through language. Since to turn the foreign into th vented from consolidatin dictable. The foreign mu recursive at all scales. D system. Here, the past an to a series of nano-prece present which, through a being.

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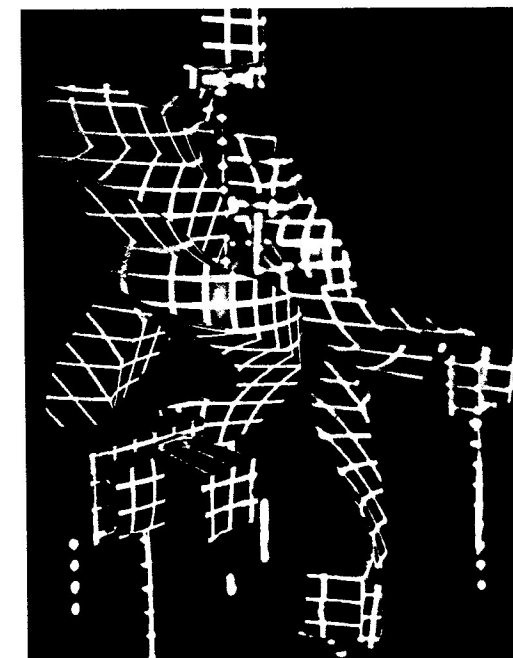


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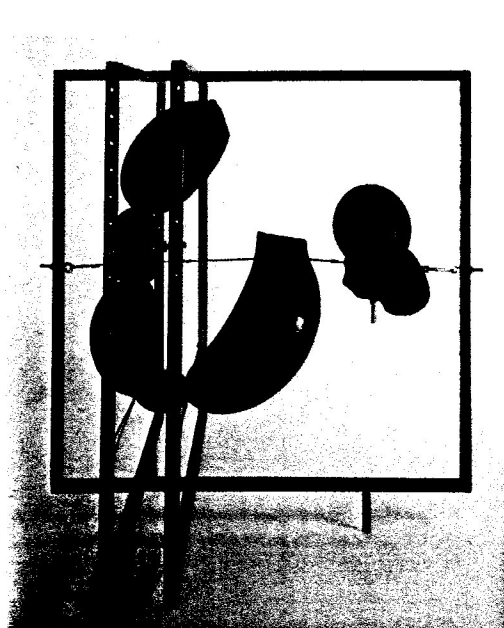
This is exactly when students are encouraged to create neologisms which enable the system to maintain its autonomy and avoid being contaminated by conventional language. These word formations separate students even further from history, which perpetually threatens to contaminate the purity of the system with the already known. Words like *Nocturnal-Vertiflux*, *Perforative-Ecoadaptation*, *Ectodermal-Plexisection*, *Epidermal-Interlace*, and *Ectodyno-morphism* represent students' attempts to establish a language as novel as the material practice. These parallel channels of language and material serve to block out conventional notions of meaning. Words, like the material to which they are struggling to relate, are constantly colliding against one another and breaking apart. If language slips into the known, it will overwhelm the neoprene and immobilize it. Reciprocally, if the neoprene finds a place of repose and rests there too comfortably, it will fall into a conventional mode of association and deflect all attempts to extract new possibilities through language. Since language is normally the tool we use to turn the foreign into the known, it must be agitated and prevented from consolidating into that which is benign and predictable. The foreign must stay foreign. By making the process recursive at all scales, Douglass produces a closed pedagogical system. Here, the past and its associated history are reduced to a series of nano-precedents, design hinges rooted in the present which, through accumulation, rally into cohesive being.

As soon as the units achieve a critical mass the rules of the game drastically change. Language, which up until that point was a tool of free-play and discovery, now has to ground these architectural entities within the world. This is where the ambition of *Autogenic Structures* reaches a fever pitch. From an alien object waiting to land, *Autogenic Structures* become the ground itself. Here a metaphysical dimension creeps back into the process as students realize that in order to rethink the urban fabric which will host their interventions they have to question the very foundations of architecture itself. In the process, form is imbued with almost magical power as the spatial boundary between bodies and buildings and the political limit separating public from private vibrate like plucked strings. Along the way these complex surfaces are systematically analyzed at various scales and levels of organization from the individual unit to the emergent field, and mined for architectural potential. The resulting diagram serves as a lens through which a site's circulation routes, occupation schedules, zoning restrictions, building codes, material fabric, and infrastructure get redefined.

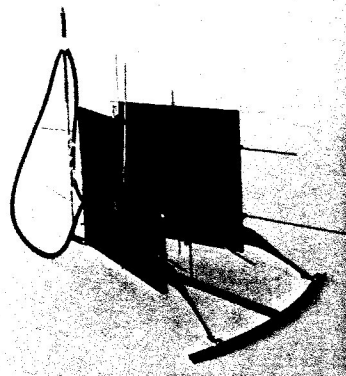
At this stage the outside world, which was held at bay, floods in as students begin hunting for new technologies with which to realize the projected intelligence of their architectural proposals. Smart materials like *shape memory alloys* (where defor-



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- 88 15 Leoncio Torres, *Inner Tire Tube Problem*, The Cooper Union, Fall 1995
 16 David Danlewich, *Inner Tire Tube Problem*, The Cooper Union, Fall 1995

an architectural assembly capable of real-time responses to external stimuli.

