

Growing Rhizomes and Collapsing Walls: Postmodern Paradigms for Design Education

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A rhizome has no beginning or end; it is always in the middle, between things, interbeing, intermezzo. The tree is filiation, but the rhizome is alliance, uniquely alliance. The tree imposes the verb "to be," but the fabric of the rhizome is the conjunction, "and . . . and . . . and . . ."

— Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*.

The system and structure of architectural education is a resultant of two sets of forces. On one side, we have the inherent characteristics and peculiarities of architectural profession that drive its academic component and remain the same at any given point of time. I will call these factors the *intrinsic factors*. On the other side, we have numerous contextual and environmental (cultural, technological, sociopolitical) factors whose essence is change. I will call these the *extrinsic factors*. Technology, and in particular digital technology, is one of those extrinsic factors that I will specifically address in this paper. My effort here is to bring a theoretical basis to understand how digital technology impacts the organization, transmission, dissemination and composition of knowledge that could in turn affect architectural education. Based on Deleuze and Guattari's notions of "rhizome" and Jean-François Lyotard's ideas on "postmodern pedagogy," I wish to expound pedagogical principles that strive to open the walls of the schools of architecture and the design studios. I call for a move toward "wall-less studios" that fuel a "rhizomatic pedagogy."

The present educational model that most of the architectural curricula follow is deeply territorial. The student would enter the walls of the institution and would go through a strict regimen of courses, exercises and simulations of the "outside world." In addition, the student would go through a series of steps that are clearly numbered, defined, graded, sequenced and hierarchically organized. At the end of the curriculum, the student is released from the bounds of the walls of the institution into the so-called "real world." This delimitation and distancing, while being useful and necessary to a certain extent, have become religiously secured fortifications. As Jean-François Lyotard wrote, "if education must not only provide for the reproduction of skills, but also for their progress, then it follows that the transmission of knowledge should not be limited to the transmission of information, but should include training in all of the procedures that can increase one's ability to connect the fields jealously guarded from one another by the traditional organization of knowledge."¹

THE INTRINSIC FACTORS

Although the expression or appearance of architecture is a variable, there is something about architecture that remains the same

all through the ages; architecture is always about the human condition. Architecture is an ultimate barometer of the society: A barometer of society's collective psyche, wealth, health, taste, sophistication, poverty, clarity, understanding, conflicts, mythologies, illusions, vanities, and just about everything that is human. Architecture is a creative barometer and an interpretative barometer – not just a mirror. At its best, architecture is an intelligent, challenging and creative critique that moves us through its thematic, philosophical and political intentions; and at its worst it is an indifferent and crass banality that is nothing more than mere infrastructure.

Architecture is a synthesis of the technological, creative, social, psychological and economic disciplines with an ultimate emphasis on the creative faculties. Unlike the exact sciences and the engineering disciplines where knowledge is cumulative and the problems are clearly defined, architecture springs from a creative and human foundation that is not necessarily cumulative. However, like medicine and law, and unlike art and music architecture is a discipline that is "practiced" as a service-oriented profession. Such is the complexity of architectural profession and education.

DIGITAL TECHNOLOGY AS A NEW PEDAGOGICAL ENVIRONMENT

I will use the word *technology* in the very sense Martin Heidegger does². He says: "Technology is . . . no mere means. Technology is a way of revealing."³ He explains how technology is indeed a poetic act: "The word stems from the Greek, *Technikon* meaning that which belongs to *techne*. We must observe two things with respect to the meaning of this word. One is that *techne* is the name not only for the activities and skills of the craftsman, but also for the arts of the mind and the fine arts. *Techne* belongs to bringing-forth, to *poiesis*; it is something poetic."⁴

Technology is an integral part of being human and is entwined with the human condition, its existence and evolution. As Jacques Ellul says, "as long as technique was represented exclusively by the machine, it was possible to speak of 'man and the machine.' The machine remained an external object, and man . . . was in a position to assert himself apart from the machine. But when technique enters into every area of life, including the human, it ceases to be external to man and becomes his very substance."⁵

One of the hallmarks of (digital) technology, by its very nature, is that it *integrates*. As Jacques Ellul rightly points out, technique integrates everything. Technology integrates economic systems, political systems, and eliminates boundaries that were previously thought as fortifications. Our usual approach to the integration of the computers into the architectural curriculum is to "integrate computers into the curriculum." However such an approach does not reflect a proper understanding of the *computer as a new environment*. The

