Field

"The order is not rationalistic and underlying but is simply order,

Conditions

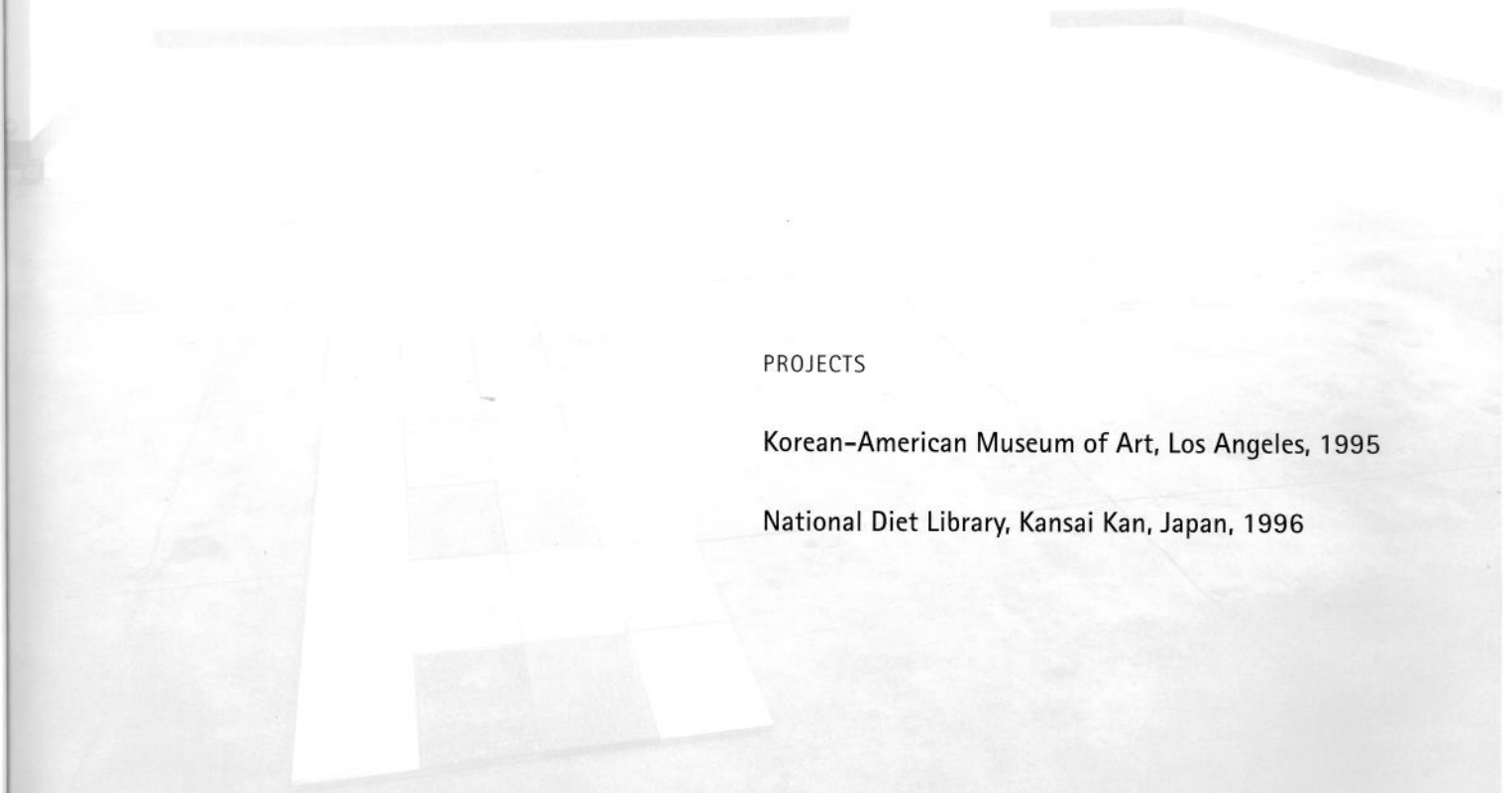
like that of continuity, one thing after another."