Conclusion

It's no coincidence that the same scientist who coined the term *autogenic* was also responsible for refining the definition of *ecosystem*. For British ecologist Arthur Tansley *autogenic succession* meant change driven by the inhabitants of just such an all-encompassing natural environment. As such, autogenic processes increasingly move toward greater levels of integration and stability, and characterize the homeostatic nature of bionetworks like rain forests.

Autogenic Structures, in their mastery of the principles of growth and continuity, are poised to take up the challenge of creating a completely sustainable system. The recent use of computation in Douglass' studios brings with it the potential for addressing at an earlier stage many of the concerns which up until now have remained last minute speculations. It isn't hard to imagine both material properties and relevant ecological forces being explicitly scripted into the initial Processing diagrams from which *Autogenic Structures* are born. This would imbue them with an actual metabolism actively engaged with the surrounding environment, and allow them to live up to their namesake.

To remain relevant Douglass' studios must avoid repeating the mistakes of previous autonomous pedagogical models, which taught advanced spatial relationships but deemphasized materiality and architecture's environmental role. However, unlike the systematic closure of the Nine Square Grid, *Autogenic Structures* thrive on the unknown potentialities of an unmapped future. Douglass' pedagogy demands a fearless march into this unknown. As such, the future it chooses to survey could, and perhaps should, address those questions most challenging to architecture today. Neologisms built of new relationships between architectural and environmental concerns can begin to pose speculative solutions, or at least reinterpret the questions in heretofore unknown ways. In the end, though *Autogenic Structures* are alien and self-sufficient, they are matter, and must live in our world. To be more than curios, samples, or ornament, their organizational logics must be able to respond to the diversity of both program and environment. Though perhaps without precedent, *Autogenic Structures* rely on a future. So do we.



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- 17 Brad Horn, *Bureau of Missing Persons*, The Cooper Union, Fall 1991
 18 18 Jonathan Baker, GSAPP, Columbia University, Fall 1997

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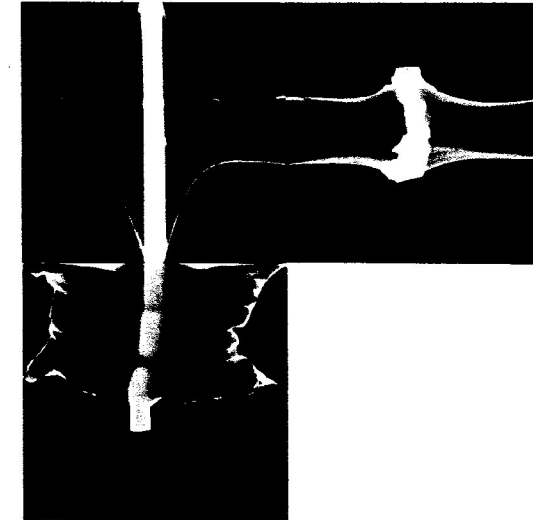
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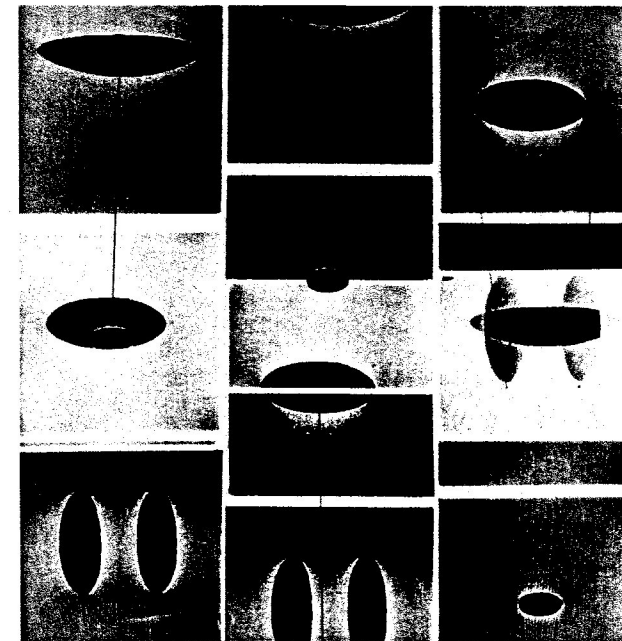
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17 Brad Horn, *Bureau of Missing Persons*, The Cooper Union, Fall 1991

