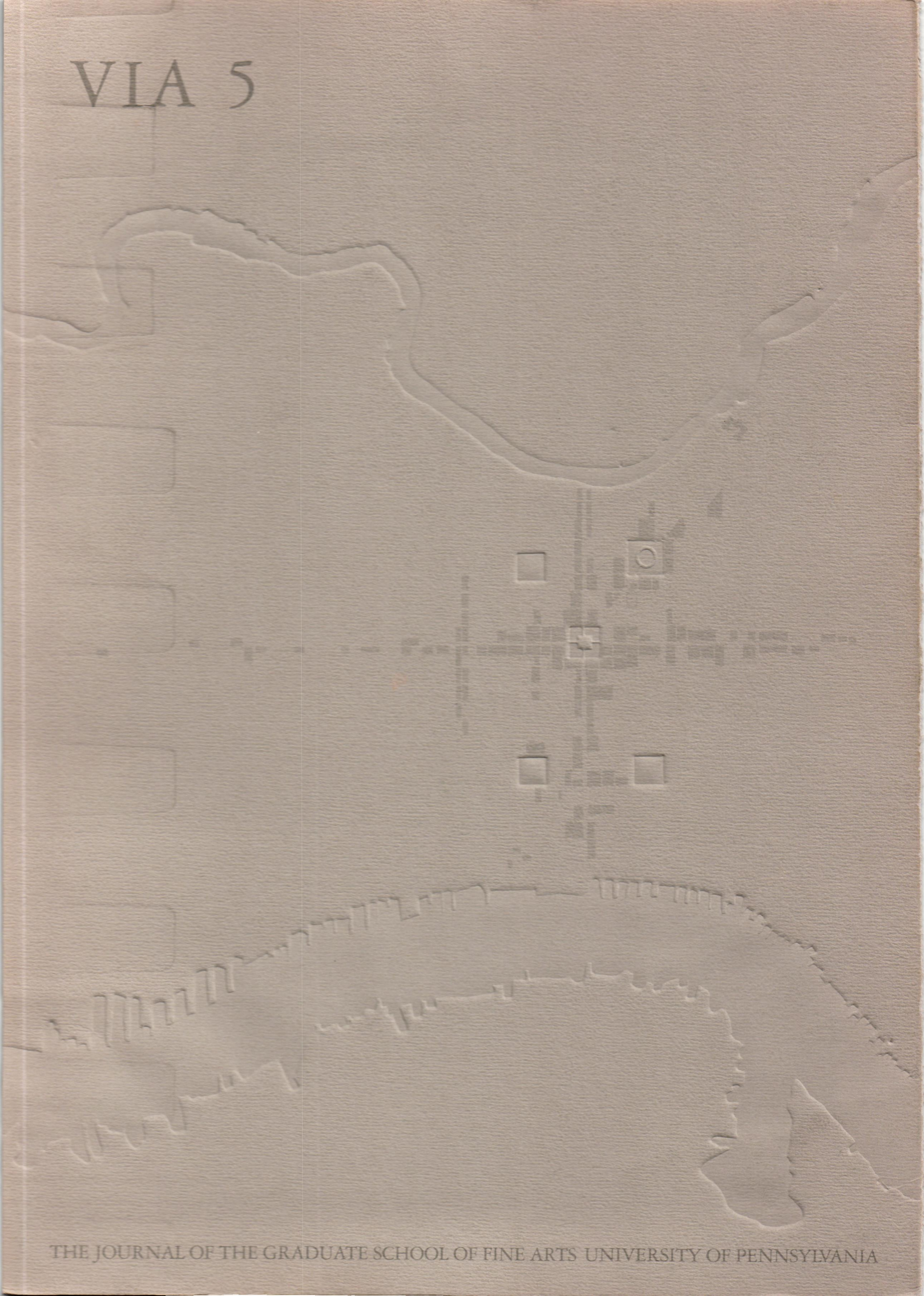
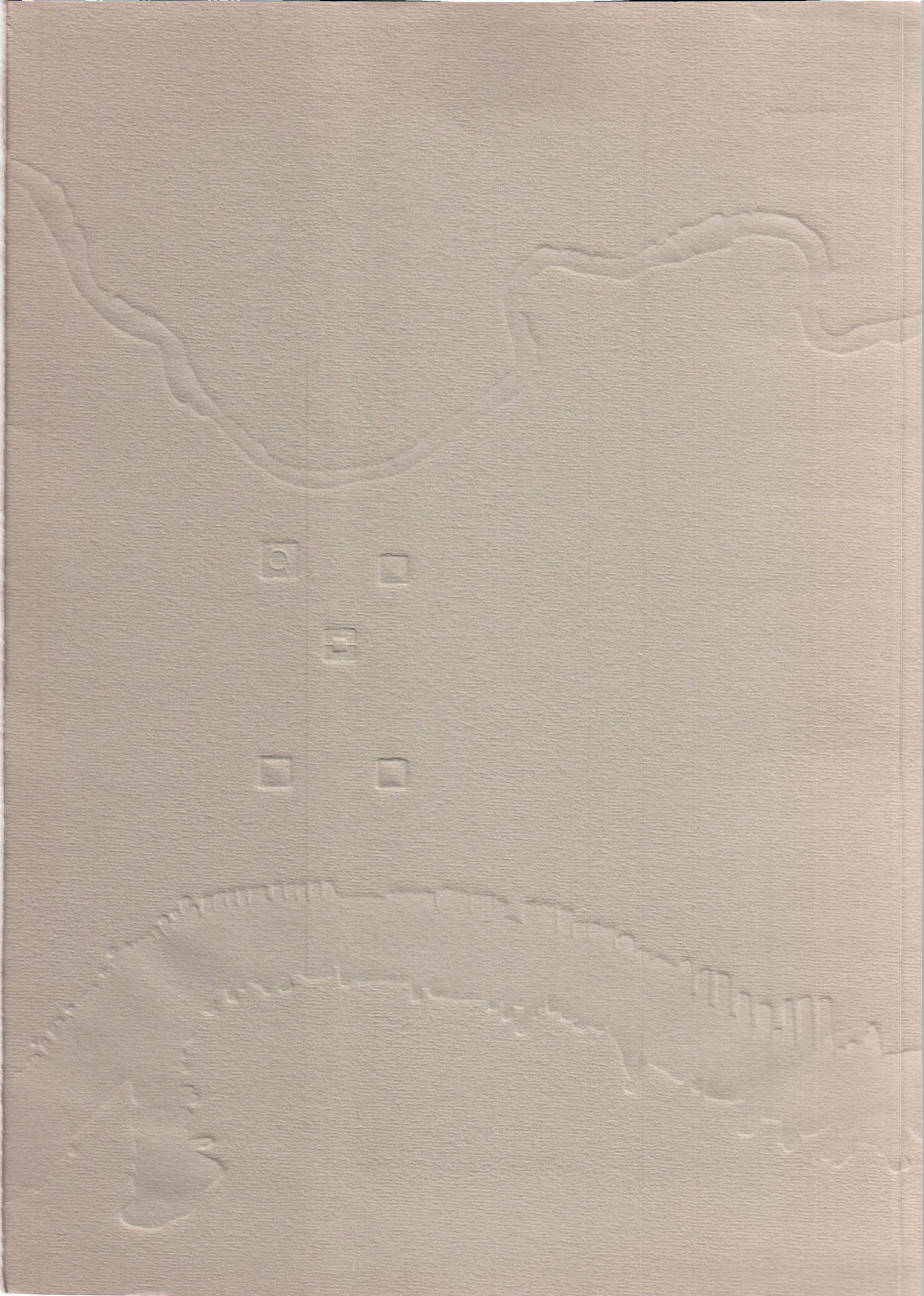
VIA 5



THE JOURNAL OF THE GRADUATE SCHOOL OF FINE ARTS UNIVERSITY OF PENNSYLVANIA



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As with previous issues of *VIA*, "Determinants of Form" explores a single theme. Interest in the theme began in a design studio among architecture students concerned with identifying the fundamental forces that shape natural and man-made environments. This anthology of essays, drawn from a diverse group (planners, historians, poets, philosophers, and architects), is one outcome of that concern.

In introducing the issue, it is appropriate to quote Robert LeRicolais, a visionary engineer. His thoughts on form well express those held by the editors. From his unpublished notes:

There are two approaches to form: one from the outside, taking it as a piece of sculpture made for visual enjoyment; the other comes from within, from the understanding of the true determinants, always in accord with physical facts and necessities. The first approach is but an empty shell; the other, the grain that carries life within itself.

"Determinants of Form" is dedicated to its contributors, whose thoughtful work made this volume possible; and to its readers, whose interest will make these pages come alive.

Darl Rastorfer

VIA 5

DETERMINANTS OF FORM

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FORM:
THE PHILOSOPHIC IDEA AND SOME OF ITS PROBLEMS

Abraham Edel and Jean Francksen

Form is one of the most difficult and provocative ideas in the philosophic repertoire. In one sense it is extremely simple; in another, complex beyond comparison. It had a fascinating career in philosophy, where it took its bow, but it has been enriched and entangled during its sub-careers in the multitude of arts and sciences and even in the perception, purposive activity, and planning of ordinary life. It is maintained, even when not analyzed, by the human tendency to find order, or to create order, in every human sensing or thinking endeavor. And it is usually given some meaning by the particular context of inquiry or action, even while attempts to give it a general meaning may precipitate intellectual floundering. Features associated with various types of order often cling to *form*, and it is occasionally associated, sometimes disastrously, with dichotomies: material-immaterial, static-dynamic, concrete-abstract, sensory-conceptual, and others. This is because there is a tendency for order to drift away in Platonic fashion from that of which it is the order, and when it grasps this illusory freedom its career usually narrows to that abstraction—for example, the static or the intellectual—of which it has become enamored.

The remarks that follow will attempt to clarify the idea of *form* through examination of the cluster of features that characterized its philosophical genesis in Plato and Aristotle. From this we can untangle a number of issues on which science and art and thought in general have at times taken different paths, and we can try to illustrate what is at stake in these issues from discussions of divergent tendencies in the arts.

Classical Greek Genesis

While the earlier pre-Socratics were looking for a basic matter to which *all that is* might be reduced (water, fire, an indeterminate stuff), the Pythagoreans turned their attention to numbers (and so to abstract ideas) as the key to understanding harmony in music, relations in space, the movement of the heavens, the balance of elements in health, even the nature of justice and the explanation of significant differences in the world and life. From these beginnings, particularly after Socrates had focused on ideas and on how to clarify them in dialectical discussion, Plato fashioned the more general notion of the *eidos*, the idea or form. It is an imposing theory, expressing

Detail of the lower Tuscan order from the Villa Pisani, Montagnana, designed by Andrea Palladio.

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the convergence of insight in one field after another: linguistics, physics, mathematics, logic, epistemology, metaphysics, psychology, ethics, art. The bulk of language, he saw, consists of terms that are general, and to understand their meaning is to grasp these general ideas. Physical science aims at universals and laws; its explanations give the governing generalities that particular phenomena exemplify. Mathematics, whether in the arithmetical manipulation of numbers or in the deduction of properties of geometrical figures, deals with fixed ideal objects, not with the shifting material things that may suggest them to the mind. Logic provides ideal standards for the mind to derive the implications of what is asserted, and in the search for definitions it looks for the essential as distinct from the accidental. (Form thus provides the essence.) Epistemology, analyzing the nature of knowledge, distinguishes the flux of beliefs from the grasp of the truth; truth is an ideal of the correct and the unchanging. To know what is true is thus to grasp the real (the concern of what is later called metaphysics), and that real is eternal and unchanging, as contrasted with the flux of phenomena all about us. In psychological processes it is the intellect or reason or thought that grasps the invariant, while the senses present the changing material world. In ethics, we seek rational standards and pursue eternal ideals, which we can use as a basis for criticizing existent ways. In art, both in creation and appreciation, there is a form or idea behind each work, and a grasp of the form guides the hand or mind of the artist and the apprehension of the beholder; beauty itself is the glimmer of the form.

Putting all these principles together, Plato saw forms as the eternal realities at the root of all that is. They are universal, not particular; eternal, not changing; intellectual, not sensible; the objects of knowledge, not of belief. They are immaterial, not material. They are sources of explanation, of meaning, of standards for conduct, of genuine pleasure, of beauty. Much of Plato's philosophical endeavor was directed to systematizing the relations of forms and trying to understand their natures. It is not surprising that in *The School of Athens* Raphael has Plato pointing upward toward a heaven away from the earthly.

Aristotle provides a quite different career for form.[1] Some notion of form is inescapable—Plato's insights into the many disciplines and their structures are not to be gainsaid—but they add up in a different way in Aristotle's philosophy. Aristotle started with a conceptual apparatus in which matter and form are correlative; they refer respectively to the materials and the organization of some situation or product. The distinction is involved in his theory of explanation, the familiar analysis of his four "causes," according to which the factors responsible for anything are: (i) the material cause, the out-of-which the thing is composed, like the bronze out of which the statue is made; (ii) the formal cause, the way the material is organized, an account of which would give its "essence"; (iii) the efficient cause or the moving cause that precipitates the thing's formation, like the advisor for the action, the father for the child, the sculptor for the statue; (iv) the final cause or the for-the-sake-of-which the happening takes place, the end or goal (*telos*) toward which the happening is moving. Aristotle's conception of form absorbs three of these causes—all but the material cause—and the process of absorption shows us the threads in his finished conception.

The final and the formal are assimilated in a teleological view of things and processes. While in the special domain of human affairs the goal may be projected beyond the form—the statue may be created for a religious setting or for private honor—in the broader domains of nature the final cause is the mature development of the form itself in the specific materials. The acorn grows into an oak tree and its end is to express in its career what it is to be an oak, that is, its form. In general, nature works like the artist; the accounts of craft production and biological process in Aristotle are not far apart. Given the absorption of final within formal, it follows that the functional is contained within the meaning of a thing, and any separation of form and function simply shows that function is taken in too narrow a sense.

A way in which efficient and formal cause are brought together has a startling metaphysical outcome. Aristotle generalizes from such phenomena as adults' generation of children and something's becoming hot by action of something else that is already hot to the proposition that the efficient cause is always some activity *of the same type as that which the mature form manifests*. (The actual is prior to the potential.) This gives a continuity and fixity to the form. New forms do not emerge out of some cosmic or human creation. The form, existent in actual materials, repeats itself into fresh existents (if a house were to grow by nature, says Aristotle, it would do it in the way the architect builds it). On the other hand, there are occasional signs of a form's coming to maturity over an historical period, just as the adult comes to maturity; Aristotle's best example is his discussion of tragedy's achieving its completion in the Athens of the classical period.

Form in Aristotle has thus, while remaining bound to matter, moved from being simply an organization or a structure to being a *culminating design*, achieved or maintained, in a world of continuity and repetition. This is not, however, the end of the Aristotelian conception. At a critical point in his *Metaphysics* Aristotle carries out a further assimilation: he fuses the concept-set of matter and form with that of potentiality and actualization. Form is the actualizing of the potentialities in the matter, since there is no separate form. (Only in Aristotle's theology does God appear as pure form or pure actuality, but this idea is not used for specific explanations in the world.) Hence form takes on an individual character; the universal is simply an intellectual abstraction of the form. The form of man is, in effect, the life that he leads, in which his specific potentialities are becoming actualized; it is his structured or patterned living. There are, of course, many forms—witness the species of animals—and the relations of individuals living out these forms is full of accidental happenings. The form thus provides the *essential* as contrasted with the accidental or *incidental*. In general, the assimilation of matter-form with potentiality-actualization imparts a dynamic character to form. Not only motion and change but even unchanging existence in which the form is the full actualization gets this dynamic tinge. Things are active—they do not just exist. The marble before us, as an existing statue, is thus a type of actualization, just as much as is its being made into a statue. If we asked the marble statue what it was doing, it could almost reply, in Sartrean fashion, "I am busy at work being a statue."

The Platonic view of form is thus reversed. The form is in the particular, in its organization and function; it is not separate from the material, but is the actualization of that material's potentialities. It is individual, not universal, although it is universalizable. It is grasped in thought, yet this occurs on the basis of sensory experience; such grasp gives us what is essential for each of the many forms we encounter and enables us to see the meaning when we speak of the form, seeing through the maze of incidentals. The eternity of the forms lies in their continued exemplification in the world; there is no evolutionary change in forms; they are what they are. But there can be a shaping of existence to embody a given form, and a coming to maturity in the lives and thought of artists and craftsmen that gives expression to the form.

What, then, are themes that the Aristotelian conception of form articulates that are relevant to the theory of the arts?

The general idea dominating Aristotle's work on form is that form has a guiding role in the arts and in nature. There is always a guiding idea working its way through the processes of art, in both creation and appreciation. This is the distinctive note, over and above commonsensical elements such as the idea of shape and processes of shaping or the descriptive notion of *order*, no matter how numerous the near-synonyms that cluster around that idea (e.g., *pattern*, *structure*, *design*, *composition*, *organization*, or *relations*).

The guiding idea enables us to distinguish in a particular, whether of science or of art, what is essential and what is incidental. The incidental is what could have been otherwise, the essential is what is fundamental and invariant.

The way in which the form guides processes of nature and art is—since the actual is prior to the potential—a tight governance, just as the program guides the technical process in the functioning of computers or as the genes guide the development and maturation of the organism. To understand human activity and creation we have to find where in experience the form is grapsed or locked into place to gain this guiding position.

Under the guidance of form the potentialities of specific materials are actualized or the matter transformed. There is thus a close relation between the opportunities that complex materials provide and the character and meaning of the artistic product.

The form is to be dynamically conceived both on the creative side, in which the materials are being transformed under the guidance of the idea, and on the receptive side, in which the potentialities of experience are being actualized in the apprehension of the form.

There is a rich variety of forms, and these forms are not to be subsumed under some general idea, as if their role were simply to lure us on to some unified goal. Each is its own end, and there is an ultimate pluralism in spite of accidental crossings and cross-purposes. In that sense, the grasping of a form has a final or intrinsic character.

At bottom, form and matter are relative to one another. What is form in one context can be regarded as matter for some other form in some fresh context; and what is matter can be seen as form in some lower-level analysis. They remain intelligible as long as they are inseparable.