DONALD JUDD

PROJECTS

Korean-American Museum of Art, Los Angeles, 1995

National Diet Library, Kansai Kan, Japan, 1996



Amy Lipton Gallery, New York, 1989–91. Detail

The field describes a space of propagation, of effects. It contains *no matter or material points*, **rather functions, vectors and speeds. It describes local relations of difference within fields of celerity, transmission or of careering points, in a word, what Minkowski called the** *world*." SANFORD KWINTER, 1986[1]

01 FROM OBJECT TO FIELD

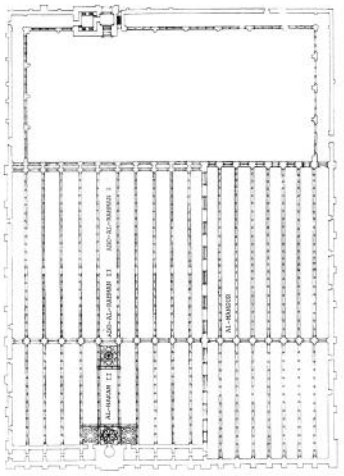
Field conditions moves from the one toward the many, from individuals to collectives, from objects to fields. In its most complex manifestation, the concept of field conditions refers to mathematical field theory, to nonlinear dynamics, and to computer simulations of evolutionary change. However, my understanding of field conditions in architecture is somewhat distinct from its more exact meaning in the physical sciences. I intend the phrase to resonate with a more tactical sense, as it would for an anthropologist or a botanist engaged in "fieldwork," for a general facing the field of battle, or the architect who cautions a builder to "verify in field." My concern parallels a shift in recent technologies from the analog to the digital. It pays close attention to precedents in visual art, from the abstract painting of Piet Mondrian in the 1920s to minimalist and postminimalist sculpture of the 1960s. Postwar composers, as they moved away from the strictures of serialism, employed concepts such as "clouds" of sound or, in the case of Iannis Xenakis, "statistical" music in which complex acoustical events cannot be broken down into their constituent elements.[2] The infrastructural elements of the modern city, by their nature linked together in open-ended networks, offer another example of field conditions in the urban context. A complete examination of the implications of field conditions in architecture would necessarily reflect the complex and dynamic behaviors of architecture's users, and speculate on new methodologies to model program and space.

To generalize, a field condition could be any formal or spatial matrix capable of unifying diverse elements while respecting the identity of each. Field configurations are loosely bound aggregates characterized by porosity and local interconnectivity. Overall shape and extent are highly fluid and less important than the internal relationships of parts, which determine the behavior of the field. Field conditions are bottom-up phenomena, defined not by overarching geometrical schemas but by intricate local connections. Interval, repetition, and seriality are key concepts. Form matters, but not so much the forms of things as the forms *between* things.

Field conditions cannot claim to produce a systematic theory of architectural form or composition. The theoretical model proposed here anticipates its own irrelevance when faced with the realities of practice. These are working concepts derived from experimentation in contact with the real.

0.2 GEOMETRIC VS. ALGEBRAIC COMBINATION

The diverse elements of classical architecture are organized into coherent wholes by means of geometric systems of proportion.



The Great Mosque of Cordoba, Spain, c. 785–800. Shaded area indicates original extent

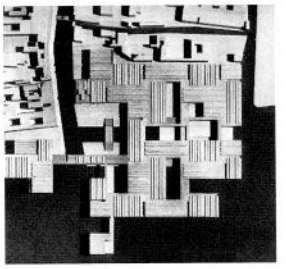
Although ratios can be expressed numerically, the relationships intended are fundamentally geometric. Alberti's well know axiom that "Beauty is the consonance of the parts such that nothing can be added or taken away" expresses an ideal of organic geometric unity. The conventions of classical architecture dictate not only the proportions of individual elements but also the relationship between individual elements. Parts form ensembles which in turn form larger wholes. Precise rules of axiality, symmetry, or formal sequence govern the organization of the whole. Classical architecture displays a wide variation on these rules, but the principle of hierarchical distribution of parts to whole is constant. Individual elements are maintained in hierarchical order by extensive geometric relationships in order to preserve overall unity.