18 Jonathan Baker, GSAPP, Columbia University, Fall 1997



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- Notes:
- 1 Michel Foucault, *The Order of Things: an Archaeology of the Human Sciences* (New York: Vintage Books, 1973), 331.
 - 2 Humberto Maturana and Francisco Varela, *The Tree of Knowledge: The Biological Roots of Human Understanding* (Boston, Shambhala, 1987), 48-9.
 - 3 Merriam-Webster Online Dictionary, *Autogenous*, <http://www.merriam-webster.com/dictionary/autogenous>.
 - 4 Kenneth Frampton, Notes on American Architectural Education: From the End of the Nineteenth Century until the 1970s, *Lotus International* 27 (1980): 5.
 - 5 John Shaw Letter to the Author, 1992 in Alexander Caragone, *The Texas Rangers: Notes from an Architectural Underground* (Cambridge, Mass: Massachusetts Institute of Technology, 1995): 272.
 - 6 John Hejduk, *Education of an Architect: A Point of View* (New York: Monacelli Press, 1999), 121.
 - 7 John Hejduk, *Torso* *Wiederhall* 2 (1990): 10.
 - 8 Brian Massumi, introduction to *A Thousand Plateaus: Capitalism and Schizophrenia*, by Gilles Deleuze and Felix Guattari (Minneapolis: University of Minnesota Press, 1987), xii.
 - 9 Marc M. Angélli, "The Concepts of Natural and Artificial Production in Architecture," *Center: A Journal for Architecture in America*, The University of Texas at Austin, Volume 8, (1993): 87, 92.
 - 10 Roland Barthes, *Sade, Fourier, Loyola*, trans. Richard Miller (Berkeley: University of California Press, 1989), 75.

Volume+Vector: Exceeding/ On the Architectural Spaces of Evan Douglass

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In another interview Coltrane spoke of starting a musical phrase in the middle and instigating an evolution of that movement whose trajectory followed two directions simultaneously.²

Forward: 2008

The work done by Evan Douglass at Columbia between 1992 and 2002—as a studio professor and in the school's gallery as a curator and designer—constituted two bookends for the school's history. His work was, on one hand, foundational in setting a first year studio benchmark that linked concepts of form and space to concepts of time and transformation. More importantly, his studios represented a tremendous moment of destabilization and re-orientation; they were a break with what anyone might think architecture was or *could be*, and were the first steps to establishing a method for and a comprehension of what it *might be*. Columbia relied on this model of education, and Douglass (as well as William Mac Donald) set the standard for a process upon which the entire school relied for at least seven years.

As Director of Columbia's Ross Gallery, Douglass played another role. His work there, viewed by members of the architectural community both within and beyond the school as seminal, was not bound by the first year studios, but inspired by them. This work as an exhibition designer (and curator) led him to advanced forms of fabrication—manifestations of research hinted at in first year studios, but here executed by Douglass himself—that were some of the earliest realizations of the complex experimentations on surface, mass, and space that Douglass had set in motion at the school. Here the difference was not just execution but also the revealing of an undertone in Douglass' work—a sense of the sublime that linked this utterly new work with qualities one could also find in certain architectural histories. Few people can operate at both ends of this spectrum: realizing the depth but accessibility of a first year studio pedagogy and simultaneously achieve such exquisite manifestations of it in ways that fully reveal its potential, that push its limits in practice. The culmination of this was his design for an exhibition of projects by Jean Prouvé, where the limits of Prouvé's procedures and forms were shown against the dramatic folds and surface undulations of Douglass' own installation.

His latest endeavors—as studio professor and architect—have been in the context of Pratt Institute, where he directs the school's legendary undergraduate program. This essay addresses his work at Columbia, situated within the context of his own education at The Cooper Union in New York City.



Simultaneous Vector

Two themes, both of which animate the works that at the School of Architecture theme can be characterized of space and program and project movement: of Douglass' studios show studios in its reliance on primary initiatives of the students are advised through based design stage based *pliable growth*.³ To this a Columbia Core studio are intended to eventually *extreme variation*. It is this provides Douglass' studio extreme variation. Base

d why two bassists played on his album OM, he explained: *I want more of the sense of time, I want time to be more plastic.*¹

Interview Coltrane spoke of starting a musical middle and instigating an evolution of art whose trajectory followed two directions easily.²

2008

one by Evan Douglass at Columbia between 1992 as a studio professor and in the school's gallery as a designer—constituted two bookends for the story. His work was, on one hand, foundational in its first year studio benchmark that linked concepts of space to concepts of time and transformation. Importantly, his studios represented a tremendous destabilization and re-orientation; they were a what anyone might think architecture was or *could be* the first steps to establishing a method for and extension of what it *might be*. Columbia relied on this education, and Douglass (as well as William MacArthur) the standard for a process upon which the entire school depended for at least seven years.

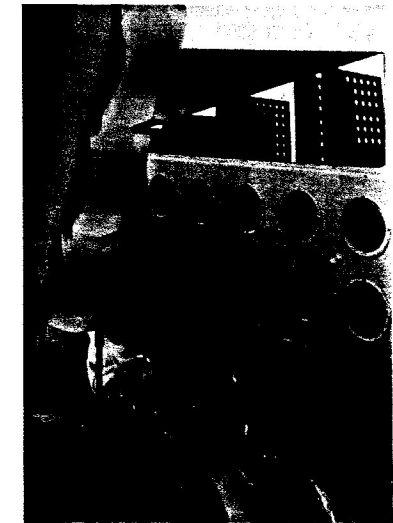
Director of Columbia's Ross Gallery, Douglass played a central role. His work there, viewed by members of the architectural community both within and beyond the school as well as not bound by the first year studios, but inspired by his work as an exhibition designer (and curator) led to advanced forms of fabrication—manifestations of architectural ideas intended at in first year studios, but here executed by Douglass himself—that were some of the earliest realizations of complex experiments on surface, mass, and space Douglass had set in motion at the school. Here the difference was not just execution but also the revealing of an intention in Douglass' work—a sense of the sublime that linked Douglass' new work with qualities one could also find in architectural histories. Few people can operate at both ends of this spectrum: realizing the depth but accessibility of their studio pedagogy and simultaneously achieve visible manifestations of it in ways that fully reveal its intentions that push its limits in practice. The culmination of Douglass' design for an exhibition of projects by Jean Prouvé here the limits of Prouvé's procedures and forms played out against the dramatic folds and surface undulations of Douglass' own installation.