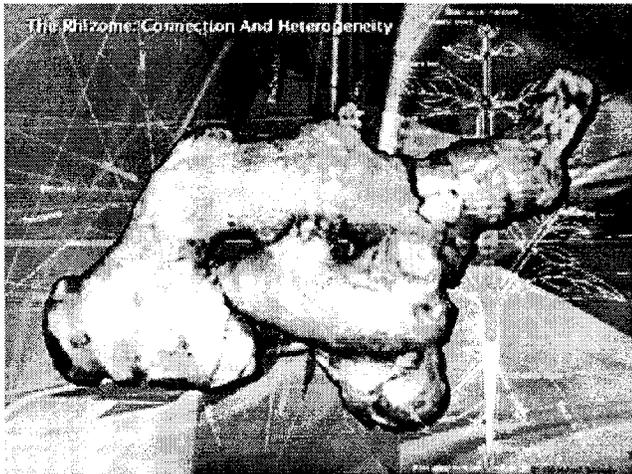


Fig. 1.

computer is not just a tool anymore. Our environment is not integrated *into* our lives; rather, we are integrated *with* the environment. Rather than integrating the digital environment *into* the curriculum, as I will illustrate later, we should let the digital environment integrate disparate elements within the curriculum and beyond the curriculum that have so far remained isolated. We should use the computers to forge new connections with the larger world.

THE RHIZOME

Understanding the impact of technology involves studying its relationship to us and to our institutional structures. Gilles Deleuze and Felix Guattari have provided us with well-articulated metaphors that help us give a structure to such a changing environment around us. D&G's *rhizome* is a potent and radical model that could contribute very effectively to the development of a more appropriate and flexible architectural curriculum.

Rhizome is a fascinating notion that D&G propose in their brilliant work *A Thousand Plateaus: Capitalism and Schizophrenia*.⁶ As Martin Pearce and Maggie Toy observe, "Gilles Deleuze and Felix Guattari proposed a condition where the tap root of ideology has been aborted in favor of the shifting layers and boundless interconnectivities of the rhizome. . . the model provides a useful analogue to architectural education today."⁷ D&G propose the rhizome not as a transmuting notion that is anti-establishment or even utopian. Fredric Jameson says: "the schizophrenic ethic they propose was not at all a revolutionary one, but a way of surviving under capitalism."⁸ The developmental strategies of rhizomes give them an evolutionary edge.

D&G base their proposition of *rhizome* on the following principles:

1. **Principles of connection and heterogeneity (fig 1).** D&G write: "A rhizome ceaselessly establishes connections between semiotic chains, organizations of power, and circumstances relative to the arts, sciences, and social struggles."⁹ Further, they write: "any point of a rhizome can be connected to anything other. . . This is very different from the tree or root, which plots a point, fixes an order."¹⁰ Conventional design studios are trees with fairly well defined hierarchies, beginnings and ends with preset learning objectives and quantified evaluations. They are predicated on isolationist strategies. The instructor is the taproot with the students branching out from it. Whereas, a rhizomatic studio would establish heterarchical connections between all of its points and beyond.
2. **Principle of multiplicity (fig 2):** A *rhizome* cannot be treated as

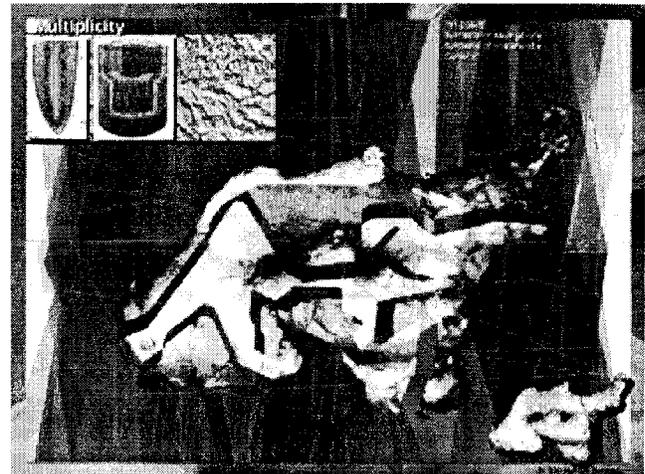


Fig. 2.