The Great Mosque of Cordoba, Spain, constructed over a span of nearly eight centuries, offers an instructive counterexample.[3] The form of the mosque had been clearly established: an enclosed forecourt, flanked by a minaret tower, opening onto a covered space for worship (perhaps derived from market structures, or adapted from the Roman basilica). The enclosure is loosely oriented toward the *qibla*, a continuous prayer wall marked by a small niche (the *mihrab*). In the first stage of construction (c. 785–800) the typological precedent was respected, resulting in a simple structure of ten parallel walls perpendicular to the *qibla*. These walls, supported on columns and pierced by arches, defining a covered space of equal dimension to the open court. The arched walls operate in counterpoint to the framed vistas across the grain of the space. The columns are located at the intersection of these two vectors, forming an undifferentiated but highly charged field. This field generates complex parallax effects that prey on visitors as they move through the space. The entire west wall is open to the courtyard, so that once within the precinct of the mosque there is no single entrance. The axial, processional space of the Christian church gives way to a nondirectional space, a serial order of "one thing after another."[4]

The mosque was subsequently enlarged in four stages. Significantly, with each addition the fabric of the original has remained substantially intact. The typological structure is reiterated at larger scale, while the local relationships have remained fixed. By comparison with classical Western architecture, it is possible to identify

contrasting principles of combination: one *algebraic*, working with numerical units combined one after another, and the other *geometric*, working with figures (lines, planes, solids) organized in space to form larger wholes.[5] In Cordoba, for example, independent elements are combined additively to form an indeterminate whole. The relations of part to part are identical in the first and last versions constructed. The local syntax is fixed, but there is no overarching geometric scaffolding. Parts are not fragments of wholes, but simply parts. Unlike the idea of closed unity enforced in western classical architecture, the structure can be added onto without substantial morphological transformation. Field configurations are inherently expandable; the possibility of incremental growth is anticipated in the mathematical relations of the parts.

It could be argued that there are numerous examples of classical Western buildings that have grown incrementally and have been transformed over time. St. Peter's in Rome, for example has an equally long history of construction and rebuilding. But there is a significant difference. At St. Peter's, additions are morphological transformations, elaborating and extending a basic geometric schema, and tending toward compositional closure. This contrasts with the mosque at Cordoba where each stage replicates and preserves the previous stage of construction by the addition of similar parts. And at Cordoba, even in later stages when the mosque was consecrated as Christian church and a Gothic cathedral was inserted into the continuous and undifferentiated fabric of the mosque, the existing spatial order resisted the central or axial focus typical of the Western church. As Rafael Moneo has observed: "I do not believe that the Cordoba Mosque has been destroyed by all these modifications. Rather, I think that the fact that the mosque continues to be itself in face of all these interventions is a tribute to its own integrity."[6]



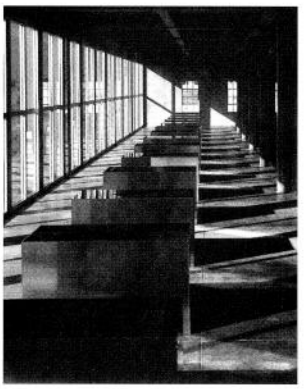
Le Corbusier, Venice Hospital, 1964–65

To briefly extend the argument to a more recent example, Le Corbusier's Venice Hospital (1964–65) employs a syntax of repeated self-same parts, establishing multiple links at its periphery with the city fabric. The project develops horizontally, through a logic of accumulation. The basic block of program, the "care unit" formed of twenty-eight beds, is repeated throughout. Consulting rooms occupy open circulation spaces in the covered areas between. The rotating placement of blocks establishes connections and pathways from ward to ward, while the displacement of the blocks opens up voids within the horizontal field of the hospital. There is no single focus, no unifying geometric schema. As in the mosque at Cordoba, the overall form is an elaboration of conditions established locally.[7]

0.3 **WALKING OUT OF CUBISM**

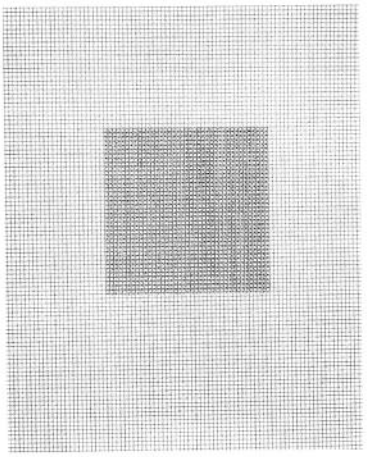
Barnett Newman, it has been said, used a sequence of plane/line/plane to "walk out of the imperatives of cubist space and close the door behind him."[8] The story of postwar American painting and sculpture is in large part a story of this effort to move beyond the limits of cubist compositional syntax. Sculptors in particular, working under the shadow of the achievements of abstract expressionist painting, felt that a complex language of faceted planes and figural fragments inherited from prewar European artists was inadequate to their larger ambitions. It is out of this sense of exhaustion that minimalism emerged in the mid-sixties. Robert Morris's refusal of composition in favor of process, or Donald Judd's critique of "composition by parts" evidence this effort to produce a new model for working that might be as simple and immediate as the painting of the previous decades they so admired.