Before going to the theory of the arts, let us remind ourselves that such themes, stemming from classical conceptions of form, have not gone unchallenged in the later history of philosophy. For example, Cartesian dualism separates body and mind, the physical and the immaterial, and reopens the doors to an independent realm of ideas and meanings whose nature is not an expression of material potentialities. Again, Aristotelian pluralism is transformed by Hegel into an idealistic monism: the totality is the only real individual, and so the ultimate Idea is the rational pattern of its historical development. (When we grasp that Idea we see the unfolding that determines what kind of art will have significance at each step—what, as it were, is appropriate to the Spirit of the Age.) Other philosophies tackle not the pluralism but the fixity and essentialism of the Aristotelian forms. The idea of the creative as something boiling up in the stew of nature and the human spirit, not bound by previous forms or essences but seeing or fashioning new ones, is a conception that builds upon the slow seeping into the modern temper of evolutionary ideas and an open world. Aristotle said that Plato was too impressed by Heraclitus' view that all is in flux and therefore turned away too quickly from the material world to the objects of knowledge. Aristotle himself assumed a more orderly world and could therefore keep his gaze on its well-regulated processes. Darwin, in providing an explanation for the origin of species, put onto the broader metaphysical level a view of the origin and transformation of forms in relation to the conditions of historical existence. In modern times pragmatic philosophies thus abandoned the static view of knowledge that Aristotle retained. Emphasizing change, probabilism, and construction, they opened the world to give form the ebullient career in a changing world that it can now have. This strikes hardest at the Aristotelian (and Platonic) idea of the prior actuality of form and turns attention to artistic creation as a less-than-regulated process in which a new form is being fashioned, and not merely a prior form embodied. Nevertheless, in spite of these historical shifts there is much to be gained from looking at the notion of form in relation to its classical genesis, for many of the features of the original notion have persisted. In what follows we want therefore to ask several questions about the arts.

First, does it make sense to sort out the essential from the incidental?

If the essential is what is tied to the form, then to discern the form in a work of art involves sorting out the essential from the incidental. On the other hand, the attempt to separate essence and accident was developed originally (in Aristotle's philosophy) for science; the form is the governing law, universal and abstract in statement, that enables us to understand and find our way in the richly detailed particular. It enables us—to take a standard example from Aristotle—to realize that having eyes is structural, while their color is an incidental item. It may therefore turn out that the attempt to distinguish essence and accident in art is applying categories of science to art and yielding trivial if not wholly irrelevant results. What do we accomplish if in analyzing a painting we declare the fact of eyes to be essential, and the fact that they are gray-green to be incidental? Suppose, however, the eyes are emerald green. Might this not be significant if the green-eyed person is to be exhibiting intense envy, or if it be a Kelly green and the picture is entitled *Hues of St. Patrick's Day*? Would the green of the eyes then be essential to the guiding idea of the picture? And if so, are there not many ways in which an item in the work could become essential and thus become a guiding idea? For example, the red of the grass in Gauguin's *Jacob and the Angel* might be thought to be essential to that picture because it has an organizing role in the color composition.

Such examples have little to do with the original Aristotelian distinction, since that meant by the essential the invariant and necessary, whereas envy obviously can be conveyed in many different or contingent ways. The examples are thus rather concerned with the differences in the significance of the incidentals in relation to the guiding idea of the work. While the distinction of the essential and the incidental may therefore seem inapplicable to the arts, there are clearly kindred or parallel issues worth exploring. For example, disputes about what is ornament and what is not, or how a theme permeates a construction (such as how a specific religious story or doctrine permeates a cathedral or the myths of Athena give a tight unity to the Parthenon) are of this type.

The interesting issue for art that arises from attempts to distinguish the essential from the incidental is the multiplicity of linkages that are possible between the detailed parts or items of a work and the form as a guiding idea. Now, ideas are more or less general or abstract, while particulars are richly detailed. An item in the particular is linked to the form if it gets its meaning from the guiding idea or somehow enhances the form. This presupposes, however, that we have an assured and articulated knowledge of the form from the outset. It may often be the case that the reverse holds: the testing of different linkages between the form and the detail of the work of art is itself helping us to discern and build up the form. Hence the recognition of linkages is itself the determination of the form. This seems to us the most significant outcome

of a distinction between the essential and the incidental. It is also important to note how varied the types of linkage may be—logical, psychological, intellectual, sensory, affective, cultural-historical, and even symbolic (grounded in conventions of the art and its development).

There is a quite different aspect to our present concern that appears when we find the claim that everything in a successful work of art is essential to its being what it is. When Vollard pointed out to Cézanne two tiny spots of uncovered canvas in his portrait, Cézanne replied: "You understand, Monsieur Vollard, if I should put there something haphazard, I should be compelled to do my whole picture over, starting from that place."[2] It is quite conceivable that some works of art are of such a sort, while others are not. If a work is of this sort, then the interesting problem may become its relation to what lies physically beyond the boundaries of the work. This again would require empirical investigation. For example, what is the effect of the frame, if the picture has one? Or of the shade of color on the environing walls, or of the lighting? The history of framing may be of theoretical interest in showing the extent to which frames have secured protective effects for the work of art, have enhanced the form (as in the France of Louis XV and XVI, or in Victorian England), and have successfully isolated the work.

We may conclude that the important problem, if we work with a notion of form as guiding idea, is that of the types of linkage between the form and the detail, and that this is a transactional relation, that it spreads out into many kinds of relations, and that the result is a considerable loosening (in the sense of contextualizing) of the notion of form itself.

The second question we may ask is, How do we construe the relations between form and function?

The classical assimilation of form and function and the basically teleological character of the Greek idea of form yields a tight relationship between form and function, almost as if we were looking at a single phenomenon from different perspectives. On the other hand, in ordinary usage we tend to treat them as separate but as capable of being brought into some sort of congruence. An advertisement for baggage talks casually of "a perfect blend of form and function" as we would talk of blending tobacco or coffee.

To start with a weaker assumption—that form and function are intertwined in many ways—and to let experience determine how far we can go to a tighter unity is probably better. It also has the advantage of turning our attention to the conditions under which stronger relations can be affirmed—whether, for example, it is true as it is so often asserted, that form follows function. Certainly a divergence of form and function cannot rest on the contrast of a richly described form and a single dominant function with the demand that every item in the form be revealed as geared to that function. The contemporary theory of functionalism in social science can at this point come to the aid of a parallel theory in the arts by calling attention to latent functions, hidden functions, and a host of historical functions. These cover everything from social functions of supermarkets, religious functions of baseball, and ideological functions of elections, to the death appeal of the motor car, to sex and power drives. And there are complex historical functions such as emotional appeals of facial expressions rooted not only in physiological similarities but in survivals of past evolutionary and sociocultural functions. One can only say "and so on."

In such a broader interpretation of the relation, form is redolent of function. An excellent illustration of the proliferation of function and its shaping of form is costume design. Of course there is the basic protective function of clothing, but that is only the beginning, and this function itself is quite different in the case of fur coat, party dress, and medieval armor. If the designer elects to have clothing adapt to the body, then it may be made to enhance body form in the light of existent standards of beauty and of what may be risked with propriety. If, on the other hand, the body is used simply as a support for clothing, then the form of the clothing follows largely from the character of the material, yet there is a crossing of functions. The material can disguise the body, accentuate the body, or intermittently reveal the body when it is in motion but not when at rest. The permutations are as endless as the styles, but detailed understanding of form leads regularly to detailed specific functions.

The connection of form and function may not be as direct as "form follows function" suggests. For example, the connection may lie in the processes that make the function possible, and here functional meanings may be intertwined with material consequences that in turn provide a route for form. Speculate on the Greek amphora. Its primary function may be to store oil or wine or the ashes of the dead. The materials used may yield a pleasing combination of earth colors, the colors resulting from chemical effects of the methods of firing. The shape may reflect the ease with which the potter makes a curved vessel. The outer surface now tempts the artist, but of course with scenes relevant to the intended contents: scenes of the household, of battle and of the sad but glorious road to death. Nor is the technique of the scene unaffected by the result to this point: Achilles and Ajax play draughts before us, seated face to face, but their backs are arched in parallel to the curve of the amphora, and the loosely held spear points directly in the line of the handle, almost instructing us where to grasp.[3]

Finally, if we put no constraint on what is to count as a function, a form apparently without a function may carry its function directly within itself. After all, Aristotle defined *praxis* as the doing or action that has an end in itself. So, too, there need be no paradox if the ultimate function of a painting were said to be to provide a visual experience, or of a work of art in general to provide a significant insight. In that case, any war of function and form would culminate in a mutual Aristotelian embrace.

We may also ask if prior existence of a guiding idea is necessary.

Aristotle reiterates that nature works like the artist or craftsman with the actual plan before him. Is it the case, however, that the artist has to work in such a way? Aristotle has allowed that nature makes mistakes (as an artist may) and in the Darwinian world "mistakes" take the shape of incessant mutation, only some of which create the new. It is tempting to ask if a model of this sort, which allows for the novel and the creative and the emerging, with the plan itself transformed in the process, can hold for one or another of the arts.

There are strong metaphysical concerns in this theme. Contemporary philosophy has witnessed a number of revolts against the idea of a fixed nature for man. Historically, it is said, man makes himself. An explanatory model to predict man's path is denied on the ground that any model is a narrowing of perspective to one or another aspect which in its narrowing blots out other perspectives; different models explain more or less, but man is always more than the models. Humans make their own purposes; they do not simply express antecedent purposes. No ideal, too, can wholly capture the human being, since an ideal is itself a thinning of the rich multipotential complex of present existence, which pulls in divergent directions; each ideal clarifies, but no ideal encompasses the whole, for an ideal is directional and not an immaterial reality. Man is always rooted in the thick slice of existence.

How much of this can be found in the arts? In music, of course, the idea of improvisation (as a creative process, not as a makeshift adjustment) is an old one; "Herr Beethoven," a program can announce, "will improvise at the piano." And in the modern world the spontaneous production of the jazz players led the way to today's spontaneity in music and dance. What the planless yields in comparison to the planned still seems to be an unresolved question. It is hard to find unplanned architecture. Will it be improvisation such as that of the Watts Towers? Or is it simply the fact of change in a long-range project, as Gaudi changed the plan of The Expiatory Church of the Holy Family into what will be an imposing Barcelona Cathedral? More likely is the development of the multifunctional, which leaves open varieties of determination and works toward sufficiently small modules to make varieties of form and function possible. Something like that takes place in the prefabrication of parts to allow for variable wholes, but in that case the whole is fixed when its specific plan is made. (Indeed, the totality of the possibilities computable at the outset might be included as part of the plan.) Plans allowing a variety of needs, even changing needs, within a structure that admits of almost casual interior readjustments as those needs arise, offer the possibility of improvisation.

It is also of interest to ask in what sense the product is active or dynamic, and not just a finished object.

Aristotle's assimilation of matter-form to potentiality-actualization gave a dynamic cast to all existence, so that (as suggested above) even being was to be considered a kind of doing. He achieved this through a teleological approach by having form first govern the creation and then maintain the character of the finished work. The dynamism of the modern world has followed a different path, from a mechanistic physics that found the dynamics in an underlying constant movement to a twentieth-century scientific revolution that brought space and time together, all of this accompanied with the growth of a dynamic technology. The world thus comes to be regarded as a collection of events fast or slow, rather than of things; the intellect has even been attacked for its static presentation of phenomena and challenged to develop conceptual tools for encompassing constant change.

What happens when the work of art is sensed as active, and not as a finished object? The turn to the dynamic in art and the works of art cannot be given an oversimplified formulation. There have always been the arts of movement as well as the arts of rest; even the ancients distinguished in classification dance and song and drama from painting and sculpture and architecture. And the medieval folk well knew how the interior of the Gothic cathedral lifted the spirit upward and how the placement of the altar carried the spirit forward; all this was envisaged in the form. The ways in which the dynamic may be embraced in the form are therefore multiple and complex, and their enumeration calls for careful distinction rather than bundling into a single formula.

In perhaps the mildest sense of the dynamic, the form may call for changing uses. The lovely squares of the old European towns today shift in use from markets in the morning, to parking places in the afternoon, to scenes of social gatherings and café life in the evening. The walls of Carcassone, no longer needed for defense, are walks as well as the settings for celebrations and tourist attractions; on July 14 the town itself becomes theater, with fires lighted on the ramparts, just as the canal in Venice on Feast Days can become theater as the people take to barges and gondolas.

In an important sense already suggested, the form may be dynamic in its impact on the observer. Certainly after Kant the perceiver has an active role in the determination of aesthetic effect. We may take this more literally than Kant intended by looking to the effect of the perceiver's activity, just as we may find in Yaacov Agaam's compositions, depicting the multifaceted character of reality, that the resulting picture is different according to the stand of the observer. Again, the guiding idea of a work may well include what it is to evoke in participants and viewers—as simply as when, in Rembrandt's *The Risen Christ at Emmaus*, the ladder in the shadow may be put there to bring to the viewer's mind the background of the crucifixion. In architecture the shaping of space has much to do with an intangible reaction of the people who move in that space. Features of grandeur or cosiness, formality or informality, warmth or coldness, are directly conveyed.

In many respects the most intriguing sense of the dynamic is that in which the guiding idea of a work calls for an internal presentation of motion and change. Films make motion, while Futurism showed motion in a static medium. Of course the problems of the dynamic in painting and architecture in these and doubtless other forms are the special problems of the "static" arts. For the fullest history of the visual dynamic one clearly has to go to the development of photography and the film. Nevertheless, in all art the perspective from which one sees the work as active, not as a finished external object, makes a profound difference insofar as it turns attention to the transactions that are going on with the observing self and the environing culture. This phase was much exploited in the idealist philosophies of art—Croce and Collingwood, for example—that, beginning with their roots in this aspect of Aristotle, ended by locating the work of art itself in consciousness. Collingwood even says that "The work of art proper is something not seen or heard, but something imagined."[4] Hence he even denies the distinction between matter and form in a philosophy of art. For Aristotle, however, that distinction is unavoidable, although it remains throughout a relative one.

The final question we should ask is, How are form and matter related?

There are two distinct questions in the relation of form and matter. One is, What is the extent of dependence of form on matter, on its potentials and opportunities as well as on its constraints? This is a familiar topic, particularly with the rapid development of new materials usable in the arts. The second question, which is our present concern, is the correlative character of the two concepts. Aristotle's point was simply that what in one context is regarded as form may in another be regarded as matter, and conversely. He regards earth as matter for marble as form, marble as matter for the statue of Apollo as form, the statue of Apollo as part of the matter for the temple as form; similarly, wood for the house, the house for the city. It is therefore the context with its interests and conditions that determines what is to be the *locus* of form, that is, where we are to look for form. Let us illustrate with two cases: one a shift downward on the matter-form axis, the second, a shift upward.

The first is a familiar story, still with us. Impressionism, as is well known, marked a break in the tradition of painting. Instead of forthright presentation of people and things that of course had shapes and colors because things in the world do have shapes and colors and because the artist working on a two-dimensional canvas has to attend to them, Impressionism shifted the focus to those shapes and, especially, to those colors. They ceased, in a grammatical analogy, to be the adjectives of the objects presented, and made a bid to be the substantives. The pictures presented the tone and color and play of light on surfaces. Where, however, was the locus of the form? The form or guiding idea of Monet's studies of the cathedral at Reims is not the religious vision; it lies in the realization of the subtle play of light at different times of the day. (If we insist that a cathedral is by definition a religious object and look there for the inspiring form, we shall have to invent some Zoroastrian heresy for Monet!) Now while subsequent movements, such as Cubism, weighed geometric structures more heavily, the development through Neo-Impressionism is drawn through the expansion of techniques for the manipulation of color. (It is a suggestive parallel that in philosophy in that period writers on epistemology began to talk of colored surfaces rather than of colored objects, almost as if colored patches, as sense-data, were being peeled from surfaces which themselves had a sensory autonomy from the objects.) Finally, in our own time, there have been attempts to make chromatic structure the central focus of painting.[5] To look for the form in such painting is to look at what the colors do in the mutual sensory interactions.

Our attempt here is not to explore such movements, not to predict their courses or to attempt their aesthetic evaluation. They illustrate strikingly the way in which the locus of form, what is used as the guiding idea in the work, may shift from one level to another. In the older tradition, color and shape were the matter (in the Aristotelian sense) of the painter's art, serving the idea that organized them. In the extreme of the appeal to chromatic structure, the previous matter now is the seat of form.

For an illustration of the upward shift, take the movement from the perspective of the architect to that of the city-planner. Ideally, the form that guides the design of the building would be integrated into the form that guides the design of the city. But we know the apprehension that attended the first appearance of a skyscraper on the skyline of London, and the anguish over what should replace Les Halles in Paris. There are the beauties of a city that has chanced to grow well, and there are the horrors of a city that has just happened to grow in an architectural laissez-faire. It would be carrying coals to Newcastle to pursue these topics here. But it is worth noting that there is no easy reconciliation of the levels of form, and we are pressed to relate them instead as matter and form. Edmund Bacon gives an example of five towers in Stockholm's Norrmalm project in which, though there was a general plan in relation to the city area, slight differences between each successive tower resulted in a dissonance, "as in a quartet in which each person is performing slightly off key. It is worse than it would have been if the shapes of the towers had been unrelated, and, of course, worse than if any one of the four designs had been repeated four times."[6] His conclusion is simply that "an organism is all of a piece, and you cannot deal with one part of it, leaving another part out, except at your peril." But of course this simply points to the question of which is the organism, the city or the building. Bacon finally calls for the amalgamation of planning and architecture.[7] This is a challenge rather than something to be done by an act of will. It cannot be left to chance, nor can it always be a matter of fortunate accident, as when, for example, the Roman remains in Split were ample enough so that instead of being relegated to a museum they could continue as an old city in which modern life could build and accommodate itself.

These two brief examples show that the place in which we seek the form is relative to our needs and purposes, values and interests, hopes of experiment and of progress. This is not an arbitrary relativity, for the location of a form is itself a kind of experiment, testing whether such an organization of the materials will prove satisfactory in terms of the underlying needs and interests.