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Simultaneous Vectors

Two themes, both of which can be termed *topological*, animate the works that emerge from Evan Douglass' studios at the School of Architecture at Columbia. The first topological theme can be characterized as a vectoral process, an analysis of space and program derived from techniques that transcribe and project movements. During the design stages, this aspect of Douglass' studios shares qualities with many Columbia studios in its reliance on transformation and exchange as the primary initiatives of the design process. In Douglass' syllabus students are advised that the studio will premiate a process-based design stage based on *morphological innovation* and *pliable growth*.³ To this somewhat normative directive for a Columbia Core studio, Douglass adds that these procedures are intended to eventually reveal a process capable of



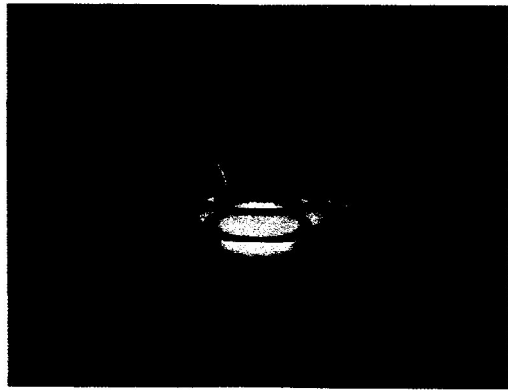
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- 1 Custom Display-scape designed by Evan Douglass for the exhibition; Jean Prouvé: *Three Nomadic Structures*, curated by Evan Douglass and Robert Rubin, Buell Gallery, Columbia University 2003. Photo: Michael Moran
- 2 Detail highlighting high-gloss blue pleated surface in juxtaposition to Prouvé's collection of artifacts. Photo: Michael Moran

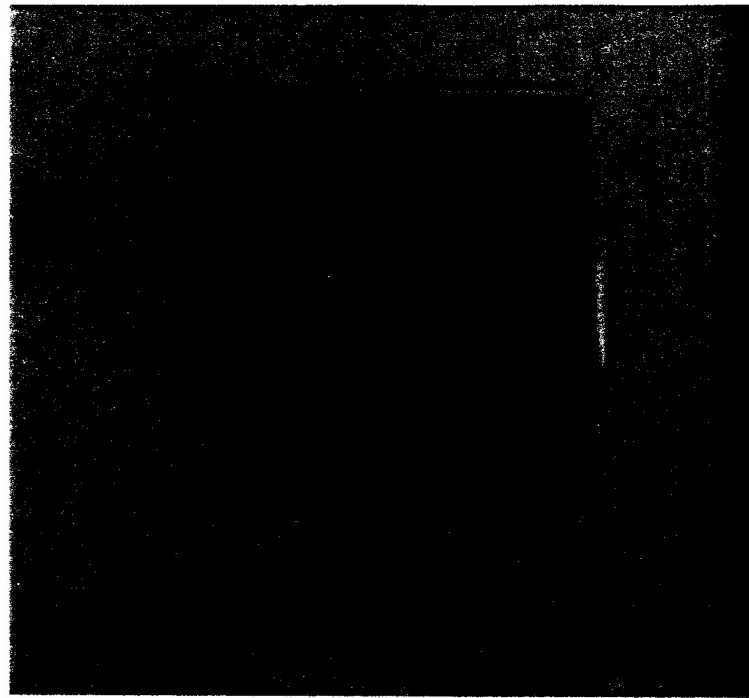
techniques, this second attribute of Douglass' studios pursues extreme variation as both an elastic testing of topological limits—space transformed by processes of speed and metropolitan spectacle—and also a testing of interior limits. By way of surface mathematics and the examination and re-definition of interior volume, Douglass' studios reveal architectures that are produced (at first simply) as folds within linear processes and rudimentary arithmetic transformations; as these processes accelerate through additive modular practices, the interiors produced in the first sequential moves gradually exfoliate and bifurcate, eventually turning themselves and the volumes they previously described inside-out. Douglass' studio investigations, initiated by the temporal courses of change, speed, and movement commonly pursued at Columbia, ultimately describe spaces and volumes whose initial presence has been unpeeled, the transformations of



3



4



5

Volume Exceeded: Space Inside-Out

To create a house which captures the unrevealed tone, the hidden spirit of the austere, foreboding, forbidden depth of a presence at once so very simple, even banal, yet imploding leaving a void, to make a house with a voided center.