Minimalist work of the sixties and seventies sought to empty the artwork of its figurative or decorative character in order to foreground its architectural condition. The construction of meaning was displaced from the object itself to the spatial field between the viewer and the object: a fluid zone of perceptual interference, populated by moving bodies. Artists such as Carl Andre, Dan Flavin, Morris, and Judd sought to go beyond formal or compositional variation to engage the space of the gallery and the body of the viewer. In written statements, both Judd and Morris express their skepticism toward European (i.e., cubist) compositional norms. They place their work instead in the context of recent American developments.



Donald Judd, installation view, Marfa, Texas

As Morris wrote: "European art since Cubism has been a history of permuting relationships around the general premise that relationships should remain critical. American art has developed by uncovering successive premises for making itself."[9] Both Morris and Judd single out Jackson Pollock for his decisive contribution. Judd notes that "Most sculpture is made part by part, by addition, composed." For Judd, what is required is consolidation: "In the new work the shape, image, color and surface are single and not partial and scattered. There aren't any neutral or moderate areas or parts, any connections or transitional areas."[10] The aspirations of minimalist work are therefore toward unitary forms, direct use of industrial materials, and simple combinations: a "pre-executive" clarity of intellectual and material terms. Minimalism's decisive tectonic shift activated the viewing space and reasserted the artwork's condition as "specific object."

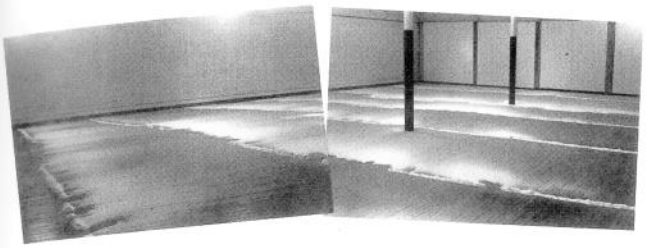


RIGHT: Eva Hesse, untitled, 1967

BELOW: Barry Le Va: *Bearings Rolled* (six specific instants; no particular order), 1966–67

And yet if minimalism represents a significant overturning of prewar compositional principles, it remains indebted to certain essentializing models in its reductive formal language and use of materials. Its objects are clearly delimited and solidly constructed. (Judd's later architectural constructions confirm this essential tectonic conservatism.) Minimalism develops in sequences, but rarely in fields. It is for this reason that the work of artists usually designated "postminimal" is of particular interest here.[11] In contrast to Andre or Judd, the work of artists such as Bruce Nauman, Lynda Benglis, Keith Sonnier, Alan Saret, Eva Hesse, and Barry Le Va is materially diverse and improper. Words, movement, technology, fluid and perishable materials, representations of the body—all of these "extrinsic" contents that minimalism had repressed—return. Postminimalism is marked by hesitation and ontological doubt where the minimalists are definitive; it is painterly and informal where the minimalists are restrained; it remains committed to tangible things and visibility where the minimalists are concerned with underlying structures and ideas. These works, from the wire constructions of Alan Saret to the pourings of Lynda Benglis to the "nonsites" of Robert Smithson, introduce chance and contingency into the work of art. They shift even more radically the perception of the work, from discrete object to a record of the process of its making in the field.

The artist who moves most decisively in the direction of what I am calling field conditions is Barry Le Va. Partly trained as an architect, Le Va is acutely aware of the spatial field implicated by