a *unity*; it could only be a *multiplicity*. *Unity* would signify a coming together of a number of singular identities with a certain hierarchical order. Further, *unity* and *multiplicity* are different from *uniformity*. *Uniformity* denotes elements of equal appearances either conjoined or just simply piled together. D&G observe that the concept of unity appears only when there is a takeover of the multiplicity by one dominant element or idea that establishes a subject/object duality. A house of cards is a system where every point depends on every other point to maintain its unity, but every point is not connected to every other point without dependence. So, if you remove any single connection everything else falls down. All that is united must fall apart. All that is united maintains its integrity by top-down hierarchical strategies. In multiplicity, there is no interdependence, but there is a direct interconnection. The distinction between multiplicity and uniformity or unity is that in multiplicity, every element is complete in and of itself and is capable of regenerating and re-growing itself. Now, think of the way we normally conduct the design studios: The design studios are treated as self-contained units with a clear beginning, middle and a clear conclusion. The student is thought of as a neophyte who needs to be imparted "training" and "learning" so that he or she might become "one of us" – the wise trees. The flows of the conventional studios have clear-cut hierarchies and orders. You disrupt one flow and that severely affects the functionality of the rest.

3. **Principle of asignifying rupture (fig 3):** A rhizome may be shattered into multiple pieces, but it always grows again from those pieces, thus resisting any singular signification. If a rhizome is ruptured at any point into two pieces, the two pieces would grow along the lines of rupture and regenerate themselves. The rupture and the number of ruptures do not signify anything in particular. In contrast, if a square is cut diagonally, it breaks down to two triangles. For those of you who are *Star Trek* buffs, *The Borg Cube* is a rhizome that can regenerate itself even if it is shattered into pieces. Thus, it always maintains an edge over *Starship Enterprise*, which is non-rhizomatic in its construction and operation. The implications for an architectural curriculum are many. Our educational system works with "quantification" of training and education imparted through well-quantified and numbered courses. If you take away one course and one quantity from that system everything else dis-integrates.
4. **Principle of cartography and decalomania (fig 4):** A cartographic map is a rhizome in the sense that different points on the map form connections with different points of a terrain without a particular beginning or end. A map forms a rhizome with the terrain. In distinction, a tracing (decal) merely establishes a

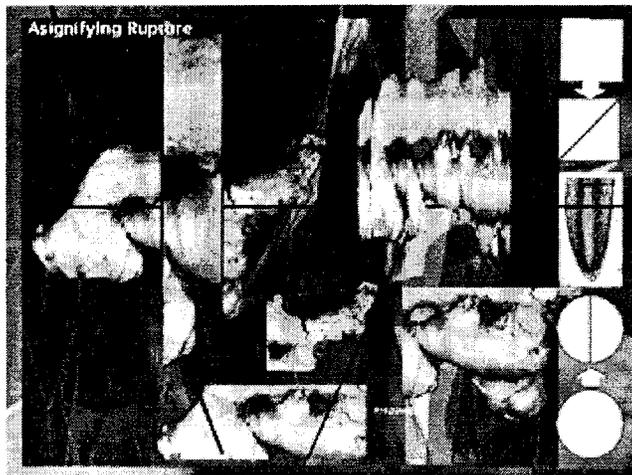


Fig. 3.

singular reproductive connection with the original – a copy. A map is not a tracing of the terrain. A tracing is not a map of a map. D&G write: “The orchid does not reproduce the tracing of the wasp; it forms a map with the wasp, in a rhizome. What distinguishes the map from the tracing is that it is entirely oriented toward an experimentation in contact with the real. The map does not reproduce an unconscious closed in upon itself; it constructs the unconscious.”¹¹ In case of a map, the relationship is mutually enriching and multivalent without imitation or reproduction. I think that this principle is quite important to architectural pedagogy in the sense that certain curricula and certain design studios are modeled as imitations or reproductions of the professional architectural setup of the so-called “real world.” The problem with such a model is that it reduces the studio to a mock up and it becomes a tracing of the profession. A rhizomatic studio would be a map of the world, but not a tracing or mock up of the world.