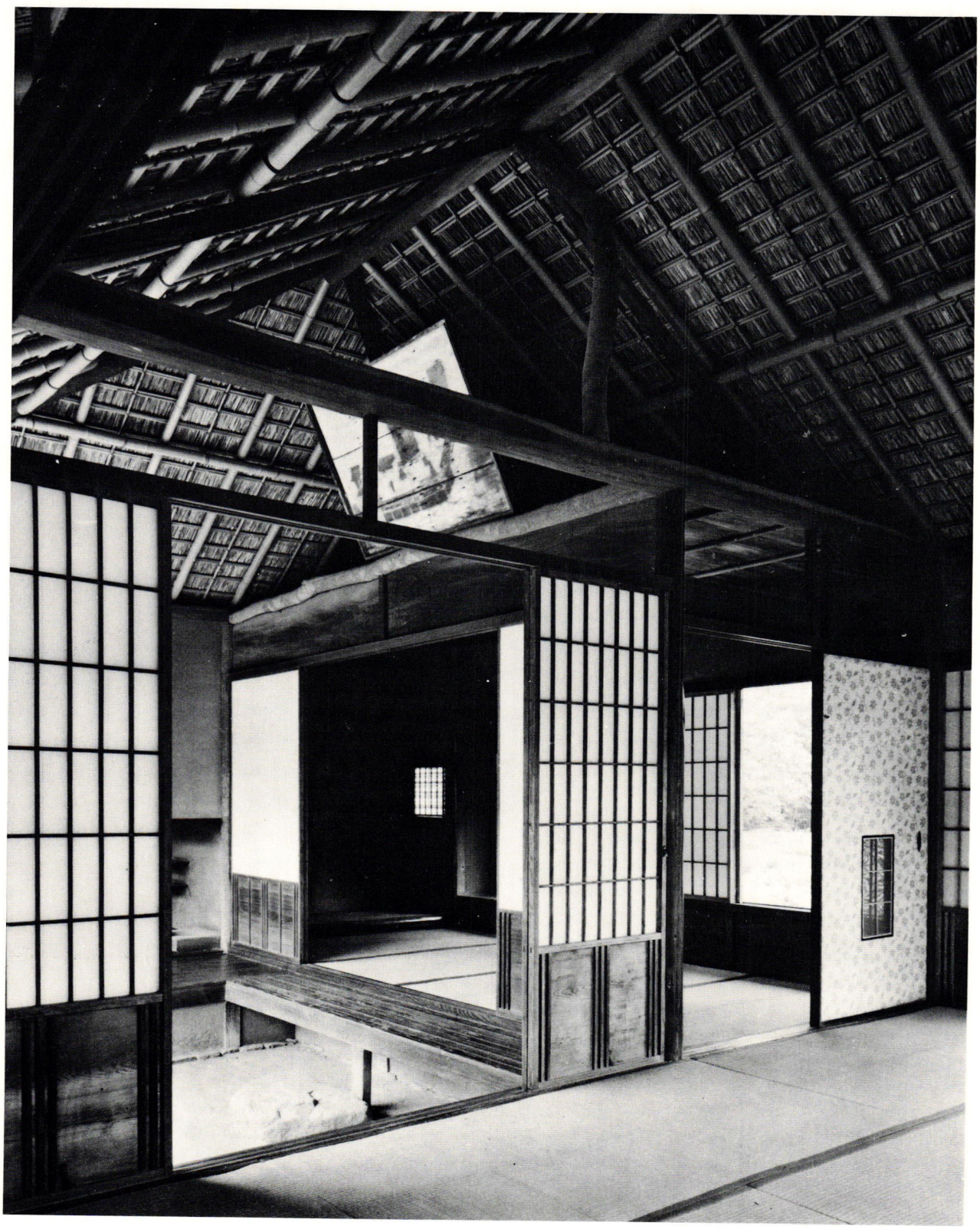
Conclusions

Our first conclusion is more general than one about form itself. It is the need to recognize the relativity of all categories that organize fields of inquiry, craft, construction—a relativity of contexts and conditions and purposes. Let us illustrate this with David Billington's attempt to make a fundamental contrast between structures and machines, and with a response by Mario Salvadori.[8] Billington takes structures to be static and often large-scale, custom-made, designed to last, and unique. Machines, on the other hand, are dynamic, small-scale, mass-produced, not intended to last indefinitely, and universal in the sense of performing a definite function wherever they may be. He suggests that the dike and the locomotive be seen as symbolic of this contrast. Having set down this dichotomy as basic for engineers, he outlines different laws for each, and in the end allies the machine with science and the structure with art.

Now this is a pretty formidable dichotomy. How secure is its categorial contrast? Does it capture two distinct forms? Would it not be possible to think of a structure as itself a machine doing slower or steadier jobs, just as the dike is holding back the constantly beating waves? If so, Billington's contrast concerns chiefly practical methods of construction under different conditions of speed and stability. In responding to Billington, Salvadori quotes Corbusier's "*la maison c'est une machine à habiter.*" He calls attention to cases where problems arising in structures are met with machine-like devices; for example, the use of thousands of dampers or dashpots to dampen a building's oscillation; or preventing the outer columns of a building from becoming destructively hot by permanently circulating a liquid. We may add that flying machines serving as temporary hotels and space stations serving as dwellings and factories would likewise straddle the categorical divide. And, it is worth noting, machines that do nothing in the traditional sense can become works of art with a strong kinetic effect, such as Tinguely's machines, whose imprecision of action generates surprise, anticipation, or anxiety while they twitter, creak, and groan.

The illustrations we have considered may suggest that the concepts that organize a field and the modes of organization they dictate hold under limited conditions of materials, purposes, traditions of construction, and ingenuity. Borderline cases may be ignored while the conditions are stable and the clear cases furnish a normal paradigm. But with changed conditions, increased knowledge, new techniques, and more inventiveness come conceptual vagueness and conceptual shifts. Large-scale conceptual alterations become possible.

This conclusion clearly holds for the concept of form itself. It takes different shape as conditions change and knowledge grows, and interests focus more sharply on one or another portion of creative and appreciative processes. Form as guiding idea may be pushed upward Platonically and become more general. Following Aristotle, on the other hand, we see that form may be kept close to the product to become almost the embodied identity of the individual work. In these wanderings form can come to cover sensory organization, structure, or any of a host of concepts to which the term has been applied in the history of art discourse since its classical genesis. If this is ambiguity, it still may be systematic ambiguity, rendered more precise by attention to focus and level, prompted by conditions and purposes. Form remains a useful notion if we have responsible form-talk. It embodies the search for order in understanding and construction, and delineation of form in a given context under given conditions constitutes a proposal of the order and level of order at which we may significantly aim. But what holds form together is the matter of the context and its potentials and purposeful directions. Form is thus a channel for our discovery of similarities and differences in the flux of things along lines that are humanly and purposively significant. While we continue to use the notion, we should not place too great a burden on it.



KIWARI IN JAPANESE DWELLINGS

Akira Naito

The traditional method of structural design in Japanese architecture is called *kiwari*.[1] Literally meaning "lumber utilization," *kiwari* originated with practical concerns for structural stability and the economic use of construction materials.

Kiwari underwent continuous development over a period of centuries, paralleling and often enabling the innovation of other aspects of architectural design. In its ideal form, the *kiwari* method began with the smallest structural unit. From that unit was generated a series of dimensions that constituted a form of modular coordination. Though based on the framework of traditional construction and embodying the secret art of building passed among carpenters of old, *kiwari* evolved into an abstract theory. Through history its refinements were progressively motivated by the desire for architectural beauty such that aesthetics came to govern design, undermining *kiwari* as part of an interdependent system of decision-making grounded in the art of building.

There are more than four hundred extant technical volumes that deal with *kiwari* whose contents range from design theory to instructional manuals geared to the methods of the day. These books cover a variety of structures, including shrines, temples, gates, dwellings, Sukiya tea houses, castles, and furniture building. What concerns this author—namely, the dwelling—is dealt with by more than forty volumes; the material presented herein was derived from these works.

The Old Method: *Kiwari* in the Early and Late Muromachi Period (1333–1573)

The oldest known written account of *kiwari* is in *The Three Generation Book* (*Sandaikan*). Written by the followers of the Nakai Master Carpenters' School of Kyoto, the first edition appeared in 1489.[2] Though there are only short technical descriptions of housing in the book, the following excerpt is representative of its basic theory:

In order to know the count of the house, it is necessary to make six divisions; these are called the 3, 2, 1, 6, 5, 4 divisions; the structure is divided into six and made up from the six; from the small the large is obtained. There are main beams dividing the six parts . . . the six divisions can be seen in the roof graduations . . . things are accommodated easily by use of the sun *and* shaku *measures where the smaller builds into the larger.*

The Geppa-ro, one of the tea houses of the Katsura Palace dating from the 1640s; view is from the Middle Room looking toward the First Room.

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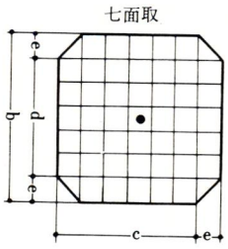
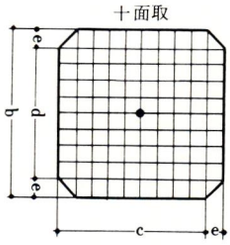
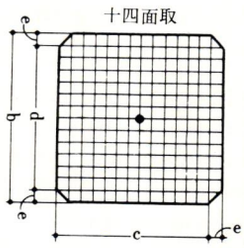
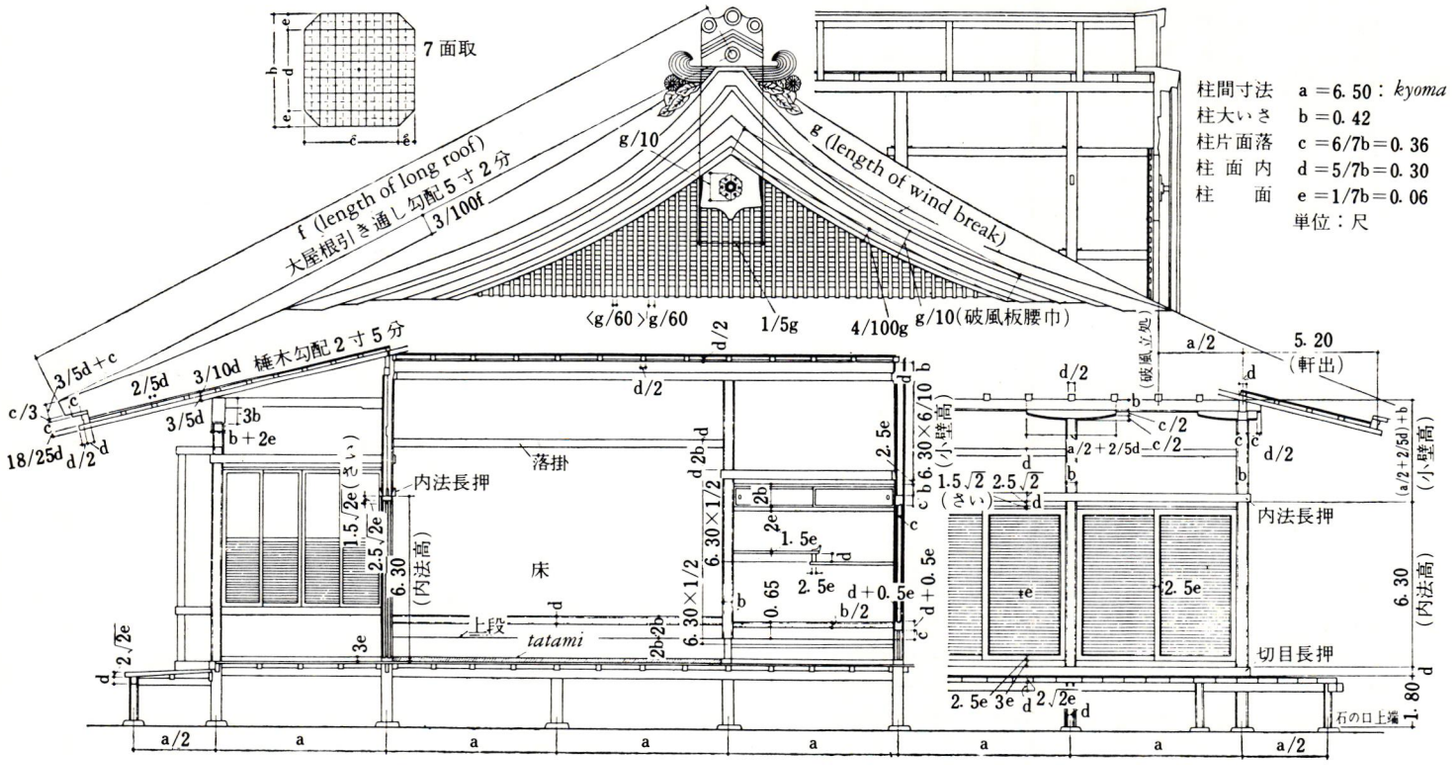
時代区分 / 木割	Old Method		Tose-ho Method	
	Early Muromachi	Late Muromachi	Momoyama	Edo
Post cross-section	Dimensions of post cross-section are not fully standardized.	七面取 	十面取 	十四面取 
Standardized units	a=7.00	a=6.50 (*kyoma*)	a=6.50 (*kyoma*)	a=6.30 (*tatami*)
	b=0.06 a=0.42	b=0.42	b=a/10=0.65	b=0.42
		c=6b/7=0.36	c=9b/10=0.585	c=13b/14=0.39
		d=5b/7=0.30	d=8b/10=0.520	d=12b/14=0.36
	e=0.06	e=b/7=0.06	e=b/10=0.065	e=b/14=0.03

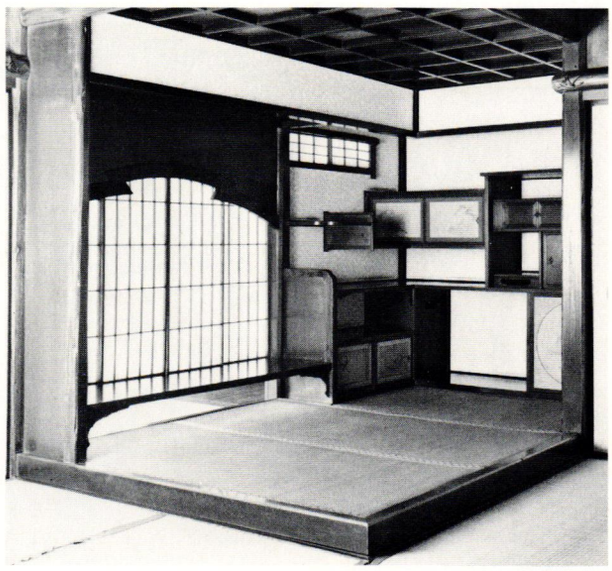


Accordingly, when a house was designed, a single generating line was sectioned into equal divisions of six (each division is termed *me*). By using multiples of the six-part form, the designer generated all the proportional elements to which structural dimensions were eventually assigned. For example, when determining the thickness of a vertical support, the designer first multiplied the number of basic divisions of the proportional system (six) by three to arrive at eighteen. Next, the six divisional numbers— 3 to 2 to 1 and 6 to 5 to 4—were added to obtain mid-divisions (fig. 1). If the distance between posts were set at 7 *shaku*, as was typical during the early Muromachi Period (1 *shaku* = 1/.995 feet), the six-division method would lead one to obtain a 0.42 *shaku* cross-section for the wood posts. Nonstructural elements also followed the six-division module, but with stock dimensions one-tenth that of the structure.

During the early stages of *kiwari*'s development, the aesthetic character of a dwelling ultimately depended upon the designer. It was he who, after considering the overall qualities of a structural diagram, quantified a plan by imposing dimension upon proportion. Herein lay the freedom of *kiwari* design.

The architectural style of dwellings through this period was influenced by Buddhist architecture of the Tang Dynasty in China. Evidence suggests that the same type of construction used for Shinto shrines and Buddhist temples—a main building with a canopied penthouse—was used for personal dwellings. The addition of the everyday tools and decorations of people's lives such as *oke*, *kikko kushi* and *sumi* (wood vessel, tortoise shell comb, charcoal burner) made this construction, which had no real personality of its own, adaptable for dwelling.

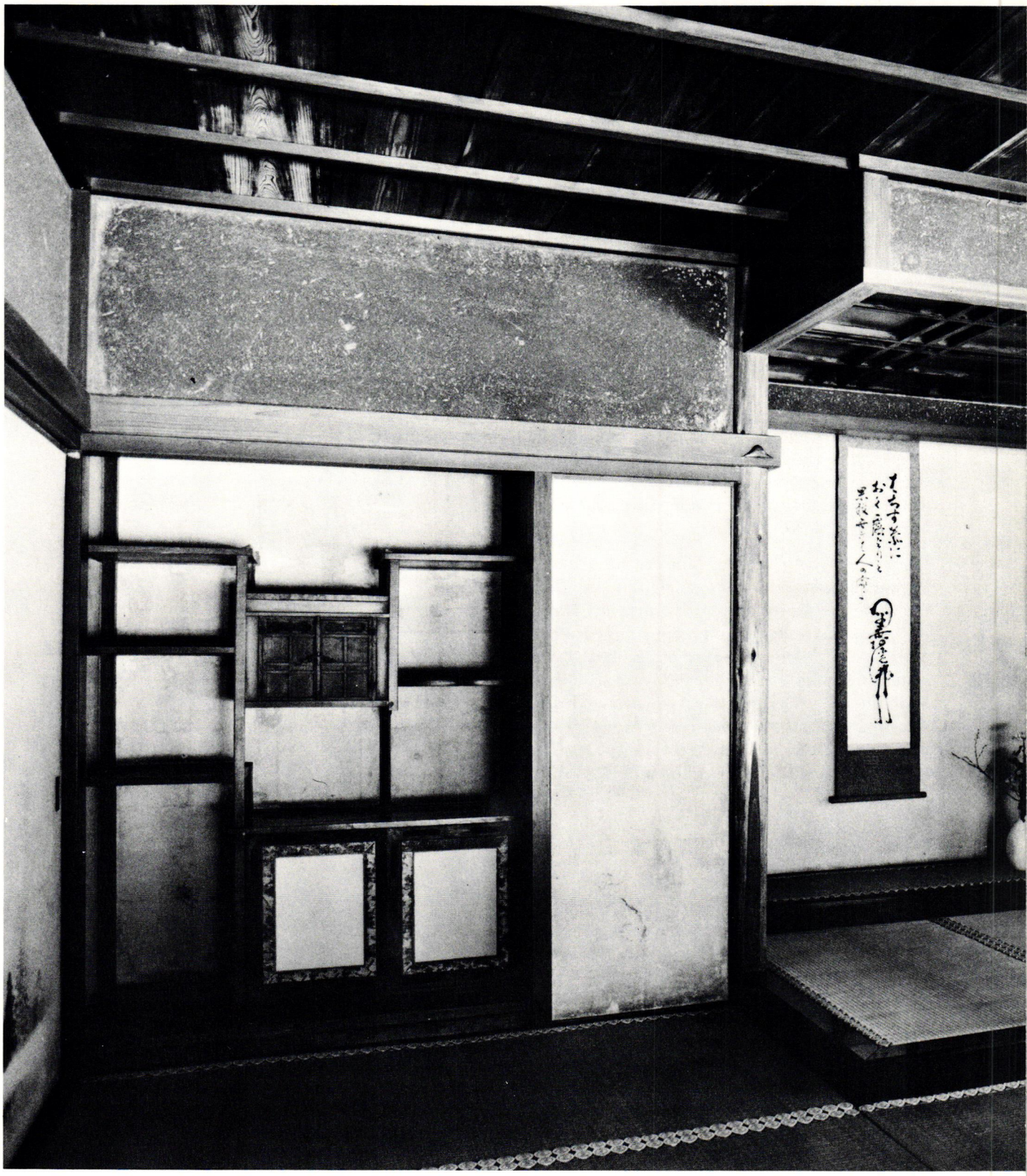
During the later part of the Muromachi Period, the architecture of dwellings began to differ significantly from that of temples and shrines, adapting itself to the greater diversity of professions among the people of the age. This was the period of the Shoin Tsukuri style of dwelling architecture—a style that depended upon the skills of professional carpenters. This period was important for the development of many features now characteristic of Japanese dwellings: *tatami* mats, and distinctive floor, shelf, and ceiling construction.