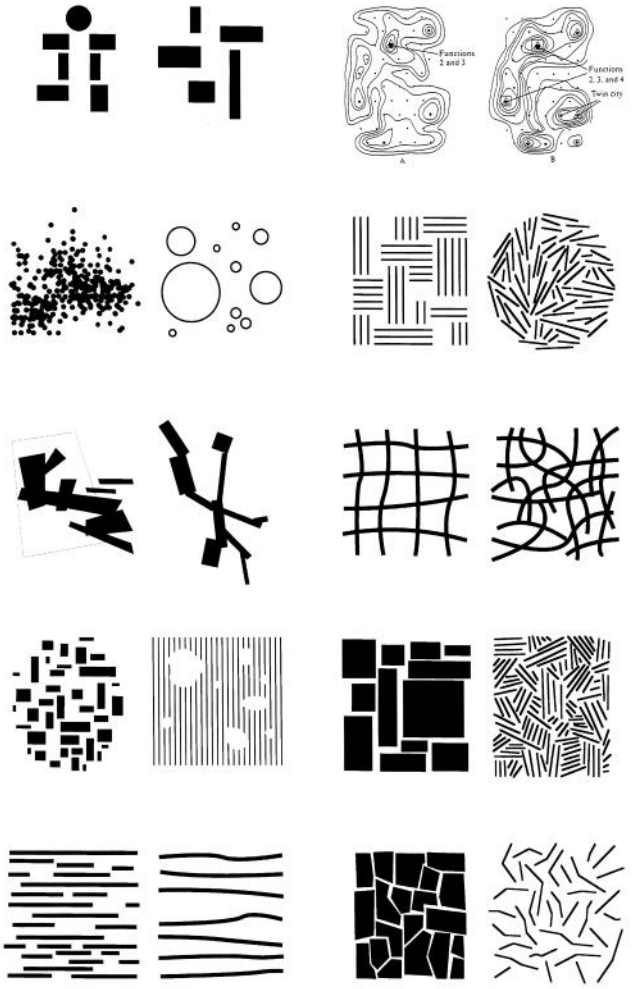


Barry Le Va, *Six Blown Lines*, 1969

the sculptural work. Beginning in the mid-sixties, he began making pieces, some planned in advance, others incorporating random process, that thoroughly dissolve the idea of "sculpture" as a delimited entity, an object distinct from the field it occupies. He called these works "distributions": "Whether 'random' or 'orderly' a 'distribution' is defined as 'relationships of points and configurations to each other' or concomitantly, 'sequences of events.'"[12] Local relationships are more important than overall form. The generation of form through "sequences of events" is somewhat related to the generative rules for flock behavior or algebraic combination. Le Va signals a key compositional principle emerging out of postminimalism: the displacement of control to a series of intricate local rules for combination, or as a "sequences of events," but not as an overall formal configuration. In the case of postminimalism, this is often related to material choices. When working with materials such as wire mesh (Saret), poured latex (Benglis), or blown flour (Le Va), the artist simply cannot exercise a precise formal control over the material. Instead the artist establishes the conditions within which the material will be deployed, and then directs its flows. In the case of Le Va's pieces of felt cloth, it is a matter of relating fold to fold, line to line. In later works from the sixties, the materials themselves become so ephemeral as to function as a delicate registration of process and change.

0.4 THICK 2D: MOIRÉS, MATS

All grids are fields, but not all fields are grids. One of the potentials of the field is to redefine the relation between figure and ground. If we think of the figure not as a demarcated object read against a stable field, but as an effect emerging from the field itself—as moments of intensity, as peaks or valleys within a continuous field—than it might be possible to imagine figure and field as more closely allied. What is intended here is a close attention to the production of difference at the local scale, even while maintaining a relative indifference to the form of the whole. Authentic and productive social differences, it is suggested, thrive at the local level, and not in the form of large scale semiotic messages or sculptural forms. Hence the study of these field combinations would be a study of models that work in the zone between figure and abstraction, models that refigure the conventional opposition between figure and abstraction, or systems of organization capable of producing vortexes, peaks, and protuberances out of individual elements that are themselves regular or repetitive.



Field conditions diagrams

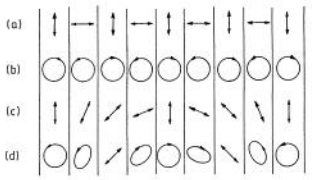
A moiré is a figural effect produced by the superposition of two regular fields. Unexpected effects, exhibiting complex and apparently irregular behaviors result from the combination of elements that are in and of themselves repetitive and regular. But moiré effects are not random. They shift abruptly in scale, and repeat according to complex mathematical rules. Moiré effects are often used to measure hidden stresses in continuous fields, or to map complex figural forms. In either case there is an uncanny coexistence of a regular field and emergent figure.