—John Hejduk, *The Mask of Medusa*⁴

The combination of spatial characteristics described above is not only unique in the work of Evan Douglass (and his students), but in some ways also illustrates the historical confluence of New York's great uptown and downtown schools—Columbia and The Cooper Union. Douglass, a supremely gifted teacher and architect, is one of several of Columbia's faculty whose tenure there was preceded by education at The Cooper Union. This roster includes Laurie Hawkinson, Stan Allen, Jesse Reiser, Nanako Umemoto, Leslie Gill, Karen Bausman, and Yoshiko Sato. Within this group, however, it is Douglass who has most aggressively

3 Pablo Picasso, *Portrait of Jacinto Salvado as Harlequin* (1923) © 2003 Estate of Pablo Picasso / Artists Rights Society (ARS), New York

4 A minimal surface can be described in finite terms, but is capable of infinite extension without self-intersection. Until recently few such figures were known mathematically, but variations that approach the visual appearance of these forms are common and indeed often stand in for architectural works that claim such infinite extension. Minimal and embedded surfaces such as the plane, the hypersphere, the catenoid, and the helicoid have

served as visual metaphors for an unlimited extensity, but their physical construction is, of course, not architecturally possible. Their lack of boundary, framing datum, and segmentation disallows readings of space that seek distinctions. (Paraphrased from Ivars Peterson, *The Mathematical Tourist: Snapshots of Modern Mathematics*. New York: W. H. Freeman, 1988, 56–59). © Thomas Banchoff, Huseyin Kocak, David Laidlaw and David Margolis, Brown University

5 Robert Slutzky, *Untitled*, 1983 © Robert Slutzky, courtesy Joan Ockman

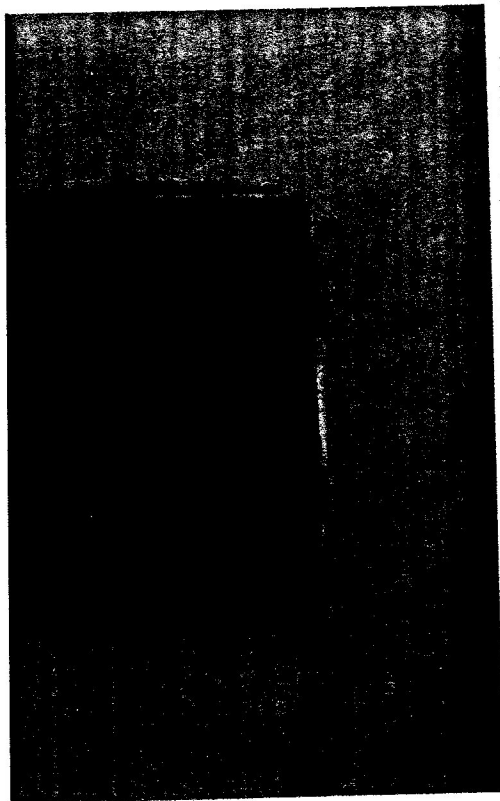
used the design studio at The Cooper Union. Loo's reliance on the model of resulting in practically unobvious architectural benchmark of Columbia cannot be read as traditional portends a spatial sensibility essential aspects of arch

Evan Douglass' students of movement as they simulate architectural surfaces architecturally driven by a desire to of both the architect and citizen whose space is not of residual movements a relentlessly subdivided studio production as easy capital as they do to slow entropy. As Douglass writes *either through the slow or due to the dissolution of the spectacle, the hyper acceleration through the delirious machine*. It is Douglass' confluence combined with vectorial movement that marks the to Columbia's (and in retrospect curriculum.

Alloy—Neither/Or

Columbia, under the direction of 1988 and 2003, allowed Douglass of Cooper, but not without new influences. Douglass of both schools forward, John Hejduk's work on vertical still-life—and Bernard Tschumi and programs.

The projects shown in this by Hani Rashid and Greg transcription of events. Extracted from these others by movement are coupled with transformed not only by



Pablo Picasso, *Portrait of Jacinto Salvado as Harlequin* (1923) © 2003 Estate of Pablo Picasso / Artists Rights Society (ARS), New York

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5 Robert Slutzky, Untitled, 1983 © Robert Slutzky, courtesy Joan Ockman

used the design studio as a laboratory in the tradition of The Cooper Union. Loosening, even dismissing, the studio's reliance on the model of professional practice, at times resulting in practically useful buildings, Dougliis leads his students to produce works of deep spatial complexity, yet with little obvious architectural presence or use. His studios, a benchmark of Columbia's first year architecture program, cannot be read as traditionally architectural, yet the work portends a spatial sensibility and an investigation of the most essential aspects of architectural history.