1. Changes in kiwari*'s basic dimensions.*

2. Typical section of a Late Muromachi Period dwelling.

*3. The three-*tatami *mat space and* shoin *window of the Imperial Dais in the First Room of the New Palace at Katsura. This was first constructed in the mid-1650s and remodelled in 1663. The cabinets and shelving are famous throughout Japan as "Katsura shelving."*



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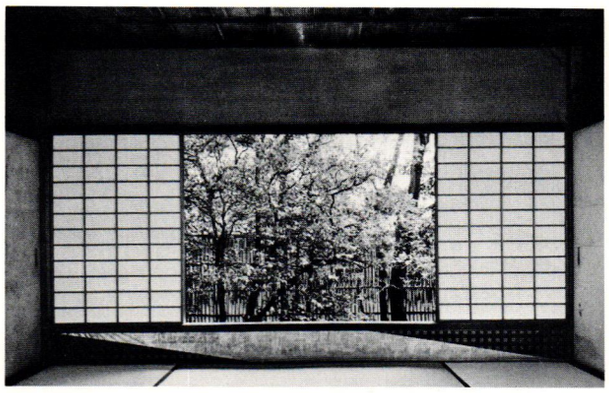
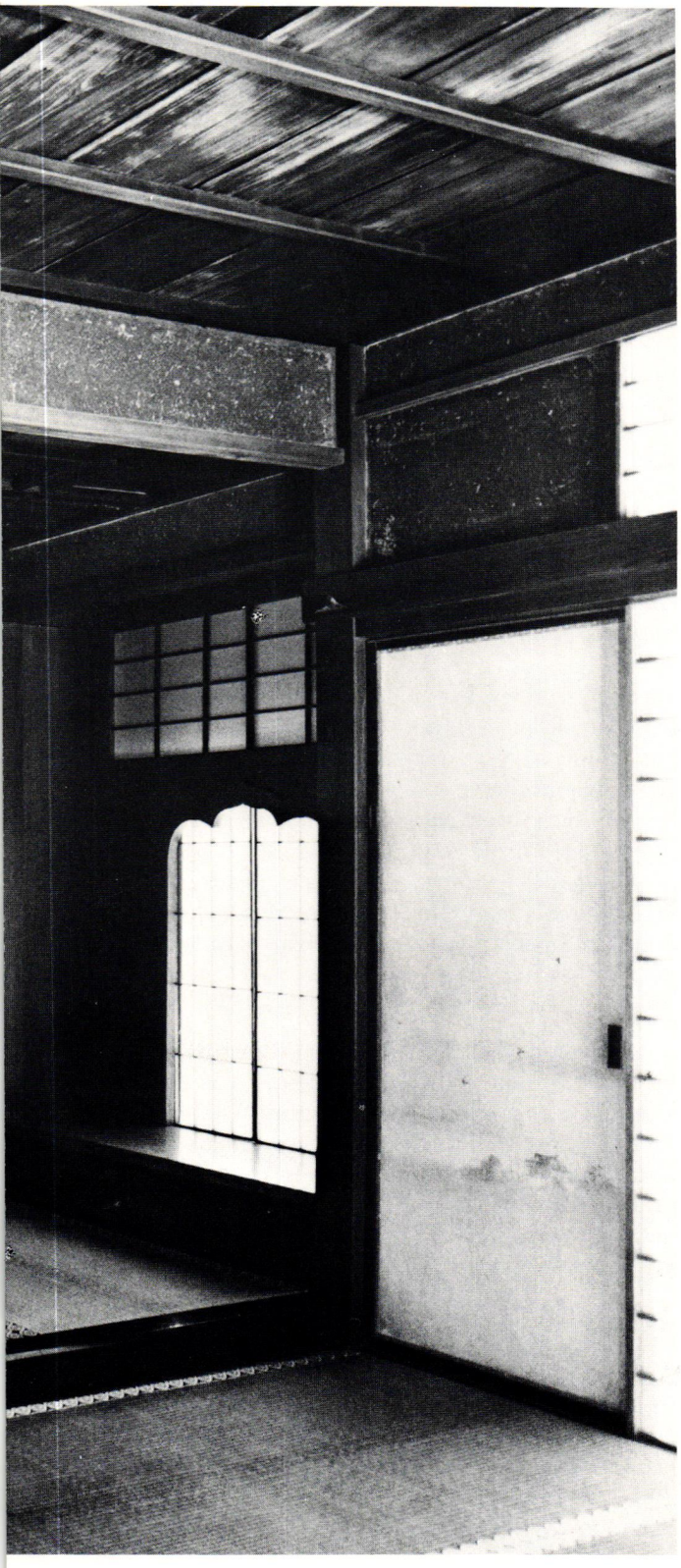
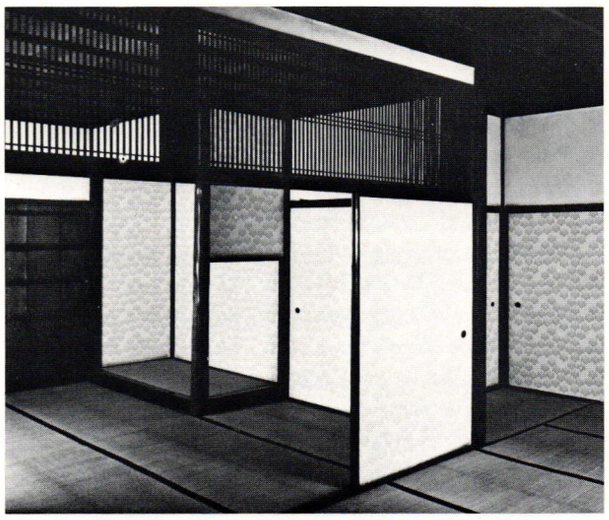






4. The Twilight Room of the Manju-in, Kyoto, built in 1656.

5. The south window in the Middle Room of the Shoi-ken is called an "elbow-rest window" since the sill is just high enough to prop one's elbow on when seated beside it. As such a window required a splendid view, the original intention was for a row of spirea trees, beyond which the fields of the Lower Katsura Village could be seen.

6. Detail of the ceiling of the Geppa-ro at Katsura.

7. The Tokonoma in the First Room of the Old Shoin, Katsura Palace. The prominent corner post was hewn from a cryptomeria log planed leaving bark at the corners.

Kiwari changed in two characteristic ways with the development of the Shoin Tsukuri dwelling in the late Muromachi Period.[3] First, the distance between posts (studs) went from a conventional 7 *shaku* to a standard 6.5 *shaku*. This 6.5 *shaku* spacing was later to be called simply *kyoma* ("distance between studs"). The reason the distance between studs was standardized is in part related to the sophisticated construction techniques required to install, between posts, pairs of sliding screens common in Shoin Tsukuri style dwellings: in order to make a joint resistant to air infiltration, at least three types of tools were necessary. The second change was in stock dimensions. Stud stock was standardized at 0.42 *shaku*. As was stated earlier, there was a six-division (i.e., 6 percent) method for calculating stock size. Since a corner post smaller than 0.42 *shaku* was inadequate to accommodate the sliding screens, the standard for stock dimensions was based on 7 rather than 6.5 *shaku*.

As outlined in *The Three Generation Book*, design during the first period was principally based upon a six-division method. But, in the second half of the Momoyama Period, the multiple of 7 for the overall post stock width became paramount in Old Method *kiwari*; many dwellings carried this principle to roof beams' stock dimensions.

Tose–Ho: *Kiwari* of the Momoyama (1573–1615) and Edo (1615–1867) Periods

Kiwari methods of the Momoyama Period adopted a 0.01 ratio and a ten-unit post. Posts were spaced at 6.5 *shaku*, with a module stud dimension at 0.065 *shaku*. As is shown in figures 1 and 2, the size of one post face and the inside post surface also changed. The development of *kiwari* from the late Muromachi to the Momoyama Periods involved changes in these computational relationships, but virtually no other changes in the implementation of other units or methods of dimensional determination. With the adoption of the ten-unit per dimension post, the ratio increased so that in comparison to the Old Method, the stud's proportions, and thus the dimensions, became bigger.

The structural potential inherent in the Momoyama *kiwari* enabled the development of a large and elegant dwelling type called "large room" or "1000 *tatami* mat building." Representative dwellings from the period include the Jirakudai, Fushimi-jo Castle, and Ni-jo Castle—all magnificent palatial structures. Without the technical developments and the standardization of *kiwari* systems, buildings of such large scale could not have been possible.

However, aside from the large palaces of the feudal lords, it was not necessary to use 0.65 *shaku* in normal house construction. *The Old Method* (*Shomyo Denya-shu*) described the appropriate scale for the *Tose-Ho* (Modern Period *kiwari*) style of architecture as being sixteen or seventeen rooms. With typical dwellings having six or seven rooms, confining post dimensions to a whole series of dimensional numbers would have been unreasonable. Therefore, the *tatami wari* method, which determined dimensions by the number of *tatami* mats accommodated by the room, was adopted in the *Tose-Ho* Period.

For centuries, posts used in Japanese construction were measured from center to center, whether round or square in shape. In shrines, which had vast areas of space, there were no problems with variation in the size of posts. However, this was not the case in everyday dwellings. For example, according to the *kiwari* of the Momoyama Period, there was a center-to-center distance of 6.5 *shaku* between posts. If one applied the *Tose-Ho kiwari* to a stud measuring 0.65 *shaku*, the size of the *tatami* mats laid into it would change as follows, according to the size of the room:

In a 1-ma *room:*
a–b = *6.5–0.65* = *5.85* shaku
In a 2-ma *room:*
*(2*a–b*)/2* = *(2* × *6.5–0.65)/2* = *6.175* shaku
In a 3-ma *room:*
*(3*a–b*)/3* = *(3* × *6.5–0.65)/3* = *6.253* shaku

1 ma = *5.96 feet*
a = *distance between posts*
b = *dimensions of posts*

The real problem was with a 1-*ma* room, which required a dimension of under 6 *shaku* between posts. This room was too small for the scale of human movement, when post dimensions were measured center-to-center. On the other hand, if the size of the *tatami* mat were standardized, it would be possible to place the posts outside of the mats, and this is, in fact, the convention that was adopted. Using measurements based upon a standard size for *tatami* mats is called *tatami wari* (mat division), or *tatami no wari* (division of mats).

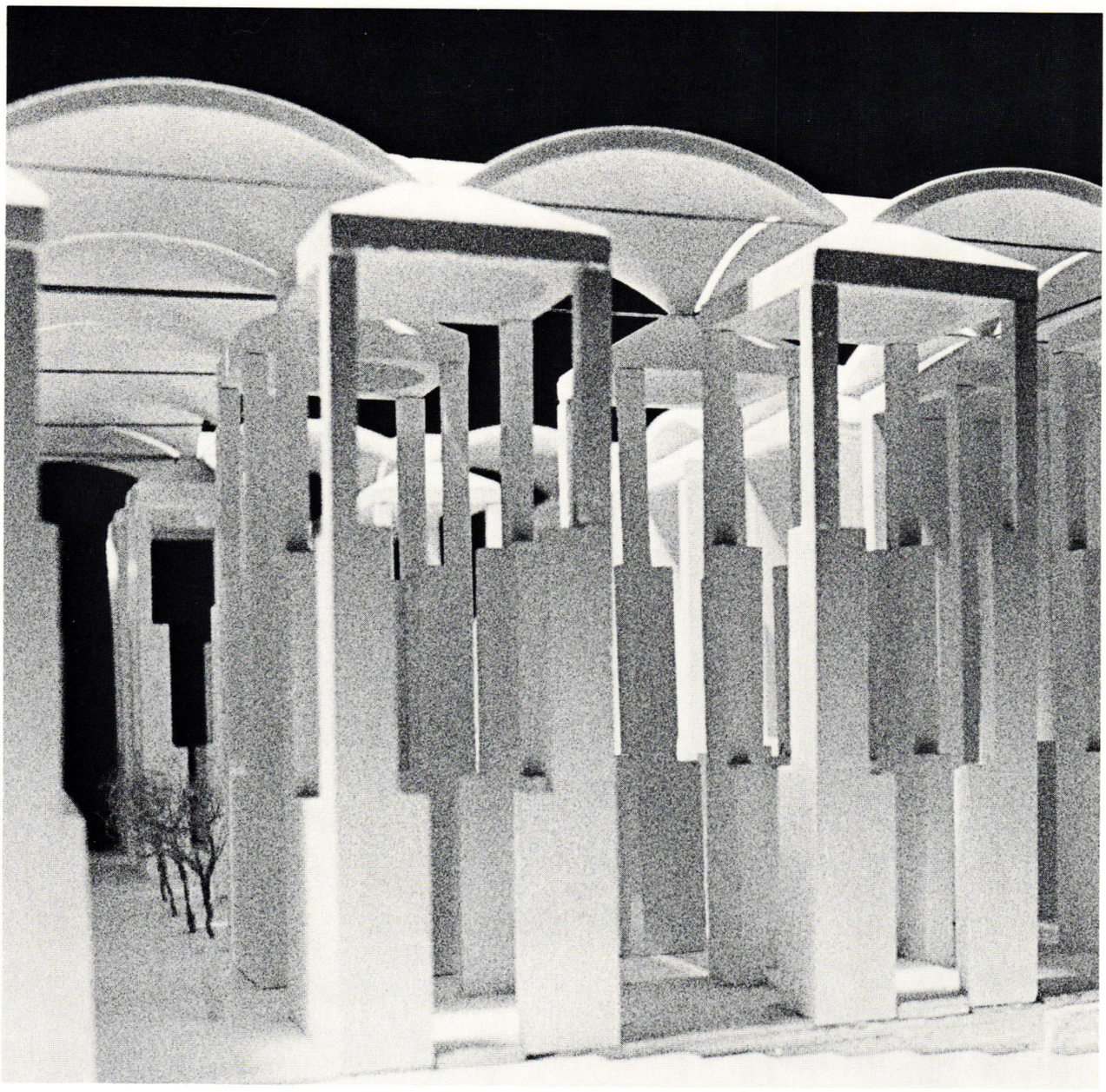
During the Momoyama Period the *tatami* mat was standardized in the literature at 6.3 *shaku*. This value was selected as an average based upon the Old Method and upon the *Tose-Ho kiwari*, in which center-to-center measurement was used. However, this dimension was an ideal standard, and, though originating in the Momoyama Period, the convention was not widely used until the Edo Period.

With *tatami wari*, the distance between posts and the stock size were determined only by the laws of statics and by what the tools of construction would allow. Further, the post unit dimension became smaller in relation to the stock dimension. As a result, the inside post could become larger. These tendencies toward reduction were natural from the point of view of construction economics.

Numerical values in dimensional determination generally increased in usage. The written source material from the Edo Period bears this out. The dimensions for posts listed, for example, are incompatible with the computational methods formerly used to obtain them. The resulting final dimensions are fairly similar, but the fact that they do not match and that they are absolute had an important meaning: the direct use of absolute dimensions tended to de-emphasize certain values, including those determined by the aesthetic sensibility of the designer, that were previously considered in structural design.

Rather than judging *Tose-Ho*'s later developments as a break with tradition, dimensional codification may be seen as a natural step in the method's evaluation. For it was guided, as were all practices of *kiwari*, by an aspiration for harmony through the proportioning of material and space as articulated by structure.

8. The residential quarters of the Imperial Palace, Kyoto.



ARCHITECTURE AND THE WALL FACING MECCA

Jaan Holt

Before the presence of the wall.

Architecture could be thought of as the material room approaching the spiritual room through the realm of human agreement.

In the act of prayer, the material room is not there, not even the floor is there; really, not even the carpet, which is the ordained surface of the paradise garden, is quite there. Only the act in its attitude is wholly there.

If a man, alone in his room, decides his orientation to Mecca, the direction is ordained through the act of prayer, and in his singularity is his absolute freedom from reproach.

The mosque is the place of human agreement to prayer. In its making, it attests to this sense of agreement, and allows an individual the same freedom from reproach as if he were alone; yet it affords, through architecture, the generosity of the presence of many.

The wall facing Mecca is made by each individual placing his niche of direction next to his neighbor. All, in attitude, are coincident, but architecturally, become a row, which becomes a wall facing Mecca, marked by the one niche of common agreement.

After the presence of the wall.

In beginning a plan, placing on paper the marks that are the solid materials and leaving the white places that are the light-filled air, considerations initially arise as to appropriate position, appropriate proportion, and appropriate presence of the elements of architecture, as the composition evolves toward a particular plan, recognizable as the plan of a library, a museum, or a mosque.

1. Detailed view of the model of the mosque; view is through the hollow columns of the portico toward the inner forecourt.

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The first drawing of the mosque on its site had only two elements: the great floor, eventually to receive its many carpets; and the wall facing Mecca, with its sacred niche. Yet already the wall seemed uncertain, as if conscious of all the other parts to come and wanting to reproportion itself to maintain and reveal its primacy and undeniable necessity. As the solid interior columns took their positions and the hollow exterior columns made the surrounding porticos, as the forecourt with its religious washing places appeared, and, especially, as the cross vaults with their lead shingles enclosed the mosque, the Mecca wall seemed forgotten in all this materialization and spacial elaboration. It was not so much that these other parts were overbearing but rather that the Mecca wall was unable to maintain its intrinsic presence.

I tried simply drawing it thick, out of will and desire alone, but while this made it more noticeable, it also made it lose all credibility as I thought of the quantities of material necessary but yet unnecessary.