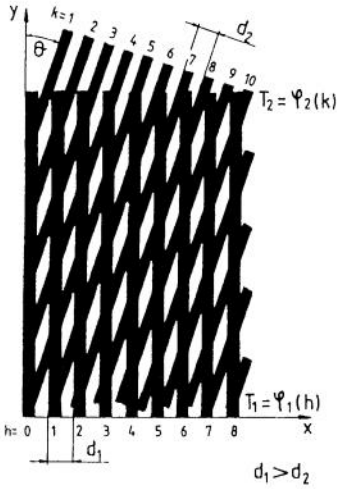
In the architectural or urban context, the example of moiré effects begs the question of the surface. The field *is* fundamentally a horizontal phenomenon—even a graphic one—and all of the examples described thus far function in the plan dimension. Although certain postmodern cities (Tokyo for example) might be characterized as fully three dimensional fields, the prototypical cities of the late twentieth century are distinguished by horizontal extension. What these field combinations seem to promise in this context is a thickening and intensification of experience at specified moments within the extended field of the city. The monuments of the past, including the skyscraper, a modernist monument to efficient production, stood out from the fabric of the city as privileged vertical moments. The new institutions of the city will perhaps occur at moments of intensity, linked to the wider network of the urban field, and marked by not by demarcating lines but by thickened surfaces.

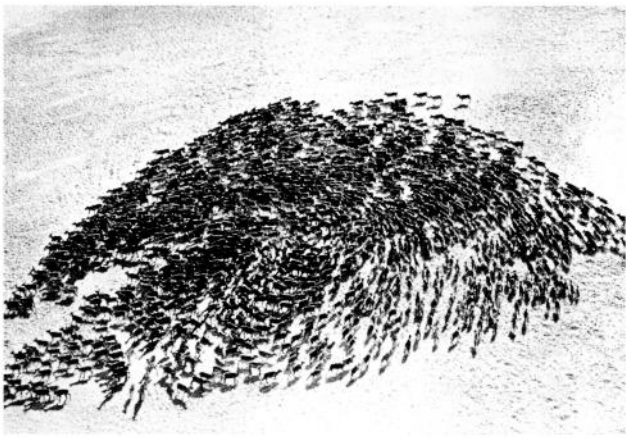
LEFT: Moiré pattern

BELOW: Diagram of moiré grates

BOTTOM: Reindeer herd reacting to helicopter overhead



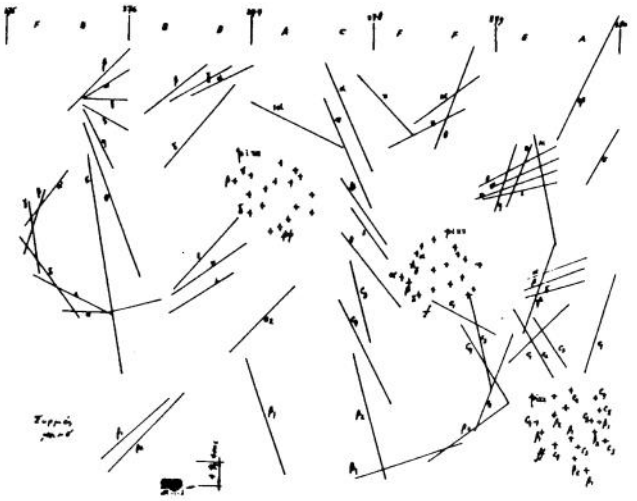




0.5 FLOCKS, SCHOOLS, SWARMS, CROWDS

In the late 1980s, artificial intelligence theorist Craig Reynolds created a computer program to simulate the flocking behavior of birds. As described by M. Mitchel Waldrop in *Complexity: The Emerging Science at the Edge of Order and Chaos*, Reynolds placed a large number of autonomous, birdlike agents, which he called "boids," into an on-screen environment. The boids were programmed to follow three simple rules of behavior: first, to maintain a minimum distance from other objects in the environment (obstacles as well as other boids); second, to match velocities with other boids in the neighborhood; third, to move toward the perceived center of mass of boids in its neighborhood. As Waldrop notes: "What is striking about these rules is that none of them said "Form a flock"...the rules were entirely local, referring only to what an individual boid could do and see in its own vicinity. If a flock was going to form at all, it would have to do so from the bottom up, as an emergent phenomenon. And yet flocks *did* form, every time."[13]

The flock is clearly a field phenomenon, defined by precise and simple local conditions, and relatively indifferent to overall form and extent. Because the rules are defined locally, obstructions are not catastrophic to the whole. Variations and obstacles in the environment are accommodated by fluid adjustment. A small flock and a large flock display fundamentally the same structure. Over many iterations, patterns emerge. Without repeating exactly, flock behavior tends toward roughly similar configurations, not as a fixed type, but as the cumulative result of localized behavior patterns.