Evan Dougliis' students investigate how architects conceive of movement as they simultaneously study how to manufacture architectural surfaces and interiors. Both realms are essentially driven by a desire to re-construct the perceptual spaces of both the architect and a contemporary subject, an urban citizen whose space is newly constituted as the memory of residual movements and volumes. Speed and stillness—relentlessly subdivided procedures of time—link Dougliis' studio production as easily to spectacular forms of urban capital as they do to slow processes of spatial dissipation and entropy. As Dougliis writes, *There are two types of forgetting: either through the slow or violent eradication of memory, due to the dissolution of matter, or via the advancement of spectacle, the hyper acceleration of historical space passing through the delirious machinery of media consumption*. It is Dougliis' confluence of slow work on volume and surface combined with vectoral transformations of speed and movement that marks the generative nexus of his contribution to Columbia's (and in retrospect to The Cooper Union's) curriculum.

Alloy—Neither/Or

Columbia, under the direction of Bernard Tschumi between 1988 and 2003, allowed Dougliis to extend the spatial concerns of Cooper, but not without crossing new thresholds or meeting new influences. Dougliis understood and moved the legacies of both schools forward, absorbing the potential of both John Hejduk's work on volume—indeed, Hejduk's work on the still-life—and Bernard Tschumi's work on event structures and programs.

The projects shown in this book, like those from studios led by Hani Rashid and Greg Lynn, rely on movement and the transcription of events. But Dougliis' work is not just a

a desire to reveal aspects of space that are often repressed. This is the sublime aspect of both Dougliis' studios and his own work. The topological qualities in his projects are at once mathematically universal and concerned with what Hejduk described as the *undertone*—a reappraisal of the space that the topological operations reveal.

At Columbia, the use of the term *topology* has had at least a ten year evolution, and it shows up in diverse areas of the studio curriculum. The range of applications and sources of the term were often derived precisely from mathematics. Greg Lynn, for example, has stayed close to the mathematical description of topology as a conflation of calculus and geometry. But the term was also often used more casually, as a contemporary surrogate for geometry itself, with little regard to the distinction: students might refer to the *topology* rather than the *geometry* of their work. In studios that have addressed biological themes, topology has become a term that describes the organic transformation of forms in time. Dougliis' studios have played across each of these registers, but his work is distinguishable by a metaphysical project that ironically still attempts to describe space apart from time—a space that results from topological processes, from a time-based operation, but is not *in itself* described as time-based.

Dougliis' studios produce forms that unfold and open up formerly closed realms of volume and mass. Given the implications of a subject—a moving subject who experiences these spaces—this unfolding releases the interior and the subject-based definitions of space after which that interior was generated. In the more secular realm of mathematics, these speculations might have little grounds. In a strict sense, these explorations are not supported by the more rarefied topological equations such as those that describe minimal or embedded surfaces. Still, Dougliis' studios seek a boundary-less space—an extended surface that is created in part by vectoral movements and programmatic events, and that also sustain the potential for uncharted movements.

What, then, should we make of the complex surfaces produced by Dougliis' studio if we cannot claim them to be truly volumetric and topological, nor can they be said to be literally vectoral and programmatic? I would argue that the work's greatest potential is apparent in its extension into wider fields—in the transformation of how we inhabit the spaces these works have unfolded, or how we occupy the newly-made perception of a wider and just-released volume.

Open(ed) City

In a 1984 essay written by Robert Slutzky and Joan Ockman, the term topology was used to describe a perceptual tool Slutzky used in his painting. The paintings are not understood as topological in their own right, but instead they become topological through use, and, in fact, under a form of duress. For Slutzky and Ockman, painting is a transitory lens, a tool, that provides a comprehension of a wider field by *turning space inside out*.⁵ Slutzky and Ockman write of *unanchoring our contemplative eyes for distant journeys and faraway places, loci of our memories re-birthed*.⁶ After encountering the painting's spaces, the wider field becomes occupied in a new way.

Hejduk's work in architecture had similar concerns, as he describes in his essay *Out of Time and Into Space*. Directly addressing the Carpenter Center, Hejduk claims that Le Corbusier's work surpasses the *harmonic fluctuations* of plastic space—it *exceeds the bounding limits of space and volume that give viscosity to Cubist space*.⁷ Like the work of Dougli's studios, the Carpenter Center is both volumetric and vectoral: its space is produced and revealed—turned inside-out—by a moving subject. Similarly, in his poem *Miniature Volume*, Hejduk asks, *How much does your heart weigh? [I don't know, perhaps as much as a miniature volume, I'd have to turn it inside out, like a leather glove*⁸ to see. Dougli's work enters this realm: his topologies are indeed rigorous, but they are intended to impart a sense of space that cannot be rationally defined and whose goals are not obviously secular.

Dougli's has worked closely with Lynn, Rashid, Reiser, and others whose work is distinctly involved with topological problems; but while at Columbia Dougli's was closest to Reiser (and his partner, Nanako Umemoto) in the degree to which his work suffused a mathematically sophisticated form of topology with a latent project of metaphysics. In other words, Dougli's work was a project of perpetual movement—subsuming and even abandoning its own origin, but maintaining a sense—an *undertone*—that this cannot in fact be accomplished. What these projects do achieve, however, is what I would call a retroactive coherence to space: under duress they allow both an unfolding of future terrains, while maintaining the registration of a path back to origins—to the simple surface that has been procedurally transformed in time.