It wanted to be made of material other than material.

The only portion of the wall which was not already solid was the sacred niche, the only hollow. I realized that if the wall were made with many hollows, it could be thick and reproportioned; but I did not know what to place in all these hollows, all of them sacred and all facing Mecca.

Only the Koran could rest there.

This was the material that could be the material other than material.

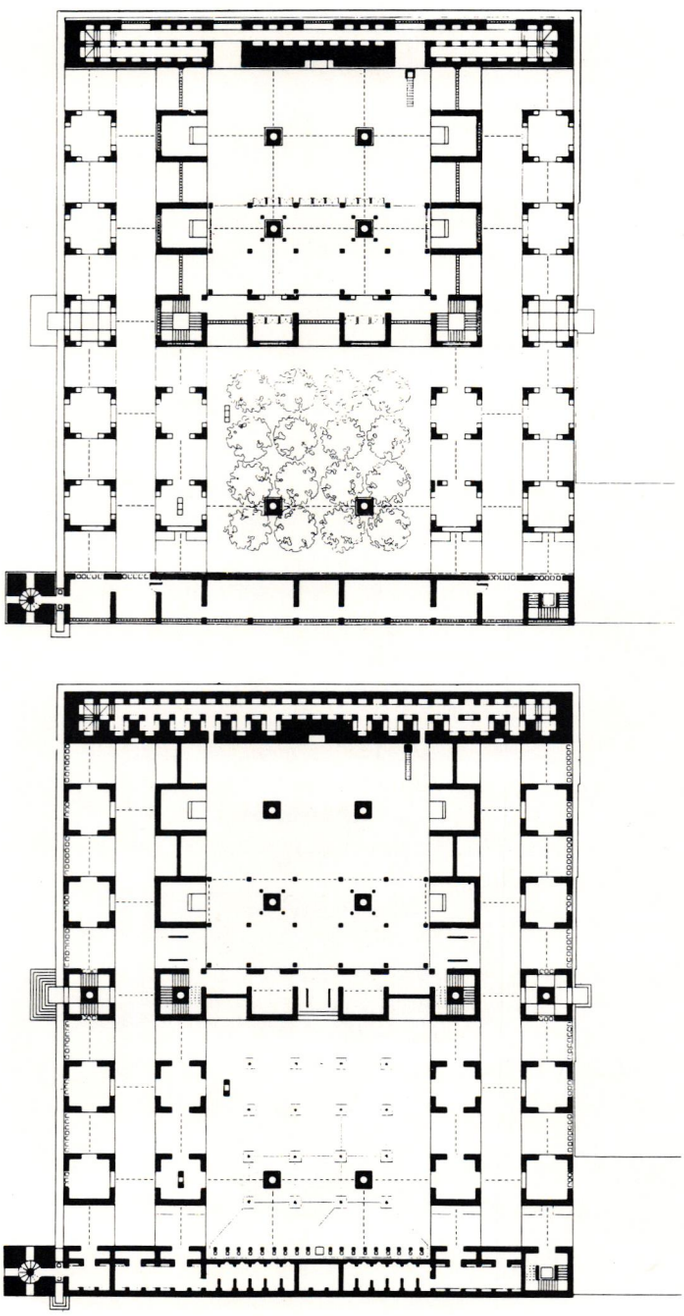
It is the custom for individuals to donate to the mosque their carpet and their Koran. The giving of carpets has made the floors of mosques layered, thick and silent, a testimony to generations of use and to the continuity of life. I felt that the Koran was able to make as wonderful a contribution, not as a floor but as a wall. In fact, I imagined the Mecca wall solid with Korans, as the floor was solid with carpets, and the material of the wall, like the material of the floor, only there to make the initial receiving surface.

I felt so certain of the acceptance of this new wall into the formal availability of places of a mosque that I felt no need to know immediately of its design. I was certain it could have many designs in many different mosques and that its existence as a considered part of any mosque would endure.

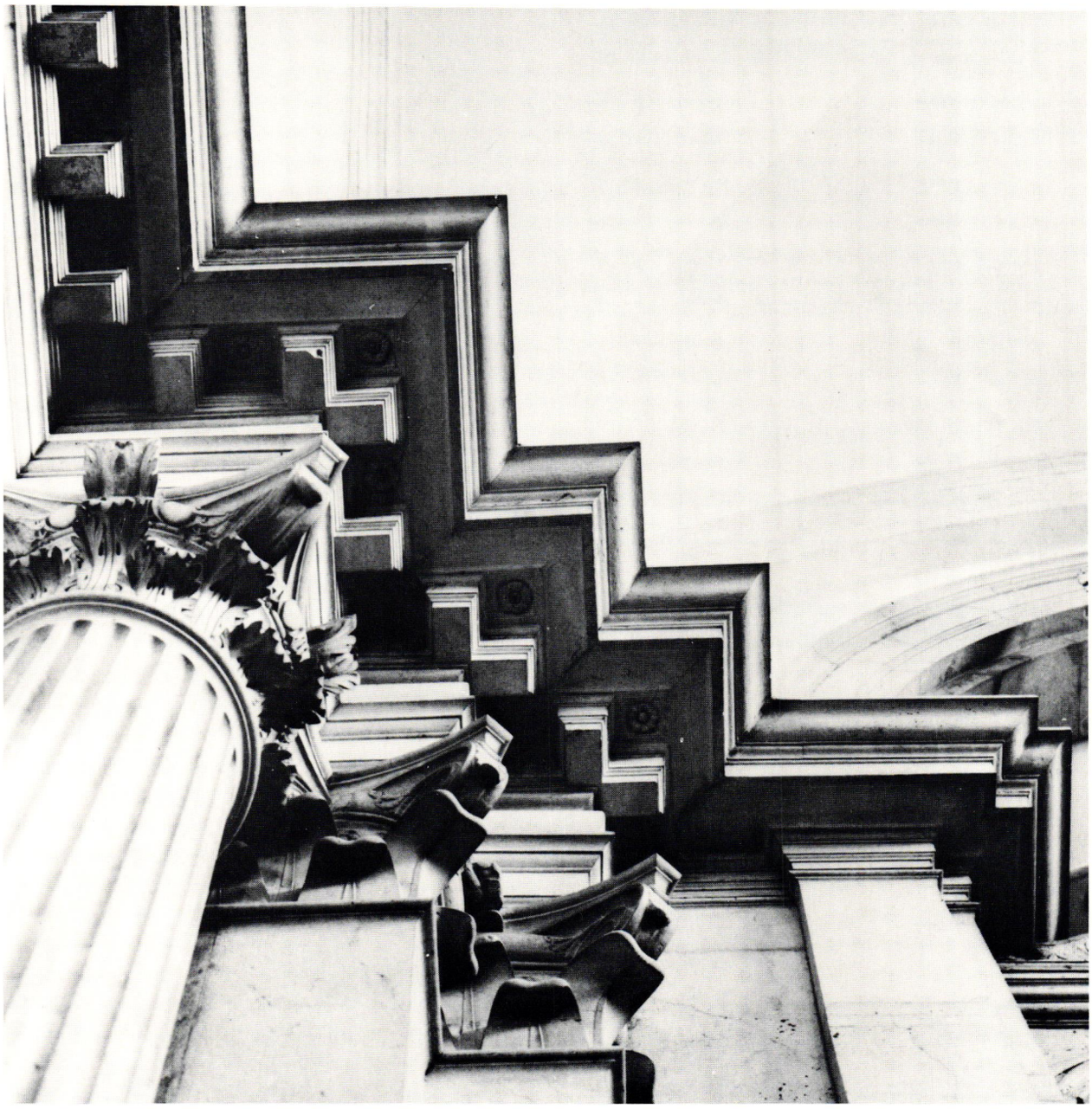
But then, of course, I did design it.

I made galleries with hollows within hollows, countless niches, all to contain the same book, a library of one book, so generous that it would never be full but would in its becoming full offer the same testimony as the carpets to the continuity of faith with its intricate accessibility affording the opportunity for remembrance of one's grandfather as well as for finding his precious gift. The thickness of the wall, now really a vertical room of galleries, would allow light from the direction of Mecca to first enter itself, be received, and then enter the mosque without abruptness or glare. Every Koran resting there would contribute its particular hue, and the light of the mosque would become more beautiful with each new donation.

What I imagined was no less real than what exists now with the carpeted floor, and I was glad to have it for confirmation as I finished the plan.



2. Ground level plan of the mosque (below) and upper level (above).



FORMALISM: AN APPROACH TO ARCHITECTURAL DETERMINATION

Susan Marthe Strauss

Denunciations of architectural works as exercises in "formalism" or of architects as "formalists" are legion in the critical literature. Notably absent, however, is any cogent explication of the ideas underlying the term "formalism."[1] Implicit, though, in the indictments of formalism are specific attitudes toward the nature of architecture and of architectural production at the present time.

I propose to examine what is entailed in the conception of formalism as an approach to the determination of form in architecture and, in addition, to elucidate the reasons behind its being a pejorative critical category. To this end, it will be necessary to consider the appearance of the term in architectural criticism in light of its demonstrable but nonetheless problematical relations to formalism in literature, painting, and sculpture, as well as its usages in the architectural literature (of which one can identity three) and, finally, the nature of formalism as an ethical rather than an aesthetic qualification.

Although admitting formalism as the sole means to the determination of architectural form would necessitate a redefinition of the nature of architecture, the *vehemence* with which the notion is repeatedly attacked in the literature is particularly revealing. A shift in ideals is indicated—specifically entailing the rejection of values perceived to represent those embraced by the European modernists of the 1920s. It is testimony to the relativity of critical judgment that the same concepts with which formalism is associated—abstraction, idealism, the search for universal truths, immutability—that were at one time positive qualities have fallen into disfavor. Ultimately, criticism of formalism in architecture has less to do with a judgment as to whether or not formalism is an absolute good than with whether or not it is an appropriate way to confront the determination of architectural form in a contemporary world.

In that formalism is understood, in all of its permutations, to represent the "foregrounding"[2] of form or the promotion of form at the expense of other aspects of design and, in the extreme, a commitment to the creation of significative form as the sole business of architecture, it is safe to assume that the issue of architectural formalism turns on an understanding of the nature of architectural form. The apparent triviality of this proposition is deceiving. While it is unlikely that anyone would deny the *importance* of form in architecture—indeed it is impossible to

1. Detail of the cornice between the presbytery and the entrance to the choir in the church of San Giorgio Maggiore, Venice, designed by Andrea Palladio.

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imagine architecture without it—the referent of the term is elusive. Exactly what form signifies, that is, what its place is in relation to other aspects of design, what it contributes to the overall design, how its absolute value is defined and determined, is questionable. Is form to be understood as an organizing principle, as a component element, as the totality of the work itself, or as the concrete manifestation of an idea? Further, by what means does one apprehend form? Is its appeal universal, and, if so, is there a common faculty by which its universal value is apprehended?

To understand form as pattern, shape, or the aesthetic component of the work of architecture is limiting and ultimately erroneous. According to this view, form represents nothing more than an accessory feature of the work, and formalism an overweening emphasis on the decorative. The creation of beautiful form becomes the sole aim of architecture, and whether the architecture is functional or not is a matter of coincidence.

Contrary to the conception of form as a discrete element in the work of architecture, form represents an organic unity: the translation of material, functional, environmental, spiritual, and aesthetic requirements into an idea that then develops toward an increasingly autonomous and concrete existence. Thus, the existence of architectural form is a function of the factors that cause its coming into being, but whose identities recede in the actualized idea.

The genesis of architectural form is not effected by means of aesthetic or intellectual speculation whereby form is imposed a priori on a given set of requirements. Conversely, specific material and spiritual requirements do not inevitably cause *one* predictable form. In either case, the creative function or the intentionality of the architect is devalued. On the one hand, if a logically necessary relation existing between the causes and the end product dictates that there be only one result, the architect is virtually superfluous—the transmutation of practical exigencies into built form seems to proceed independently and mechanically toward a necessary end. If, on the other hand, form is imposed from above, certain complexities inherent in architectural production are made evident. While the architect's play with forms may be viewed as creative, ultimately it is gratuitous. The architect either has not recognized or has refused to acknowledge programmatic requirements; thus, his failure is dependent upon his not having grasped the organic generation and unifying nature of architectural form.

The use of formalism as a descriptive term and critical category does not originate with architectural criticism. The term is precisely defined with respect to literature and painting, due in part to the refinement of use. One is tempted, therefore, to expect that the vocabulary can be adopted wholesale for the description and criticism of architecture. In fact, this is not the case. The ideas underlying critical terms do not necessarily make sense once transferred from one discipline to another. The issue is complicated in that formalism in architecture does share at least one fundamental characteristic with formalism in painting, sculpture, and literature: the promotion of one group of factors or principles, namely formal ones, at the expense of others.

A consideration of the nature of the factors whose importance is superseded by that of form reveals the fact that architecture and the other arts must part company. The Aristotelian conception of art as *mimesis* (or possessing content) entails a dialectic between form and content in the work of art. While rarely defended as an *idea* (modern criticism and theory for the most part are predicated on the indissoluble unity of form and content), the antithesis tenaciously lingers on and informs the notion of criticism, even criticism of abstract works. Nowhere is this clearer than in Marxist aesthetics, which in emphasizing the documentary value of the work of art seizes on content as the locus of meaning and the index of merit. The content represents the "what," or the transformed subject matter, as opposed to the form, which denotes the treatment and handling, or the "how" of the work of art.

In architecture, which is at once more abstract and more concrete than the traditionally "representational" arts, the notion of precise content becomes problematical, if not inapplicable altogether. And whereas representation is not at issue, practical matters most certainly are. The conception or the analysis of architecture on the basis of aesthetic, iconographic, significative, and documentary values is necessarily fragmentary. Fitness for purpose, utility, and function must also be considered.

A distinction must be drawn between formalist criticism and formalist creation. In painting and sculpture, formal histories and criticism are viewed as deficient in their failure to consider the iconographic, historical, social, and psychological factors that constitute the work of art. The history of art is written as though it were divorced from the history of civilization. Rarely, however, is the *artist* characterized as a formalist and criticized on that basis for mere play with forms. Even if the work of art were to be denounced as a formal exercise in being merely decorative, the charge would not and could not have the same gravity that it would have in architecture. Denunciation of the purely decorative in the arts is precipitated only by the commitment to locate the value of the work of art in its documentary qualities.

To be sure, a work of architecture can be analyzed in formal terms. However, the recognition that architecture depends on factors extrinsic to itself for its existence is so imperative that the critic would be hard pressed to defend a formal analysis as sufficient. Further, one cannot justifiably dismiss the intentionality of the architect any more than one can dismiss that of the painter or the sculptor.

Therefore, it is to the architect and the architecture that the term and its negative connotations are most frequently directed. Questions respecting the intentions of the architect supersede all others, and the criticism is located not in the realm of aesthetics (as it would be if it were leveled at the architecture as a purely decorative phenomenon), but in that of ethics. Implicit in the term is the notion that the architect misunderstands or deliberately refuses to recognize the nature of architecture and architectural production, or that there exists a radical disjunction between the way in which the architect *expresses* the nature and purpose of architecture and the way they really are. The formalist critique focuses less on the work in itself and its appearance[3] than on the work in relation to the consciousness of the individual who produced it. The unique position of the architect is clear: he must respond to external exigencies as the starting point for architectural creation, even if his response constitutes a rejection.

Another distinction between formal analysis and design on the basis of formal preoccupations hinges on the existential nature of the architectural object. Formal analysis, which merely disregards aspects of the architecture and is therefore deficient, does not change the object itself. Even if the critic were to conceive of the object as only formal design, the object as a thing in the world would remain the same. Formal exercises, on the other hand, in disregarding practical imperatives and predicating the existence of the object on the formal qualities alone, result in essentially deficient *objects*.

Each of the usages of the term formalism in architecture rests on an exceedingly narrow definition of architectural form. That is, form is not conceived of as a synthesis that effects and represents a conciliation of *all* design requirements—a unity in which the identity of each of the causes is transformed and subordinated to permit a unique and autonomous entity to come into being. Rather, form is conceived as one of a number of discrete elements. Once the possibility for isolating individual elements is affirmed, if only implicitly, the possibility for advancing one over the others follows, and the architect is prone to submit to a formalist urge.

While all are based on the proposition that form is an end in itself, the three types of formalism differ significantly with respect to the position that form is accorded relative to other aspects of design. In order to distinguish the three types in the discussion that follows, they have been assigned names based on the generating principle of each. One can consider formalism of degree, formulaic formalism, and linguistic formalism.

Formalism of degree admits material requirements as design considerations in the work of architecture, but emphasizes the primacy of form, which is identified as the aesthetic factor. The usage depends on an acknowledged imbalance. The legitimate concern with aesthetics is exploded and distorted into a preoccupation with the aspectival or perceptual features of the work (an instance of form for form's sake). While material and functional considerations are not entirely excluded, what the building looks like and how it is perceived are regarded as the determinants of the whole.

Questions as to whether the design is able to accommodate the practical and utilitarian demands of the program are suppressed to the extent that artistic effect is emphasized. Ideally, form modifies the strict requirements of utility by creating an organic unity whose aesthetic effect is in part a function of how successfully the architect has translated the utilitarian requirements of built form. But in formalism of degree, form becomes an abstract goal rather than a determining principle, and functional and environmental considerations are subordinated to aesthetic ones. Accommodation of such requirements occurs either accidentally or in an *ad hoc* manner, if at all.

Formulaic formalism, which can be seen as a corollary of formalism of degree to the extent that it shares an emphasis on form at the expense of other aspects of design, is characterized by the unselfconscious manipulation of depleted aesthetic formulae. The history of architecture functions as a rhetorical tool in providing a rich storehouse of solutions to architectural problems. The formalist invokes the past too literally;[4] affecting little or no transformation of established aesthetic formulae, he does not acknowledge or perhaps does not recognize the disjunction between those forms and his unique cultural and historical situation.

It is difficult, if not impossible, to imagine that the architect is able to manipulate forms without effecting any transformation, that is, without adding any experience of his own. It would seem that the meaning or the communicative value of the formulae or solution would be altered necessarily when employed in a new situation. Nevertheless, that the contextual juxtaposition does in fact alter the meaning of the formulae does not in any way guarantee that the forms will satisfy the practical requirements of the new program or that their meanings or iconographic values will coincide with or complement the new situation. Even if, because meaning is conventional and therefore open to dislocation, new life may be infused into old forms, the formalist still has missed the mark. He imposes an a priori organization instead of discovering and creating an order from within. That the old formulae are given new meaning as a result of their being applied to new problems is irrelevant. The work will be formalistic in that the architect, instead of extrapolating design methodology from historical solutions, purloins the finished forms.