JEAN-FRANÇOIS LYOTARD AND POSTMODERN PEDAGOGY

Jean-François Lyotard’s *The Postmodern Condition: A Report on Knowledge* is a seminal work on the status of knowledge in the information age. Lyotard produced his report at the request of *Conseil des Universités* of the Government of Quebec. Lyotard writes: “Our working hypothesis is that the status of knowledge is altered as societies enter what is known as the postindustrial age and cultures enter what is known as the postmodern age.”¹² He argues that in the last fifty years, sciences and technologies have been concerned mainly with language and epistemological strategies: theories of linguistics, problems of communication and cybernetics, computers and their languages, problems of information storage, etc. He concludes that “The old principle that the acquisition of knowledge is indissociable from the training (*Bildung*) of minds, or even of individuals, is becoming obsolete and will become ever more so.”¹³

Another dimension of Lyotard’s argument has to do with the problem of fragmentation and “delegitimation” of knowledge. In traditional societies, legitimation of cultural, social, political and technological spheres was bestowed by what he calls “grand narratives” and the power structures built around those grand narratives such as *The Holy Bible* for the Christian world, and *Mahabharata* and *Ramayana* for the Hindu world. In the past two centuries, science and scientific modes of thinking have become discourses of legitimacy in themselves and have been struggling to usurp the central position once held by the grand narratives of various societies. The result, Lyotard points out, is that we now have two distinct realms of knowledge. One is *scientific or technical knowledge* and the other is *narrative knowledge*. The problem is that scientific/



Fig. 4.

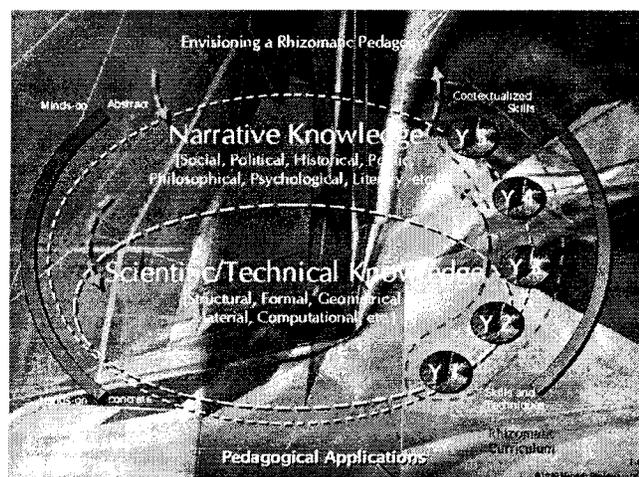


Fig. 5: Pedagogical model based on Lyotard’s exposition of postmodern condition.

technical knowledge does not represent the totality of human knowledge and thus cannot offer total legitimacy to the way we live and the way we understand our world. So, instead of becoming trees in themselves, scientific knowledge and narrative knowledge could form rhizomes with the world and grow together.

Lyotard’s exposition is ultimately geared toward understanding the impact of epistemological issues on pedagogical realities. He notes: “If we accept the notion that there is an established body of knowledge, the question of its transmission, from a pragmatic point of view, can be subdivided into a series of questions: Who transmits learning? What is transmitted? To whom? Through what medium? In what form? With what effect? A university policy is formed by a coherent set of answers to these questions.”¹⁴ The conventional power structures, which are based on traditional or modern organization of knowledge, are undergoing radical shake-ups. In a rhizomatic world, knowledge flows in a number of ways and often in a heterarchical manner. Schools, as the main sources of learning, and the teacher as the fountainhead of knowledge will be outmoded as long as they maintain isolationist and tree-like strategies.

Lyotard’s model of knowledge in postindustrial societies offers a good structure for an architectural pedagogy. This is precisely because architectural education needs to bring together technical and liberal knowledge into a creative relationship. As a part of the “digital technology integration initiative” at a university where I chaired the respective taskforce, we made an effort to adapt this



Fig. 6. Reality Center web site. Opening page.