Iannis Xenakis, Syrmos, 1959. Graphic version of "fixed states" before transcription

Crowds present a different dynamic, motivated by more complex desires, and interacting in less predictable patterns. Elias Canetti in *Crowds and Power* has proposed a broader taxonomy: *open* and *closed* crowds; *rhythmic* and *stagnating* crowds; the *slow* crowd and the *quick* crowd. He examines the varieties of the crowd, from the religious throng formed by pilgrims to the mass of participants in spectacle, even extending his thoughts to the flowing of rivers, the piling up of crops, and the density of the forest. According to Canetti, the crowd has four primary attributes: "The crowd always wants to grow; Within a crowd there is equality; The crowd loves density; The crowd needs a direction."[14] The relation to Reynolds' rules outlined above is oblique, but visible. Canetti, however, is not interested in prediction or verification. His sources are literary, historical, and personal. Moreover, he is always aware that the crowd can be liberating as well as confining, angry and destructive as well as joyous.

Composer Iannis Xenakis conceived his early work *Metastasis* as the acoustical equivalent to the phenomenon of the crowd. Specifically, he was looking for a compositional technique adequate to express powerful personal memories:

> Athens—an anti-Nazi demonstration—hundreds of thousands of people chanting a slogan which reproduces itself like a gigantic rhythm. Then combat with the enemy. The rhythm bursts into an enormous chaos of sharp sounds; the whistling of bullets; the crackling of machine guns. The sounds begin to disperse. Slowly

> silence falls back on the town. Taken uniquely from an aural point of view and detached from any other aspect these sound events made out of a large number of individual sounds are not separately perceptible, but reunite them again and a new sound is formed which may be perceived in its entirety. It is the same case with the song of the cicadas or the sound of hail or rain, the crashing of waves on the cliffs, the hiss of waves on the shingle.[15]

In attempting to reproduce these "global acoustical events," Xenakis drew upon his own considerable graphic imagination, and his training in descriptive geometry to invert conventional procedures of composition. That is to say, he began with a graphic notation describing the desired effect of "fields" or "clouds" of sound, and only later reduced these graphics to conventional musical notation. Working as he was with material that was beyond the order of magnitude of the available compositional techniques, he had to invent new procedures in order to choreograph the "characteristic distribution of vast numbers of events."[16]

Crowds and swarms operate at the edge of control. Aside from the suggestive formal possibilities, with these two examples architecture could profitably shift its attention from its traditional top-down forms of control and begin to investigate the possibilities of a more fluid, bottom-up approach. Field conditions offers a tentative opening in architecture to address the dynamics of use, behavior of crowds, and the complex geometries of masses in motion.

0.6 DISTRIBUTED INSTITUTIONS

There exists a strong historical connection between the precise rules of axiality, symmetry, and formal hierarchy that govern classical architecture and the traditional type-forms of Western institutions. The library, the museum, and the concert hall, as much as the bank, the city hall, or the capitol all appeal to the stability of classical order to signify their status as durable institutions. In the twentieth century, the utopian programs of early modern architecture sought to render the institutions of liberal democracy as transparent bodies. Lightweight steel skeletons and glass curtain walls signaled literal transparency, while a functional and compositional dynamic made visible the separate elements of these increasingly complex programs.

However, the extent to which compositional shifts are capable of refiguring these institutions reaches a limit. On the one hand, it should be noted that while the rules of combination may be new in these modernist compositions of fragments, the classical assumption that composition is concerned with the arrangement of and connections among those parts persists. As Robert Morris has put it, "European art since Cubism has been a history of permuting relationships around the general premise that *relationships should remain critical*."[17] Perhaps a more radical shift is required. This is all the more urgent given that, under the pressure of technological or societal shifts, institutions are changing from within. As the social, political, and technical roles of those institutions are called into question, the corresponding typologies lose their special capacity

to order and represent the space of these institutions. In the case of the library or the museum, what was once a place of certainty, an orderly deposit of knowledge arranged in familiar and agreed-upon categories, has been eroded by the onrush of media, consumer culture, and telecommunications. Architecture's capacity to represent and shelter that collective memory has in turn withered. To design a library or a museum today is to contend with an entirely new set of expectations. Above all, it means to recognize an ever increasing uncertainty about what constitutes knowledge, who has access to it and how it is distributed.