Linguistic formalism is so named because it develops from the proposition that architecture is analogous to language. The material aspects of architecture are denied on the grounds that they pose an impediment to the creation and understanding of a completely self-referential structure. While the equation of architecture and language is not new, linguistic formalism is based on specific analogies with projections of language characteristic of structuralism and Russian Formalism.

Architecture is conceived of as a structure in the terms proposed by Jean Piaget:[5] whole, self-regulating, autonomous, capable of transformation, and internally consistent. Change in the structure does not indicate a response to or a result of social change, but a self-propelled and self-generating development dependent only on internal exigencies for its evolution. Form is viewed as a communicative instrument in the manner of the Symbolist poets—that is, autonomous, self-expressive, and capable of extending the communicative value of language beyond its everyday use. Language, and, by extension, all art forms, are described as internally consistent systems or structures. As continuous human activities with characteristic histories, they must be described and evaluated on their own terms.

Following the example of the Russian Formalists,[6] the linguistic formalist attempts to disengage architecture from systems extrinsic to it and to determine empirically the distinguishing features of architecture as a self-justifying and self-regulating system. The formalist endeavors to isolate the architectural fact. His objective is to draw attention to the generation of architectural form itself. In that the existence of everything in the work is predicated on its permitting the work to come into being, the formalist is concerned only with the constituents and the relations among them.

As a function of relation rather than of reference or truth, the meaning of the work of architecture is conventional rather than necessary. The formalist seeks to investigate the modes of generating meaning. The practice of architecture becomes an extremely self-conscious activity, the sole concern of which is the examination of its own development. For the linguistic formalist, the aim in "bracketing" the work of architecture is to confine the creation and evaluation thereof to the architectural plane; that is, to preclude a shift to the philosophical, social, or ethical planes.

A question arises as to whether a work conceived in the manner of the linguistic formalist can properly be considered architecture. Clearly the building can be critiqued with reference only to its own becoming, but such a critique unquestionably constitutes only a partial analysis. In terms of conception, however, while it is true that a building can be designed formally and is complete in itself as a formal design, according to our previous discussion the building can be considered architecture only when it integrates both material and ideal requirements and embraces the presence of man.

It may appear that linguistic formalism represents merely the most extreme position of formalism of degree, concern with other factors of design being *wholly* eclipsed by the concern with form. On the contrary, the two are essentially different in their objectives. Formalism of degree entails the exploration of formal properties as the means to an aesthetic end and therefore remains caught up in the traditional notion of art as a purveyor of emotion. In linguistic formalism, aesthetics does not bear upon the fundamental aim of architecture, which is to examine its own coming to be or the relations between the architectural facts of which it is constituted.

Prior to discussing the negative connotations of architectural formalism generally and the shift in ideals that is indicated by the very fact that formalism has become an issue at all, it would be well to point out a major strength of the formalist position. The Russian Formalist Viktor Shklovsky[7] defined art as a defamiliarization or a "making strange" of objects.[8] By drawing attention to itself and referring to its own genesis, art renews one's perception of the material qualities of art and of the world generally. In other words, art serves to reawaken consciousness.

Of course, Shklovsky was referring to those properties of *language* that would enhance the experience of literature. In its application to architecture, the linguistic formalist sets himself the task of focusing perception on the creative experience and of breaking the bonds of habituation. Ironically, this quality of linguistic formalism sets it apart from the other kinds of formalism in that both formalism of degree and formulaic formalism tend to perpetuate mechanical performance and deadened perception.

The critique of formalism rests on an ethical rather than an aesthetic base. The Hegelian equation of Beauty and Truth is abandoned, for it is not inconceivable that formalistic architecture will be aesthetically pleasing even if its process of formation is mechanical and hence not original. Moreover, were formalism an aesthetic category, the work of architecture could be evaluated in isolation: reference to the architect as creator would be unnecessary. But to judge a work as an exercise in formalism, the critic must refer to the architect, for formalism bears upon the manner in which the conscious designer interprets the nature of architectural production.

In recent literature, formalism in architecture is associated with irresponsibility, unresponsiveness, noncreativity, abstraction, ahistorical tendencies, and preoccupation with aesthetic concerns. Each of the three types of architectural formalism fails to acknowledge the nature of architectural production. Whether inadvertent or deliberate, the failure to respond to programmatic demands can only be viewed as irresponsible. Linguistic formalism demands such unresponsiveness and abstraction as the means to a greater end. The conception is wholly intellectual—the justification for the existence of the work is to be found in the work itself.

In formulaic formalism and formalism of degree, the architect may *believe* that his design methodology fully accounts for extrinsic requirements. In a sense, though, this formalist is twice guilty. First, in striving for an aesthetic solution, the architect is oblivious to the fact that when the importance of form supersedes the role of other aspects of design, a destructive disequilibrium is created. Secondly, the architect is not original. This point requires further clarification, since one might object that a designer could be extremely creative in his manipulation of even outmoded aesthetic formulae. But if such formalistic activity is considered in light of the initial discussion respecting the nature of architectural form and the uniqueness of each problem, clearly it cannot be judged particularly creative.

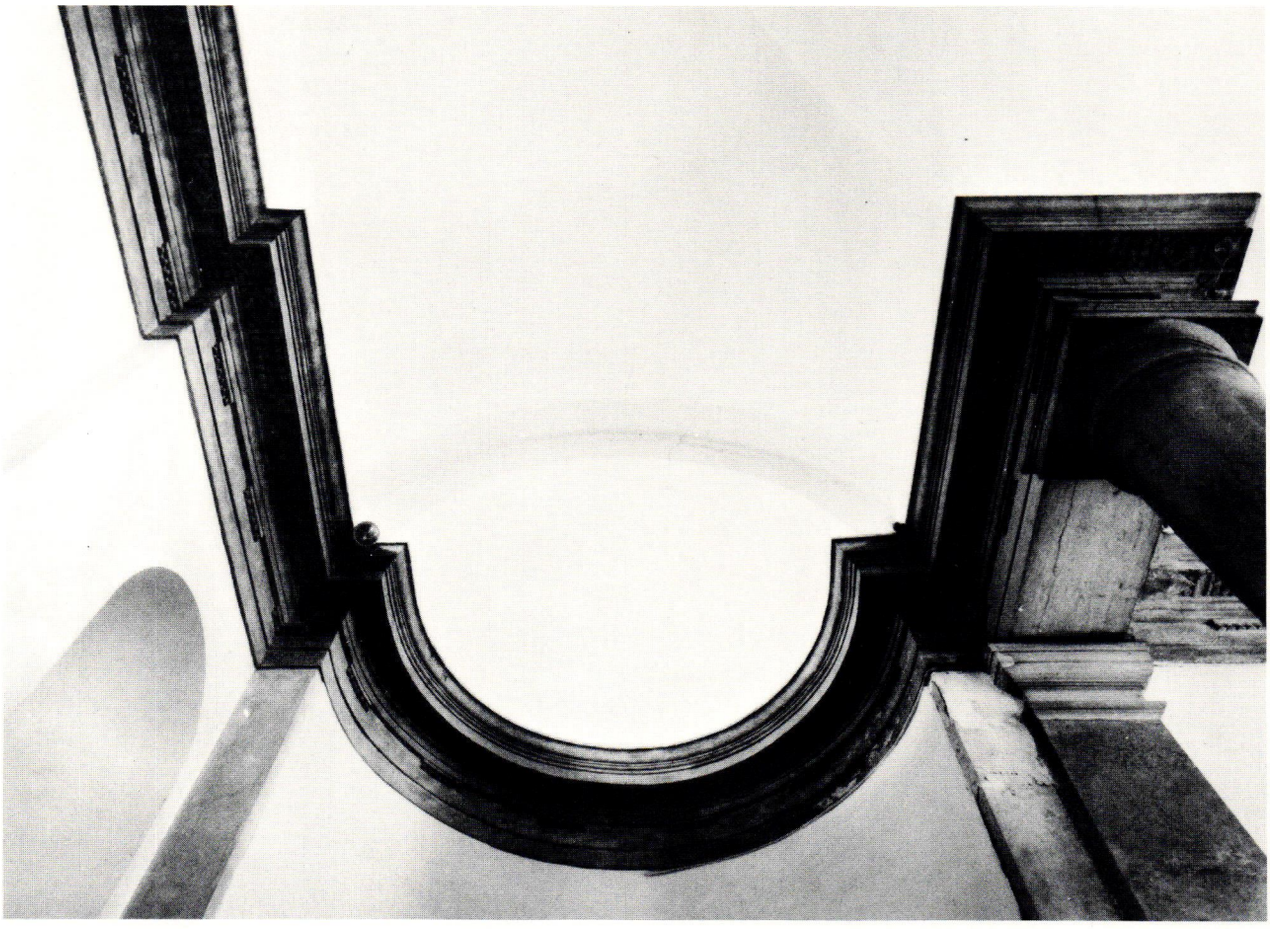
With respect to the issue of creativity, the formulaic formalist certainly is not original in that he fails to integrate his own experience into design, or if this is impossible since the mere fact of choosing certain forms over others indicates a transformation, in that he does not create forms that respond to the material demands. In that he focuses on form as the principal determinant of architectural form, the formalist of degree is preoccupied with aesthetics and abstraction. While he may be adept at producing a beautiful solution, he does not thereby prove that he is able to translate material requirements into built form in a creative way. The redefinition of the objectives of architecture by the linguistic formalist entails a concomitant reappraisal of the notion of creativity. If the end of art is the "baring of its own devices,"[9] creativity becomes a function of the architect's ability to draw attention thereto.

Consciously or not, the formalist is committed to a sort of idealism. It is difficult to imagine any other explanation, excluding of course complete ineptness, for his commitment to manipulating forms that bear no necessary or identifiable relation to the programmatic considerations at hand, or for his commitment to creating architectural form the purpose of which is entirely self-referential. Untenable as the position might be, the formalist is motivated by the search for absolutes. Predicating his work on the proposition that form constitutes the immutable and enduring quality of art that transcends temporal and spatial limitations, the formalist locates the meaning of architecture in form. In this view, that the greatness of works of art is independent of historical context testifies to form's being the essence of architecture. However, the idea that form endures entails another proposition: that there exists a unique and innate faculty common to all for the apprehension of formal qualities and relations. Artistic reflection becomes a function of the timeless abstractions of the imagination. The historically situated object ultimately is transformed into an abstraction.

The critique of formalism is as much an indictment of what European modernism is perceived to have represented as it is the basis for a thesis respecting the nature of architecture in the contemporary world. Theses as to what architecture should be initiate largely from reevaluation of what it has been. The indictment is two-pronged. On one level, it is directed at the naive optimism/idealism and the wrong-headed assessment of the role of architecture in the "machine age." On another level, it is directed at what with the benefit of hindsight is judged a disjunction between polemics and practice. The statements respecting the social responsibility of the architect are seen as so much rhetoric, cleverly couched in utopian terms in order to elicit support for what were ultimately aesthetic and specifically formalistic concerns.

That concerns with ideal or formal qualities of the work of architecture and with social, environmental, functional, and material considerations are not mutually exclusive cannot be emphasized enough. Indeed form is a determinant, and perhaps the most important determinant, of form. The concern with conceptual juxtapositions and with the sensual or emotional or intellectual power of forms in juxtaposition is not objectionable, and does in fact, in combination with functional and social and material considerations, determine architectural form.

2. Detail of the sacristy cornice from the Monastery of La Carita, Venice, designed by Andrea Palladio.



ROMA-AMOR: DIFFERENCE AND REPETITION

Paolo Portoghesi

The conjunction of the two notions of difference and repetition is not something that can be propounded from the start, but must emerge by virtue of superimpositions and intersections of these two lines, one of which concerns the essence of repetition and the other the idea of difference.

Gilles Deleuze

One can design for love or for anger; in the case of ROMA-AMOR, for love and anger both, inextricably mixed. Rome is the city in which I was born—when modern architecture was something still to come, something still in the realm of the hopes and desires of an enlightened few. Ever since my early youth, when I began visiting and revisiting Rome's periphery in search of a new culture of the city, I have experienced only intense disillusionment. At the age of eighteen I vacillated between the vocations of writer and historian; at twenty-seven, between those of historian and architect. Subsequently I believed I had discovered that these last two were one, that they nourished each other and could converge in a Platonic undertaking in which the scarcity of practical products was compensated for by theoretical achievements and by the acquisition of knowledge and insight. At forty, I realized that it was useless to await the verification of my own ideas by others, and that to prove myself as an architect I had no time to lose. I was still under the illusion, however, that it was possible to choose freely the field of application of one's own designing energies.

Now, contemplating the errors committed by those who have transformed the city in the more than two decades that have passed since I received my degree, anger wells up in me, and the desire to try my strength, to challenge authority, becomes so compelling that I cast aside all timidity and inhibitions. Government building, in consequence of regional laws and national laws, the economic recession, and the energy crisis (which the Italian bureaucrats consider only for its implications for winter heating), the myth of "industrialization always and everywhere," and the fear of requests for "supplementary expertise," has become a game of patience for eager children (calculators in hand) trying to find as quickly as possible the best way of passing through the bureaucratic tunnel. Private building has long required no remarkable brains; it is quite satisfied with the ones it has, atrophied by the commerce of new suburban developments and apartment houses. In the face of the quantitative horror of the city's vast periphery, all the worse

ROMA-AMOR, a city turned inside out. Designed by P. Portoghesi, with G. Ercolani, G. Bucci, M. Casciato, P. Devantery, I. Laumounnier, and G. Tironi.

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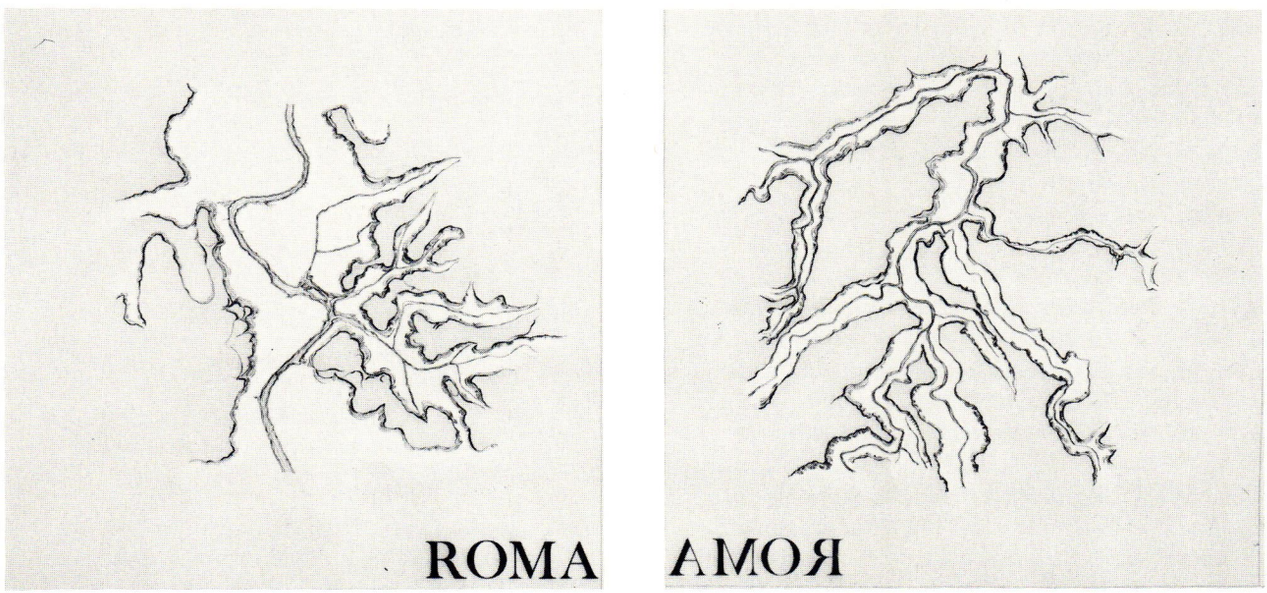
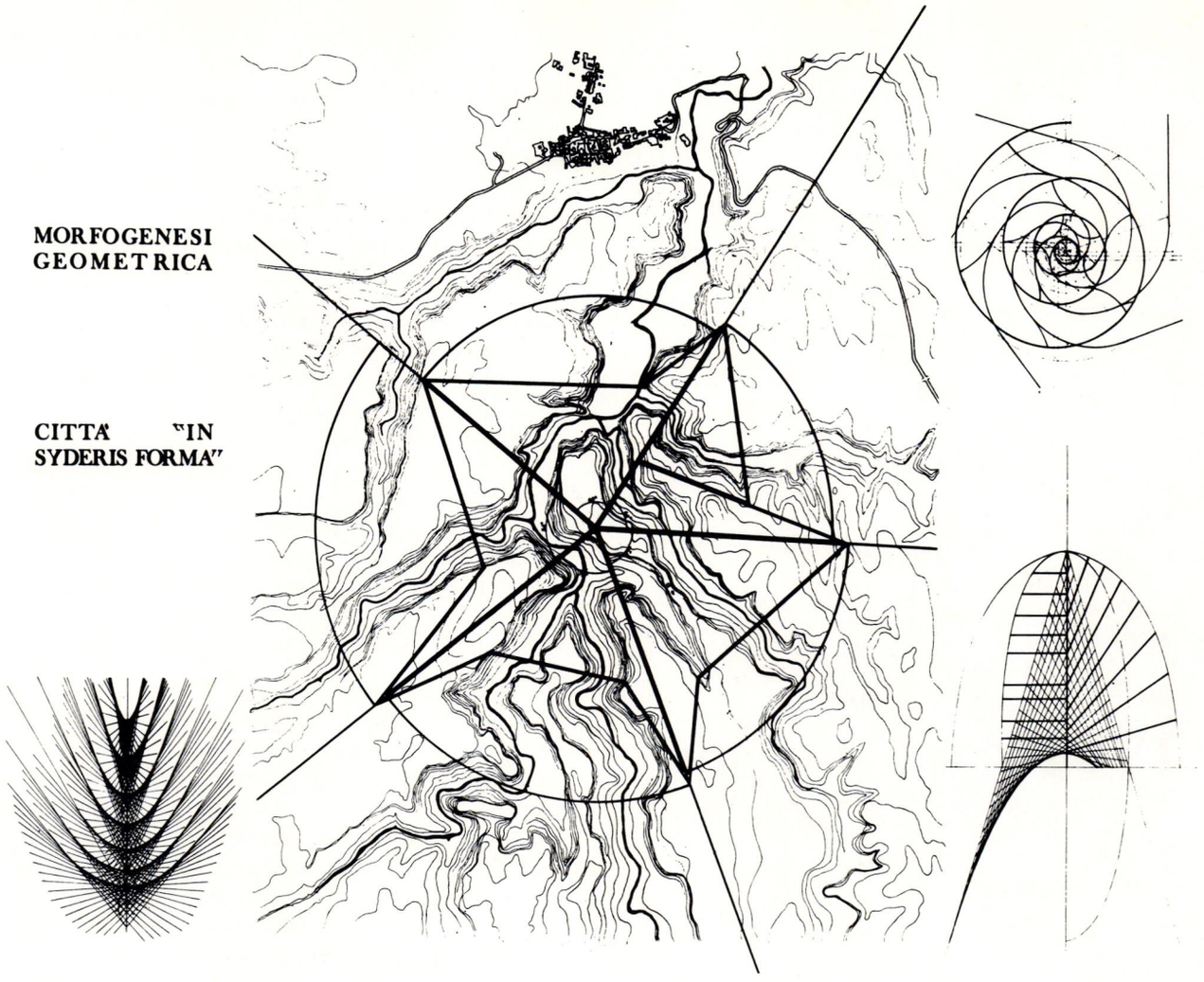
because it is contaminated by unsatisifed intellectual aspirations, one wants to call a halt, make a clean break, and courageously put oneself to the task of constructing a different city, different because *similar* to the old city, to that small portion of Rome that still merits the name "city."