PRELUDE TO A WALL-LESS STUDIO

The idea of *wall-less studio* emerged from the lessons learned from teaching a "(digital) design studio" in 1995 (fig 6). More than the technical problems that surrounded the studio, what truly disconcerted me at that time were ideological and pedagogical questions. Despite the fact that there was already a book published on electronic design studios,¹⁵ and despite the fact that numerous papers were presented about electronic design studios in various forums such as ACADIA, the philosophical questions and meta-technological dilemmas remained unanswered. How do we use the new medium of design, visualization, communication and transmission? At what level do we address the digital medium? What would be the structure of instruction and learning in the studio? To what extent would the Internet and computer-produced work be used in the student evaluation? Should the discourse of the studio be constantly made available to the world through the Web? How would the interaction between the students, their work and people from around the world be facilitated? All these and more questions lingered for a long time beyond the end of the studio.

A project entitled "*The Reality Center*" was chosen to address the studio's concerns at many levels. The project was formulated to enable a multi-level discourse about the computers and architecture. Paul Virilio's ideas served as the essential intellectual impetus for the project. The premise of the studio was that what we take for granted and hold sacred about architecture today will become questionable and uncertain in a future dominated by virtual reality technology. Our ontological and epistemological ground will give way to a quicksand of bits as described in the studio brief:

All cultural and geographic references will be either erased or overwritten or blurred. The growth of the physical cities will become chaotic and anarchic where human beings will be able to traverse multiple levels of reality quite without an orienting and locating reference. At that juncture, places such as "Reality Center" will be necessitated in order to emphatically define what is real, when is real and to act as spatio-temporal and mytho-historical anchors in the ocean of floating experiences.

The students were challenged to come up with well-considered and debated responses and architectural strategies to address such a scenario. The studio was networked to the World Wide Web and the students were encouraged to reach out and make new connections with respected personalities in related fields. Students took advantage of the new environment of the Internet to contact numerous stalwarts in allied fields. This kind of access to information, people and resources was unprecedented. The new epistemological environment is much larger than any of us could imagine and its impact is also larger than any of us could imagine. A web site was created for the studio with links to student pages and project resources. The final reviews were conducted on the

Virtual reality (VR) is the elimination of the medium by bringing a human fabrication of reality into direct sensual contact. In such a condition, which bypasses the traditional devices of metaphors, metonyms, signs and symbols, VR blurs the distinction between reality as we have known it so far and the illusion created by the computer. Dream, waking and virtual reality merge into one seamless state of existence where one can no longer distinguish between them. Memory — traditionally stored in monuments, texts, photographs and hard drives — now ceases to be memory by entering the present moment as a "lived-remembrance" which could then be manipulated and brought into the present. There will be no memory. Nor will there be a need for memory. The past will be dead and so will be the future; they coalesce into one flow of experiences. In VR, you don't *read* the memory; instead, you *live* the memory and manipulate it according to your wish.

World Wide Web. Over 3,000 people around the world visited the website and some responded enthusiastically to the project and the student work displayed on the web. The comments were distributed to the students and the evaluations were sent to the instructor.

The studio served as a valuable exercise in understanding the new medium, the new societal environment and the new cultural context. The studio helped me formulate important questions that led me to the idea of the wall-less studio as a new pedagogical model.

ENVISIONING WALL-LESS STUDIOS

Here we need to make a clear distinction between the notion of *wall-less studios* and some experiments carried out at Columbia University, MIT and elsewhere. These *paperless studios*, *electronic design studios* and *virtual design studios* are significant strides toward coming to grips with the changing environment and context of architectural education. However, those experiments also portray how difficult it is to break free from the bounds of the past models of studios and to find apt theoretical and philosophical narratives and metaphors to advance new pedagogical models. For instance, *paperless studios* are centered on a pedagogical discourse about the use of the medium of design within the studio boundaries. Such a studio may question the traditional media of design but not necessarily the traditional pedagogical modes of conducting a design studio. The framework of those studios is defined and maintained by the instructors and students with the discourse contained within the walls of the studio. I myself have encountered such difficulties and therefore can understand the struggle for innovation. These difficulties remind me of the early days of cinema when people could not escape the theatrical modes of presenting a story. The real revolution in cinema occurred when people realized how time and space could be edited, cut, spliced and montaged at will.