There are no simple equations of organization and behavior, of politics and form. As Michel Foucault has pointed out, while there are constraining architectures, there are no specifically "liberating" architectures. "Liberty," he says, "is a practice."[18] Nonhierarchical compositions cannot guarantee an open society or equality in politics. Democracy, it has been said, has less to do with the ability to do things as with the ability to undo things. The goal, therefore, in the final two projects presented in this volume is to rethink conventional institutional form through the concept of the field. The organizational principles proposed here suggest new definitions of "parts," and alternative ways of conceiving the question of relationships among those parts. The form of these institutions does not attempt to represent, metaphorically, the new condition of the institution, nor does it attempt to directly instigate new ways of thinking or behaving. Instead, by forming the institution within a directed field condition, connected to the city or the landscape, a space is left for the tactical improvisations of future users. A "loose fit" is proposed between activity and enclosing envelope.

Michel Serres's reminder that static, accidents, and disruptions will inevitably undermine any formal system defined by points and lines is not so far from what is intended here. More than a formal configuration, the field condition implies an architecture that admits change, accident, and improvisation. It is an architecture not invested in durability, stability, and certainty, but an architecture that leaves space for the uncertainty of the real:

> Stations and paths together form a system. Points and lines, beings and relations. What is interesting might be the construction of the system, the number and disposition of stations and paths. Or it might be the flow of messages passing through the lines. In other words, a complex system can be formally described....One might have sought the formation and distribution of the lines, paths, and stations, their borders, edges and forms. But one must write as well of the interceptions, of the accidents in the flow along the way between stations...What passes may be a message but parasites (static) prevent it from being heard, and sometimes, from being sent.[19]

NOTES:

1. Sanford Kwinter, "La Cittá Nuova: Modernity and Continuity" in *Zone 1/2* (New York, 1986), 88–9, emphasis added.
2. Xenakis uses language and concepts very close to those suggested here. See Nouritza Matossian, *Xenakis* (London: Kahn and Averill, 1990), 59.
3. The following discussion was adapted from Rafael Moneo: "La Vida de los edifcios" *Arquitecture* 256, (Sept.–Oct. 1985): 27–36.
4. This phrase is taken from Donald Judd's discussion of the paintings of Frank Stella: "The order is not rationalistic and underlying but is simply order, like that of continuity, one thing after another." Donald Judd, "Specific Objects," in *Complete Writings: 1959–1975* (Halifax: Nova Scotia College of Art and Design, 1975), 184.
5. The term *algebra* derives from the Arabic *al-jebr* "the reunion of broken parts." *Geometry*, on the other hand, is a word of Greek origin.
6. Moneo, "La Vida," 35.
7. Both the mosque at Cordoba and Le Corbusier's Venice Hospital figure in Alison Smithson's 1974 article "How to Recognise and Read Mat-Building," *Architectural Design* XLIV, 9 (1974): 573–90.
8. Cited in Rosalind Krauss, "Richard Serra: Sculpture Redrawn," *Artforum* (May 1972).
9. Robert Morris, "Anti Form," *Artforum* (April 1968), 34.
10. Judd, "Specific Objects," 183.
11. In fact, postminimalism developed at nearly the same time as minimalism. "Post" here implies a certain degree of dependence and opposition rather than chronological sequence. Note, for example, the absence of women in the ranks of the minimalists; postminimalism would be unthinkable without the contributions of Lynda Benglis or Eva Hesse. A certain fluidity in these categories is also required; Robert Morris, for example, is often grouped with the postminimalists. See Robert Pincus-Witten, "Introduction to Postminimalism" (1977) in *Postminimalism to Maximalism: American Art, 1966–1986* (Ann Arbor, MI: UMI Research Press, 1987).
12. Jane Livingston, "Barry Le Va: Distributional Sculpture," *Artforum* (November 1968).
13. M. Mitchel Waldrop, *Complexity: The Emerging Science at the Edge of Order and Chaos* (New York: Simon and Schuster, 1992), 240–1.
14. Elias Canetti, *Crowds and Power* (New York: Farrar, Straus and Giroux, 1984), 29.
15. Matossian, *Xenakis*, cited from an interview, 58.
16. Ibid., 58–9.
17. Morris, "Anti Form," 34, my emphasis.
18. Michel Foucault, "Nietzsche, Genealogy, History" in *The Foucault Reader*, ed. Paul Rabinow (New York: Pantheon, 1984), 87.
19. Michel Serres, *The Parasite*, trans. Lawrence R. Schehr (Baltimore: Johns Hopkins University Press, 1982), 10–1.