The plastic qualities of Dougli's space are characteristically thin as well as thick: his assemblies activate an alluvial play of space within a vigorous and willful plastic sensibility, but

dissolving spaces in the contemporary edge city—the outskirts of metropolitan New York, for example—and the edge sites these studio projects (sometimes) occupy, were the beneficiaries and possibly instigators of Dougli's conceptions of space. Dougli's students, then, reveal a place that is not simply described by movement; they also describe the vacancy and inchoate timbre of spaces that is often typical of our contemporary cities. This is where my work often intersects that of Dougli's: the work frames and inscribes its subject, but also leaves this subject in spaces that verge on plastic dissipation or that exceed their own plastic finitude.

Stilled Air: Moving Bodies

Architectural practice today is defined by legal and contractual obligations that invariably lead to limitations on building form and the organization of relatively low-level material processes. Works by Hejduk and Tschumi have taken separate paths in their engagement with contemporary practice, but both have made fundamental attempts to unfold the interiority of architectural space, introducing new dimensions in the conception and the production of space. In this way both architects produced themes of subjectivity almost before they produced architecture. Hejduk described the *dissolution and failure of the spatial organism*⁹ in Le Corbusier's Carpenter Center. Tschumi's early work revealed the violence of space and of energy—and a source of new freedoms—at the nexus of programmatic exchange that literally constituted architecture. Dougli's work at Columbia was a unique and important invention for the simple reason that it fused these two milestones in architectural thought, producing, as it were, a new and unique alloy—an unanticipated new material that was neither. Dougli's work awaited direct application at a scale of concern commensurate with its ambitions. Like Tschumi and Hejduk, Dougli's redefined architectural potential by the revision of sectors of architectural production once considered complete. It was and remains an opening that has expanded greatly in his new role at Pratt Institute, with a new group of faculty and students.

At Columbia, Evan Dougli's made topology both a secular and potentially metaphysical project, fusing the calculus of surface descriptions and movement with a latent undertone, that is, with a search for spatial origins and spatial perception. This is work that sustained the theme of a *stilled* or

is in the work; there is horror and ingenuity. But ultimately I think that corporeal subjectivity and corporeal subjectivity is asserted balance.

Unframed: Forgettin

Dougli's work at Colur understanding of an urban city. In other words, architects the subject into a person, and within the assembly of persons at everyone is an origin, yet remain. Ironically, this is which Picasso returned *The Harlequin*, painted a of Cubism, the narrative with it a sense of linear stillness of these works ment force with a proper appears before or in front subject's movement is set to reconfigure the field it

Against the inchoate, post-urbanism, Dougli's studio returned sovereignty to space inside-out, in the casting would have it, *out of time*, was revealed. That this level possible in first year studio immense talent of Dougli's generosity of a teacher whose environment of learning and reality that deeply valued the students whose work is

describe a vacancy where spatial tensions are. These works are both stilled basins and newly fields. They instigate a comprehension of plastic that is simultaneously with and without origins. The big spaces in the contemporary edge city—the outskirts of metropolitan New York, for example—and the edge sites of studio projects (sometimes) occupy, were the beneficiaries, possibly instigators of Douglass' conceptions of space. His students, then, reveal a place that is not simply defined by movement; they also describe the vacancy and timbre of spaces that is often typical of our contemporary cities. This is where my work often intersects that of the work frames and inscribes its subject, but also its subject in spaces that verge on plastic dissipation and exceed their own plastic finitude.

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Architectural practice today is defined by legal and ethical obligations that invariably lead to limitations on form and the organization of relatively low-level processes. Works by Hejduk and Tschumi have taken paths in their engagement with contemporary practice; both have made fundamental attempts to unfold the logic of architectural space, introducing new dimensions of perception and the production of space. In this way, architects produced themes of subjectivity almost before modern architecture. Hejduk described the *dissolution of the spatial organism*⁹ in Le Corbusier's *Carpenter*. Tschumi's early work revealed the violence of space and energy—and a source of new freedoms—at the nexus of immutability and exchange that literally constituted architecture. Douglass' work at Columbia was a unique and important contribution for the simple reason that it fused these two millennia of architectural thought, producing, as it were, a new alloy—an unanticipated new material that was what Douglass' work awaited direct application at a scale commensurate with its ambitions. Like Tschumi and Hejduk, Douglass redefined architectural potential by the union of sectors of architectural production once considered incomplete. It was and remains an opening that has been made greatly in his new role at Pratt Institute, with a new faculty and students.

At Columbia, Evan Douglass made topology both a secular and initially metaphysical project, fusing the calculus of descriptions and movement with a latent undertone, with a search for spatial origins and spatial perception. His work that sustained the theme of a stilled or

stationary subject, but also cast its comprehension of space into a wide and perpetually unfolding field of movement. Certainly, a sense of melancholy (if not, at times, despair) is in the work; there is also Douglass' sense of simultaneous horror and ingenuity in his invocations of the monstrous. But ultimately I think this work leads to a sense of weighted and corporeal subjectivity, to a subject whose agency and sovereignty is asserted, whilst remaining precariously in the balance.