ROMA-AMOR is a design for a daughter city: something more than a new urban section or neighborhood and, above all, something different from the *periferia dei dormitori*,[1] which are the offspring of the unhappy marriage between functionalism and building speculation. ROMA-AMOR is the daughter of Rome, but, like certain children of genius and disorder, she is the opposite of her illustrious parent; she is the existing city turned inside out. If Rome, sublime artifact, is surrounded by countryside that it (like the ogre of the fable) is progressively devouring, ROMA-AMOR has nature at its center, and sections that are wedges approaching this core without interrupting its continuity. The urban form here interprets the physical setting, a setting deliberately chosen for its resemblance on a miniature scale to Rome's original physical setting. Like the valley of the Tiber in the time of Romulus, the valley of the Treia, north of Rome, just south of the town of Civita Castellana, widens and branches out, cutting into a relatively flat area and thus forming a series of rocky buttresses, covered at their bases by rich vegetation. Taking advantage of the presence of this "internal landscape" made up of deep ravines with watercourses and sharply detached from the terrain above, the new town is conceived as a structure on two completely distinct levels: the lower, consisting of wild nature, thoroughly respected in its character; and the upper, the town proper, divided by nature into parts, each of which can grow in only one direction and has two of its sides facing onto the natural space.

1. The physical setting of Rome in the valley of the Tiber and the comparable physical setting of ROMA-AMOR in the valley of the Treia.



Portoghesi



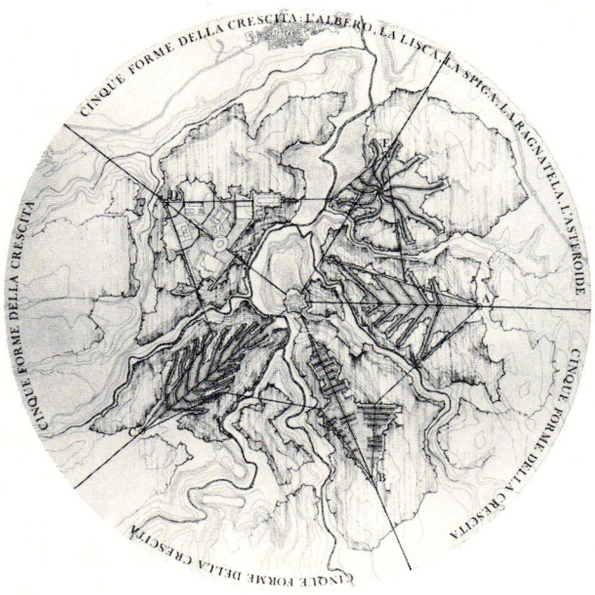
In order to make the best use of the single parts of the town, the fundamental formal layout adopted for the principal access roads is that of a convergence of three streets into a single point—the famous "trident," the most fascinating of town-planning models inherited by European culture from the city of Rome. In each of the five parts of the town, the artificial trident form is intersected by an elementary street network, the layout of which differs in each of the five parts but is invariably inspired by natural forms: tree; fish bone; ear of wheat; spider web; and starfish. This encounter between the natural and the artificial produces a complex and contradictory structure that makes possible the reacquisition of some of the systems and subsystems that can be singled out within the organic unity of the fabric of old Rome.

One of the subsystems examined and reproposed for this new urban structure is that of the subtle hinge-like continual bending of the walls of the street corridors. In much of historic Rome (especially in the central area situated in the bend of the Tiber, but also in the quarters of Trastevere and Monti), where the reuse of remains of the ancient city in medieval times had a major effect on the urban layout, the street structure is characterized by this continual angularity. In plan this system is defined by segments of variable length, joined at obtuse angles that, within a limited range, continually vary in width. The system results from the succession, but also from the independence of the various building enterprises. The effect it produces is that of a variable continuum in which, as one

2. Geometric morphogenesis of ROMA-AMOR: city in the form of a star.

3. A partial view of the site of ROMA-AMOR in the valley of the Treia, north of Rome.

Roma-Amor



4. Schematic plan of ROMA-AMOR showing the town's five forms of growth according to the diverse street layouts of each of its five parts, all inspired by natural forms: (a) tree, (b) fish bone, (c) ear of wheat, (d) spider web, (e) starfish.

5. General plan of ROMA-AMOR.

proceeds along the street, each of the diverse building units enjoys a moment of optimum visibility when it appears framed between two foreground planes; thus is created an interchanging relationship between the wall of the street and the view of the street opening ahead. The legacy of this system of hinged walls is most evident in the curves and sudden triangular widenings of the streets that are so frequent in Rome's historic quarters.

Another subsystem I have studied is that of the optical guidelines, in the form of elaborated stringcourses, mouldings, and frames, that connect rows of windows by giving them a common horizontal ground. Along their course the Roman streets often appear as spaces bound laterally by two musical staves, that is to say, as surfaces articulated to varying degrees on which the windows, like musical notes, rest on continuous lines and continually change their weight and relationship to the horizontal levels. The metaphor could be pushed still further, revealing in the window arrangements harmonies, melodies, themes, and variations on themes.

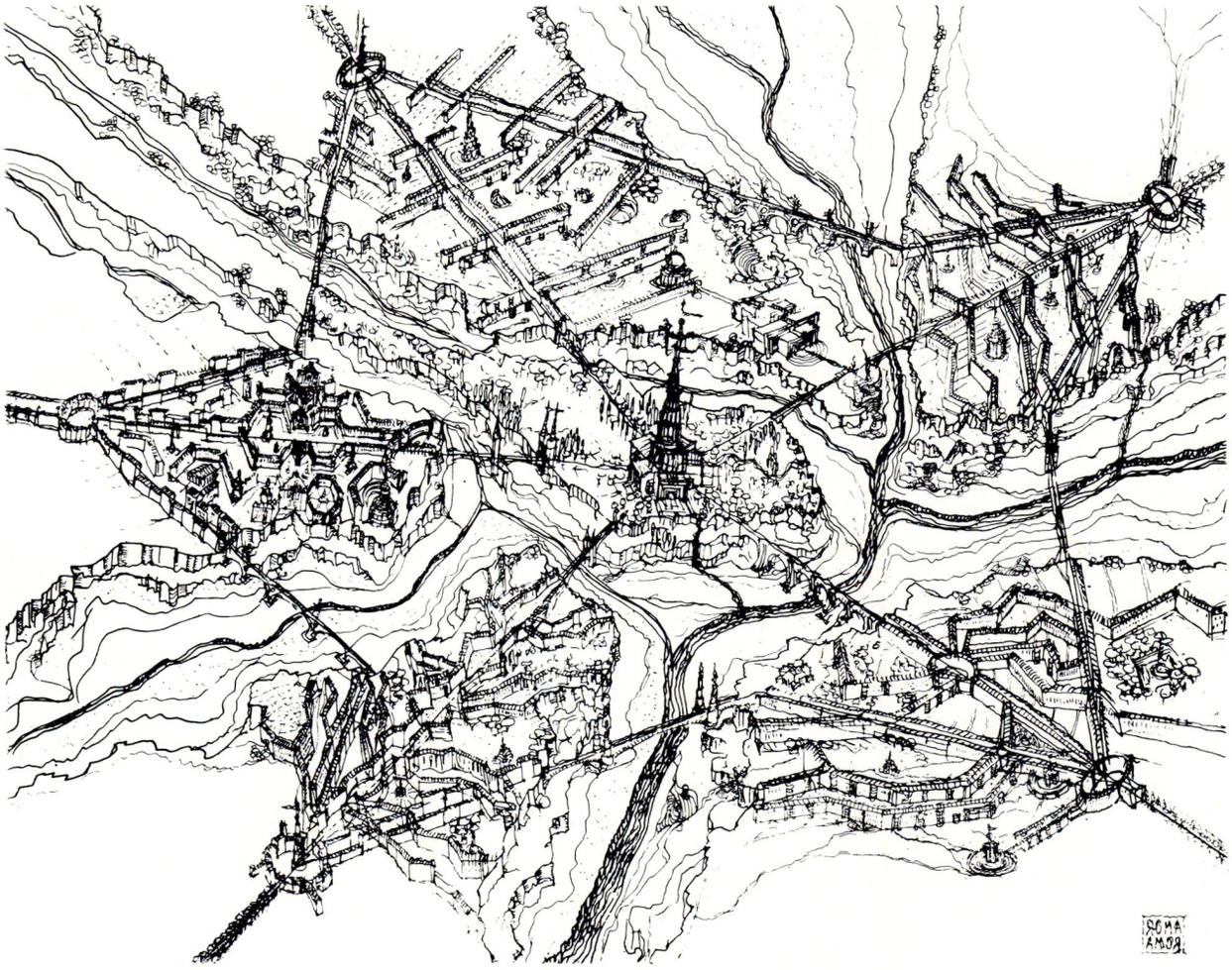
The analysis of this subsystem is fundamental to an understanding of the effect of variety in unity, to an understanding of the enveloping continuity of the street corridors, walls, and to an understanding of their function as an accompaniment to the monumental constructions. Even the transgressions of this golden rule are significant; they reveal a search for complexity that does not undermine the system, but, rather, heightens its effectiveness by dispelling the passivity of convention. A typical transgression appears in many eighteenth-century designs, in which the window openings tend to be accentuated in their vertical alignments, leading in some cases to such a solid welding of the vertical voids that the horizontal bands are reduced to contradictory elements.

Still another subsystem of historic Rome analyzed in the preliminary studies for this project is that of the optical *foci*, or aerial points of reference, that introduce exceptional symbolic interrelationships into the continuity of the urban scene. Domes, rooftop loggias, and obelisks are the primary signs of an ordering network that superimposes itself upon the street network. By introducing an imagined dimension of the distances between elements and by producing unexpected relationships between distant elements that overlap, become superimposed, and separate widely as one moves along, these aerial reference points modify the quantitative geometric relationships of the street network through which one passes. In Rome's historic center the ecclesiastical network of domes—usually visible only in irregular foreshortened glimpses, through distant openings, or from afar in a panoramic view—is counterbalanced by the secular network of rooftop loggias, which are equally important factors in a process of visual locomotion that introduces a new type of sensibility. The optical focal points (monumental backgrounds, obelisks, fountains) constitute the basic structure of an urban image in which the primacy of vision does not lessen but, on the contrary, exalts the tactile qualities of the environment. This is without doubt one of the "secrets" of Rome.

Portoghesi

6. *Bird's-eye view of ROMA-AMOR, with the large House of the People at its center.*

7. *Plans and sections of four streets in Rome's historic center showing the subtle hinged-like bending of the street walls; the studies were carried out in connection with the designing of ROMA-AMOR.*



These subsystems, together with others still to be studied (such as the tonalities of stucco used for façades, the particular treatment of building angles at street corners, etc.), are not proposed as fragments of an urban science to be passed off as a new linguistic code; they are only the results of a structural reading of the city of Rome, from which it is possible to extract usable design data.

Quality in urban life, self-identification in a place, and the response and attachment to things are all born from the unconscious perception of a structure that amplifies and develops our imaginative and sensory capacities while we live within it. Anger and indignation at the loss of urban identity in the city we have constructed in the last fifty years leads to an instructive investigation of the reasons underlying the loss of that quality.

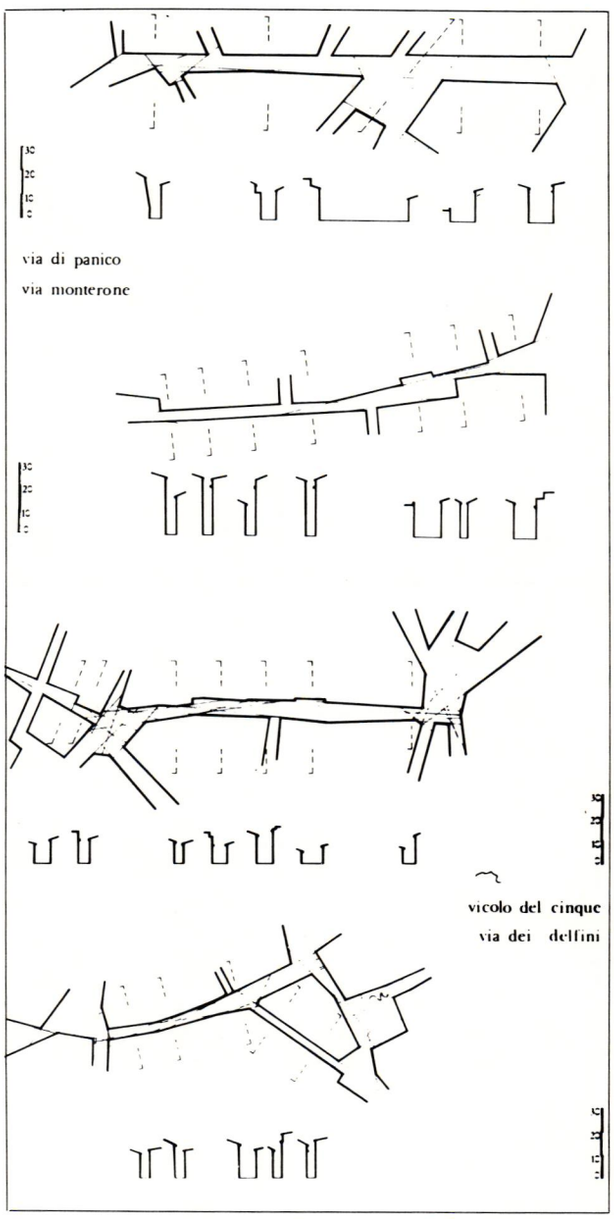
The search of the new for the new, the different for the different, has produced the most humiliating of all monotonies: uniformity. The possibility of escaping from this desiccated barrenness of invention is hidden within the mechanism of repetition, different repetition. Gilles Deleuze has written:

I do not repeat, because I remove. I remove because I repeat. I forget because I repeat. I remove because, primarily, I cannot live certain things and certain experiences if not by way of repetition. I am brought to remove that which would impede me from living them thus; that is to say, I am brought to remove the representation that mediates the lived in bringing it back to the form of an identical or similar object. In this, Eros and Thanatos are distinct, in that Eros must be repeated, can be lived only in repetition, while Thanatos (as a transcendental principle) is that which gives repetition to Eros and submits Eros to repetition.

Can repetition play a part in the practice of urban planning and the construction of the city? Certainly: it is at present the only means of accepting the responsibility of a culture that has discovered all the pitfalls of a liberation from a past based on difference as an end in itself. "Through transformation and the symbolic order," affirms Deleuze, "difference is comprised in repetition."

A systematic approach to the quality-providing factors of living can resolve the impasse at which we find ourselves today, and can give our studies and pursuits strictness and method, without borrowing procedures from science that are not those proper to architecture. In other words, we need not science, but knowledge of the city and also love of the city, loving comprehension.

Love and anger: the anger at not being able to construct what one dreams of and loves, an environment capable of restoring to daily life the congenial background of the cordiality and corporeality of space, a city like a large body nearby.



1

we Don't know
whAt
we'll haVe
when we fInish
Doing
whaT we're doing
hUt
we know every Detail
Of
pRocess
we're involveD in
A way
to leaVe no traces
nothing in between
herDed on

2

before stuDying
mountAin
and Valley
aen Is aen
while stuDying
mounTain
aen becomes confUsing
after stuDying
mOuntain
River
Desert
lAke
and Valley
aen Is aen
Difference

3

Dumb
At dawn
what i haVe
Is
all i neeD
excepT
for yoU
south sea islanD
shifting Of
mountain bReeze
sound of birDs
dArk
has gIVen way
to lIght
no neeD

4

the white birDs
fly in pAirs
they haVe
things
to Do
Together
that requIre
Duality
they fly abOve
the tRees
now anD then descending
to An upper branch
whereVer they're
going is where
they've alreaDy landed

5

weDon't
reheArse together
we gaVe that up long ago
before we gave up smoking
why Do people
sTill ask
qUestions
i finD it
Odd
strAnge
when he quoteD something
i hAd said
it seemed to haVe
a little value
but when i rmD
tT by myself
i mUst say
it seemeD
of nO use at all
(bulKs the books)

Theme

we Don't know
At dawn
and Valley
things
to Do
whaT we're doing
aen becomes confUsing
south sea islanD
mOuntain
mountain bReeze
Desert
lAke
to leaVe no traces
nothing in between
no neeD

Variation I

before stuDying
whAt
we'll haVe
aen Is aen
while stuDying
excepT
bUt
after stuDying
mOuntain
mountain bReeze

Variation II

we Don't know
At dawn
what i haVe
aen Is aen
all i neeD
mounTain
for yoU
south sea islanD
Of
mountain bReeze
soundS of birds
A way
and Valley
aen Is aen
herDed on

Variation III

we Don't
mountAin
we'll haVe
when we fInish
to Do
whaT we're doing
for yoU
Duality
they fly abOve
mountain bReeze
Desert
lAke
whereVer they're
a little value
Difference

Variation IV

the white birDs
reheArse together
they haVe
aen Is aen
while stuDying
sTill am
hUt
Duality
Odd
River

INTRODUCTION TO AN UNPRESENTED TEXT

John Cage

"Themes and Variations" was written to be spoken out loud. It consists of five sections, each to take twelve minutes. The fourth is the fastest and the last one is the slowest.