In contradistinction, a wall-less studio is NOT necessarily about digital technology albeit it harnesses digital technology. A wall-less studio is not necessarily a digital design studio. A wall-less studio is a rhizome. It is a concept that ventures beyond the metaphorical walls of the studio and strives to establish rhizomatic connections with the profession, academia, people, resources and knowledge from around the world, and aims to let those connections profoundly influence the process and workings of the design studio. A wall-less studio does not *copy*, *trace* or *reproduce* the professional setup. Rather, it seeks to connect to the profession and *map* and transform both ends of the connection. Wall-less studio is about establishing connections between people, texts, machines, resources, and discourses both inside and outside the studio walls as opposed to the traditional modes of conducting a studio, namely "training" and "problem solving."

The design studio instructor would become a facilitator and moderator and a major resource in a wall-less studio as opposed to the conventional models of "guru" and "master-apprentice." In a wall-less studio, the discourse of the studio crosses the boundaries of the studio. It is not a simulation of the "outside world" or "real world," but makes significant connections with the "larger world" by eliminating the "outside-inside" and "real-simulated" dualities of the traditional pedagogical models. A wall-less studio is about breaking the barriers of disciplines and cultures through the use of technology. A wall-less studio is not necessarily a digital design studio as the question of medium of design is only one of the concerns of the studio. ***A wall-less studio is more a political and pedagogical move than a technological move.*** Thus, a wall-less studio seeks to achieve a real integration of people, students, teachers, resources, cultures and discourses.

In a wall-less studio, there would be no four-way division between the instructor, the student, student's work and the so-called

"real world." The work produced in the studio is not a simulation of the "real thing." Neither is the instructor the commander-in-chief of the studio, nor is a student a half-baked professional striving for perfection. Instead, the work, the students, the instructor and the world (the entire world: its people, cultures, professionals, resources, texts, things, relationships, memories ...) form a rhizome. Together, the quartet forms a rhizome and grows beyond the "walls" of the studio.

Wall-less studios could very well be architectural pedagogy's significant first step toward entering the unfolding noosphere. Jean-François Lyotard's postmodern pedagogical and epistemological ideas coupled with Deleuze and Guattari's rhizomatic writings pave way for us to understand the direction of our technological civilization. I hope that the ideas that are brought together and discussed in this paper would frame important questions and scenarios for an architectural pedagogy that responds to the context it is in. The issues confronted here are too large to be coherently, cogently and rigorously addressed in a brief paper. I hope that these ideas will become basis for further pedagogical and scholarly rhizomes to grow. I will conclude with Deleuze and Guattari who write with a flamboyant French flair:

We're tired of trees. We should stop believing in trees, roots, and radicals. They've made us suffer too much. All of arborescent culture is founded on them, from biology to linguistics.¹⁶

NOTES

- ¹ Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge*, (Minneapolis: University of Minnesota Press, 1993), p. 52.
- ² See, Martin Heidegger, *The Question Concerning Technology*, (New York: Harper Torch Books, 1977).
- ³ *Ibid.*, p. 12.
- ⁴ *Ibid.*, p. 1.
- ⁵ Jacques Ellul, *The Technological Society*, (New York: Vintage Books, 1964), p. 6.
- ⁶ Deleuze and Guattari build upon Gregory Bateson's ideas of "Plateau". They write: "A plateau is always in the middle, not at the beginning or the end. A rhizome is made of plateaus. Bateson used the word "plateau" to designate something very special: a continuous, self-vibrating region of intensities whose development avoids any orientation toward a culmination point or external end." Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, (Minneapolis: University of Minnesota Press), 1994.
- ⁷ Martin Pearce and Maggie Toy, "Introduction," *Educating Architects*, (London: Academy Editions, 1995), p. 7.
- ⁸ See Fredric Jameson, "Foreword," *The Postmodern Condition: A Report on Knowledge*, (Minneapolis: University of Minnesota Press, 1993), p. xviii.
- ⁹ *Ibid.*, p. 7.
- ¹⁰ *Ibid.*
- ¹¹ *Ibid.*, p. 12.
- ¹² Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge*, (Minneapolis: University of Minnesota Press, 1993), p.3.
- ¹³ *Ibid.*, p. 4.
- ¹⁴ *Ibid.*
- ¹⁵ See Malcolm McCullough, William J. Mitchell, and Patrick Purcell, (eds.), *The Electronic Design Studio: Architectural Knowledge and Media in the Computer Era*, (Cambridge, MA: MIT Press, 1990).
- ¹⁶ Deleuze and Guattari, *A Thousand Plateaus*, op. cit., p. 15.