Unframed: Forgetting

Douglass' work at Columbia constituted an evolutionary understanding of an unframed space—and of an unframed city. In other words, architecture turns itself inside-out and casts the subject into a wider landscape. Time is within each person, and within the multiplied and segregated collective assembly of persons and spaces that have been unfolded; everyone is an origin, yet everyone is Other as long as origins remain. Ironically, this seems to be the post-Cubist stillness to which Picasso returned in the early-1920s. In works such as *The Harlequin*, painted after both analytic and synthetic phases of Cubism, the narrative returns—the *program* returns—and with it a sense of linearity and sequentiality of time. In the stillness of these works one senses each subject as an immanent force with a propensity toward movement. The character appears before or in front of the picture plane, and though this subject's movement is segregated, it possesses the potential to reconfigure the field it occupies.

Against the inchoate, power-ridden fields of contemporary urbanism, Douglass' studios produced an architecture that returned sovereignty to space. In the turning of space inside-out, in the casting of subject into space and, as Hejduk would have it, *out of time*, a harrowing and thrilling world was revealed. That this level of depth and investigation was possible in first year studios at Columbia is testament to the immense talent of Douglass—but also to the immense generosity of a teacher who could create such a profound environment of learning and production—a space of its own reality that deeply valued the thought, action, and ultimately the students whose work is shown here.

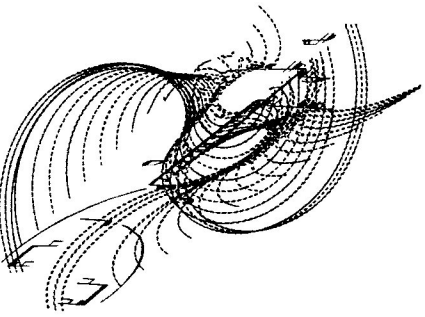
Notes

- 1 John Coltrane in Nat Hentoff, *John Coltrane: The Spoken Word*, JazzTimes, September 2002.
- 2 Ibid.
- 3 Evan Douglass, GSAPP Studio Syllabus.
- 4 John Hejduk, *The Mask of Medusa* (New York: Rizzoli, 1989), 123.
- 5 Robert Slutzky and Joan Ockman, Slutzky, Recent Work: 17 September to 29 October 2002, The Arthur A. Houghton Jr. Gallery: The Irwin S. Chanin School of Architecture, The Cooper Union for the Advancement of Science and Art, (New York: The Irwin S. Chanin School of Architecture of The Cooper Union, 2002).
- 6 Ibid.
- 7 John Hejduk, "Out of Time and Into Space," in *The Mask of Medusa*.
- 8 Ibid., "A Miniature Volume," in *The Mask of Medusa*.
- 9 Ibid., "Out of Time and Into Space," in *The Mask of Medusa*.

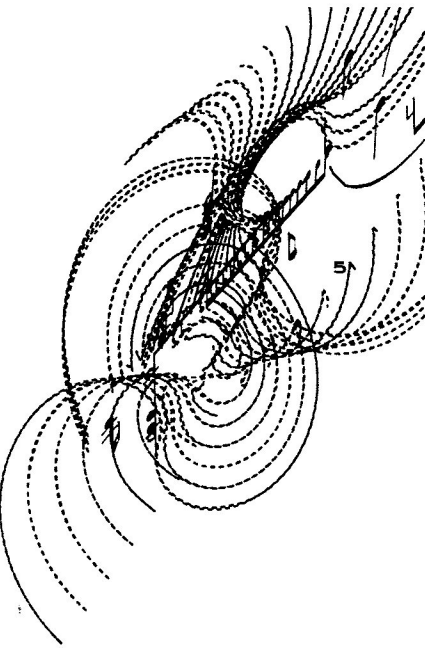


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- 1 Modular assembly generated to re-enact Mobius loops at both the unit and the massing scales.
- 2 Element attachment methods: multi combinations.
- 3 Detail of modular assembly showing range of involution surfaces distributed throughout the field.



2



Yung Eun Kim

96 **Multi-Singular Networks: Tectonic Play as Programmatic Engine**

The potential dynamics of the proposed site and program for the NYC2012 Olympics/Williamsburg Waterfront Park reside in the interplay of paradoxical forces that represent gaming not as a competition, but as a network of play. In such a network outcomes are not assigned a binary value such as victory or loss but are instead understood against a background of novel possibilities. Material studies

become a morphological analog to this idea, in which functional changes occur when singular entities aggregate and bind into a transcatenate network. Like the Olympic Games, intricate connections of disparate bodies exchange energy while still retaining their individual characteristics. This "multi-singular network" makes it possible to imagine new, hybrid games. The knitting of a mobius-like network of these modular units creates a park on the Williamsburg Waterfront. The underlying recombinatory logic of the interwoven field produces a physical ground pregnant with

unforeseen programmatic possibilities. Gaming ena variety both in the single unit and in the field accordi the density and velocity of each program. The contin juxtaposition of disparate events and conditions—b volleyball and archery, players and spectators, land t water—all processed through the morphological str of the architecture, spark unexpected events, while maintaining a continuous flow.