There are fifteen themes. They are mesostics on the names of fifteen men who have been important to me in my life and work: Norman O. Brown, Marshall McLuhan, Erik Satie, Robert Rauschenberg, Buckminster Fuller, Marcel Duchamp, Jasper Johns, Henry David Thoreau, James Joyce, Merce Cunningham, David Tudor, Morris Graves, Mark Tobey, Arnold Schoenberg, and Suzuki Daisetz. Many more could be added to this list. But to make a twelve-minute talk I needed no more than fifteen names, and I took those who first came to mind.

Ordinarily when I write mesostics, I write about the person whose name is a row going down the middle of the text, though some texts are a collection of mesostics "re and not re" that person. The mesostics in "Themes and Variations" are, exceptionally, not about the men named at all, except coincidentally. Instead they are derived from three, four, or five mesostics of equal length written on any of the following one hundred and ten ideas which I listed in the course of a cursory examination of my books (*The Works of Virgil Thomson*, a part of a book otherwise written by Kathleen O'Donnell Hoover, *Silence, A Year from Monday*, *M*, and *Empty Words*).

Nonintention (the acceptance of silence) leading to nature; renunciation of control; let sounds be sounds.

Each activity is centered in itself, i.e., composition, performance, and listening are different activities.

(Music is) instantaneous and unpredictable; nothing is accomplished by writing, hearing, or playing a piece of music; our ears are now in excellent condition.

A need for poetry.

Joyce: "Comedy is the greatest of arts because the joy of comedy is freest from desire and loathing."

Affirmation of life.

Purposeful purposelessness.

Art = imitation of nature in her manner of operation.

Coexistence of dissimilars; multiplicity; plurality of centers; "Split the stick, and there is Jesus."

Anonymity or selflessness of work (i.e., not self-expression).

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A work should include its environment, is always experimental (unknown in advance).

Fluent, pregnant, related, obscure (nature of sound).

Empty mind.

No ideas of order.

No beginning, middle, or end (process, not object).

Unimpededness and interpenetration; no cause and effect.

Indeterminancy.

Opposites = parts of oneness.

To thicken the plot (Ramakrishna); his answer to the question: Why, if God is good, is there evil in the world?

Adventure (newness) necessary to creative action.

If the mind is disciplined (body too), the heart turns quickly from fear towards love (Eckhart).

Anything can follow anything else (providing nothing is taken as the basis).

Influence derives from one's own work (not from outside it).

Chance operations are a useful means; moksha.

Being led by a person, not a book; artha.

Love.

Right and wrong.

Non-measured time.

Process instead of object.

America has a climate for experimentation.

World is one world.

History is the story of original actions.

Move from zero.

All audible phenomena = material for music.

Impossibility of errorless work.

Spring, Summer, Fall, Winter (Creation, Preservation, Destruction, Quiescence).

Possibility of helping by doing nothing.

Music is not music until it is heard.

Music and dance together (and then other togethers).

Men are men; mountains are mountains before studying Zen. While studying Zen, things become confused. After studying Zen, men are men; mountains are mountains. What is the difference between before and after? No difference. Just the feet are a little off the ground (Suzuki).

If structure, rhythmic structure.

Boredom plus attention = becoming interested.

Principle underlying all of the solutions = question we ask.

Activity, not communication.

The nine permanent emotions (the heroic, the mirthful, the wondrous, the erotic, tranquility, sorrow, fear, anger, the odious).

The practicality of changing society derives from the possibility of changing the mind.

The giver of gifts (returning to the village having experienced no-mindedness).

Studying being interrupted.

Nothing-in-between.

Object is fact not symbol (no ideas).

Poetry is having nothing to say and saying it; we possess nothing.

Uncertainty of future.

Noises (underdog); changing music and society.

Not working = knowing. Working = not knowing.

Distrust of effectiveness of education.

HCE.

It is, is cause for joy.

Earth has no escape from Heaven (Eckhart).

Mobility, immobility.

Highest purpose = no purpose. Vision = no vision. (In accord with nature.)

We are the oldest at having our airway of knowing nowness (Gertrude Stein).

Fluency in and out.

No split between spirit and matter.

Importance of being perplexed. Unpredictability.

Not being interrupted by shadows (by environment).

Theatre is closer to life than art or music.

Devotion.

Enlightened = not enlightened. Learning = learning we're not learning.

Breaking rules.

No use for value judgments.

We are all going in different directions.

Importance of no rules.

Going to extremes (Yuji Takahashi).

Absence of boredom.

Anarchy.

Meaninglessness as ultimate meaning.

Mind can change.

To do more rather than less.

To sober and quiet the mind thus making it susceptible to divine influences.

The means of thinking are exterior to the mind.

Art is criminal action.

Love = leaving space around loved one.

Utilities, not politics (intelligence; problem solving). Anarchy in a place that works.

Not just self-but social-realization.

Unemployment (cf. artists).

Giving up ownership, substituting use.

Whole society (including, e.g., the mad: they speak the truth).

Religious attitude (George Herbert Mead); world consciousness.

More with less.

Music is permanent; only listening is intermittent (Thoreau).

Invention.

Not things, but minds.

Dealing with 1, not 2.

To make a garden empty-minded.

Music = no music.

Inclusive, not exclusive: aperiodic; no vision, etc.

Objective within; going in all directions.

Demilitarization of language (no government).

A music that needs no rehearsal.

Feet on the ground.

To set all well afloat (Thoreau: Yes and No are lies. The only true answer will set all well afloat.).

Art's self-alteration.

Impossibility of repeated actions; loss of memory. To reach these two's a goal (Duchamp).

Complexity of nature; giving up simplicity of soul, vision, etc.

Constellation of ideas (five as a minimum).

Problems of music (vision) only solved when silence (non-vision) is taken as the basis.

Giving unto others what they wish to be given, not what you would wish to be given (alteration of the Golden Rule).

Use all solutions; do everything!

Inactivity (the camera).

Goal is not to have a goal.

"Themes and Variations" is one text in an ongoing series; to find a way of writing which though coming from ideas, is not about them; or is not about ideas but produces them.

I used I Ching chance operations to find which of these ideas would be the subject of mesostics on which name. In this way I gradually developed a library of mesostics.

Instead of using them as text in their own right, I used them as material for renga. Renga is a classical form of Japanese poetry. Many people now know haiku, but not so many know renga, though Octavio Paz in collaboration with other western poets has written renga. A haiku in Japanese has no fixed meaning. Its words are not defined syntactically. Each is either noun, verb, adjective, or adverb. A group of Japanese of an evening can therefore entertain themselves by discovering new meanings for old haikus.

matsutake ya
shirano ho no ka no
hebaritsuku

This is a poem by Bashō. Translated into nouns it is:

pine mushroom
ignorance leaf of tree
adhesiveness

This is R. H. Blythe's translation:

The leaf of some unknown tree
Sticking
On the mushroom.

I showed that to Toshi Ichiyanagi. He said: That is not a very interesting translation. I asked him how he would translate it. He said he'd think about it. Two days later he brought me:

Mushroom
Does not know leaf
Is sticking on it.

In the course of five or six years, having gotten the idea, I made two more:

That that's unknown
Brings mushroom and leaf
Together.

And, finally:

What mushroom?
What leaf?

From a strict point of view this last translation is not cricket, but the fact that the poem consists of questions rather than statements suggests ignorance, and their juxtaposition suggests adhesiveness.

Haiku is short: five, seven, five syllables. Renga is long: five, seven, five, seven, seven expressed at least thirty-six times.

Traditionally renga is written by a group of poets finding themselves of an evening together and having nothing better to do. Successive lines are written by different poets. Each poet tries to make his line as distant in possible meanings from the preceding line as he can take it. This is no doubt an attempt to open the minds of the poets and listeners or readers to other relationships than those ordinarily perceived. In Buddhist thought all creation is a network of cause and effect: everything causes everything else; everything results from everything else. Buddhism is utterly ecological, and that is one of the reasons it has attracted so many occidental followers in recent years. Since everything is nothing but cause and effect, Buddhists see that it is unnecessary or impossible to speak in terms of cause and effect. Thus an intentionally irrational poem can be written with liberating effect. This is called purposeful purposelessness. That renga is written by several poets conduces to its being free of the ego of any single one of them.

In Buddhist thought, mind goes full circle: out from the ego through sense perceptions to the world of relativity, around and down to the Absolute (what Eckhart called the Ground), back through what Jung called the Collective Unconscious, and then in through dreams to the ego. Suzuki said that the ego has the capacity in this full circle to cut itself off from its experience whether that comes from without through the senses or from within through the dreams. Or it has the capacity to flow with its experience. And, Suzuki said, flowing full circle is what Zen wants.

Sitting and breathing is a discipline for starting the flow in an ingoing direction. And the Australian aborigines with whom Marina Abramovic/Ulay and Ulay will shortly be living for a year use their dreams for this same initiation.

Artists who use disciplines that free their work from their intentions start the flow moving in an outgoing direction. Renga is a social example.

I used my library of mesostics on one hundred and ten different subjects and fifteen different names to make a chance-determined renga-like mix. The first "Themes" were written for a symposium of artists on the island of Ponape in the South Pacific, organized by Kathan Brown of the Crown Point Press in Oakland and by Tom Marioni, Director and Founder of the Museum of Conceptual Art in San Francisco. Each of twelve artists had been asked to make a twelve-minute text to be recorded and issued as *Vision IV*. The symposium was called "Word of Mouth," and took place during the third week of January 1980. The mouth is more important than we think. Just as one hundred people at Black Mountain College and one hundred people at Emma Lake in Saskatchewan, so at Ponape thirty-five through eating their meals in the same room became a family. Life on earth can be improved by means of food alone.

In Ponape I got the idea to extend my twelve-minute talk to an hour by performing the chance operations four more times on the same, or, where necessary, lengthened material. Where through chance operations I had too little space for the name of one of the themes, I used his initials.

The lines that are to be read in a single breath are printed singly or together as in a stanza. These divisions or liaisons were not chance-determined, but were arrived at by improvisational means.

To conclude this introduction, I give the first part of all five mesostics on the name of David Tudor (David Tudor David), which were the material for the renga but which were not themselves the renga. And, finally, the corresponding parts of the finished mixed nonsyntactical text.

1

we Don't know
whAt
we'll haVe
when we fInish
Doing
whaT we're doing
bUt
we know every Detail
Of
pRocess
we're involveD in
A way
to leaVe no traces
nothIng in between
herDed ox

2

before stuDying
mountAin
and Valley
zen Is zen
while stuDying
mounTain
zen becomes confUsing
after stuDying
mOuntain
River
Desert
lAke
and Valley
zen Is zen
Difference

3

Dumb
At dawn
what i haVe
Is
all i neeD
excepT
for yoU
south sea islanD
shifting Of
mountain bReeze
sound of birDs
dArk
has giVen way
to lIght
no neeD

4

the white birDs
fly in pAirs
they haVe
thIngs
to Do
Together
that reqUire
Duality
they fly abOve
the tRees
now anD then descending
to An upper branch
whereVer they're
goIng is where
they've alreaDy landed

5

weDon't
reheArse together
we gaVe that up long ago
before we gave up smokIng
why Do people
sTill ask
qUestions
i finD it
Odd
stRange
when he quoteD something
i hAd said
it seemed to haVe
a lIttle value
but when i reaD
(iT by myself
i mUst say
it seemeD
of nO use at all
buRn the books)

Theme

we Don't know
At dawn
and Valley
thIngs
to Do

whaT we're doing

zen becomes confUsing
south sea islanD

mOuntain

mountain bReeze

Desert

lAke

to leaVe no traces
nothIng in between
no neeD

Variation I

before stuDying
whAt
we'll haVe
zen Is zen

while stuDying
excepT

bUt
after stuDying

mOuntain

mountain bReeze

Variation II

we Don't know
At dawn
what i haVe

zen Is zen

all i neeD

mounTain
for yoU

south sea islanD
Of
mountain bReeze

sounDs of birds

A way
and Valley

zen Is zen

herDed ox

Variation III

we Don't
mountAin
we'll haVe
when we fInish
to Do
whaT we're doing
for yoU

Duality

they fly abOve
mountain bReeze

Desert
lAke

whereVer they're
a lIttle value

Difference

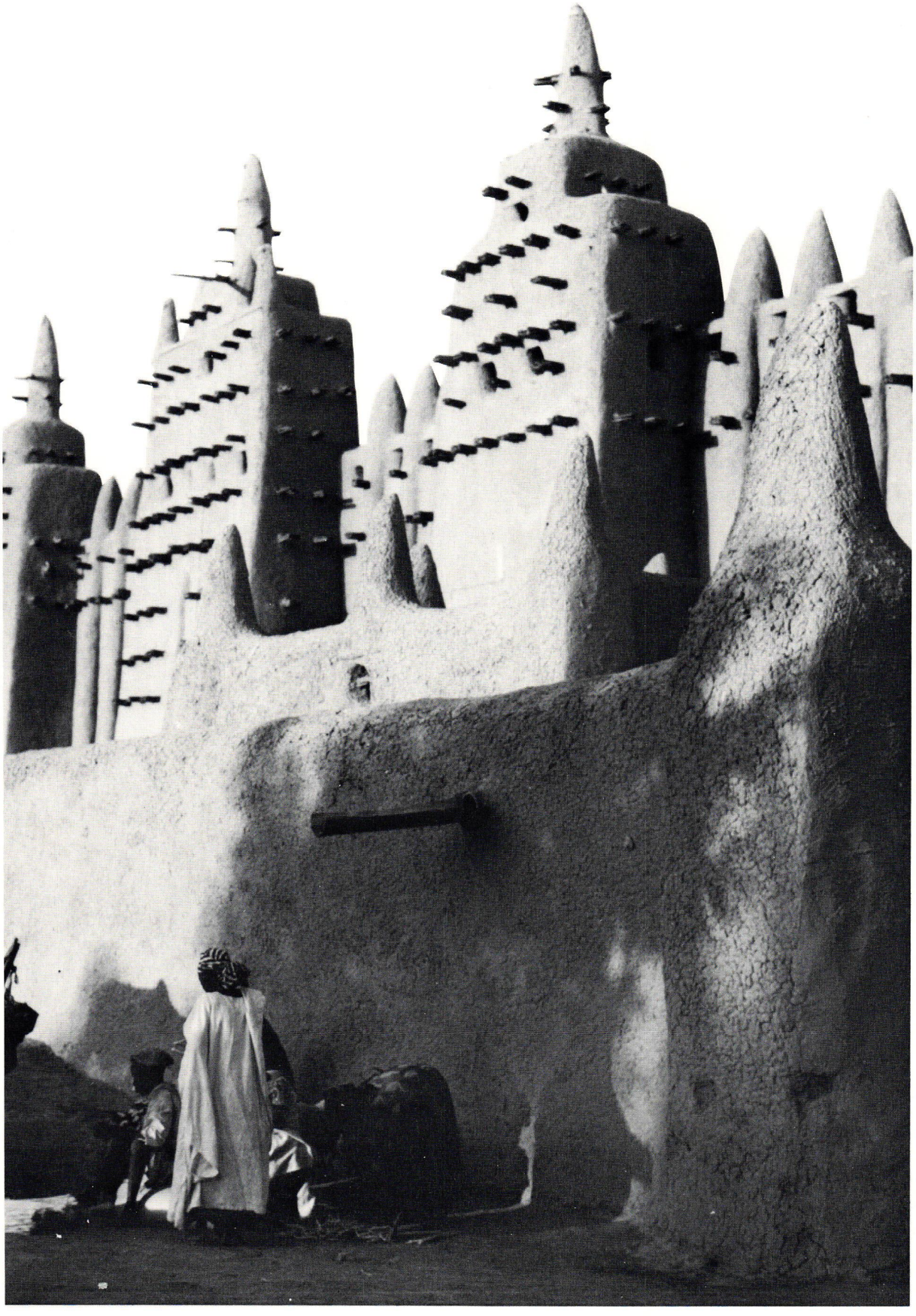
Variation IV

the white birDs
reheArse together
they haVe

zen Is zen
while stuDying

sTill am

bUt
Duality
Odd
River



ISLAMIC ARCHITECTURE IN WEST AFRICA
THE FOULBÉ AND MANDING MODELS

Labelle Prussin

Sub-Saharan West Africa has played host to successive waves of Islamization for over a millennium. Islam, in turn, like a crystalline structure, has revealed different facets of itself, taking on new forms and achieving variable success among the West African cultures of the *sahel*, the savannah, and the rain forest (Fig. 1). Although Islam has carried with it the instruments for profound transformation—a written language, a universal morality, an economy of long distance trade, and new state models—the effectiveness of these instruments has varied with host receptivity. In some instances major change was aggressively wrought; in other instances the changes were gradual and subtle, as Islam penetrated via non-disruptive means. Islam's developing network of trade patterns overlaid traditional systems of subsistence economy in West Africa; the introduction of literacy evoked different responses from societies richly endowed with oral tradition; the transformation of acephalous societies to hierarchical societies often meant that only the black aristocracy adopted Islam; and new technologies generated by social change did not evolve evenly, and often existed, as they still do, side by side with traditional ones.

Two of the most widely dispersed cultural groups in West Africa are the Manding- and Foulbé-speaking peoples. These two peoples also have been the West African societies most heavily involved with Islamic penetration and conversion, albeit at different epochs and under diverse conditions. Among the Manding, Muslims moved in peacefully over many centuries, influencing the intellectual, economic, and social development of the medieval empires of Mali and Songhay from the fourteenth century onward. Among the Foulbé, Islamic intellectual and political elites formed strong, Foulbé-led political entities in the course of aggressive *jihads*.

Islam traveled to West Africa via two *tariqas*, or brotherhoods, the Qadiriyya and the Tijaniyya. Both were lineally descended from North African Sufists. The Qadiriyya, already widespread throughout the upper savannah by the fifteenth and sixteenth centuries, was associated with the seventeenth-century Manding diaspora and with the formation of the medieval empires and entrepôts on the Upper Niger Bend. The Qadiriyya had strong ties with the North African M'zab. The Tijaniyya, spreading from Fez in the early nineteenth century, was associated with the nineteenth-century *jihads* in the Western Sudan, and thus with recent Foulbé history.

The Great Mosque at Djenné.

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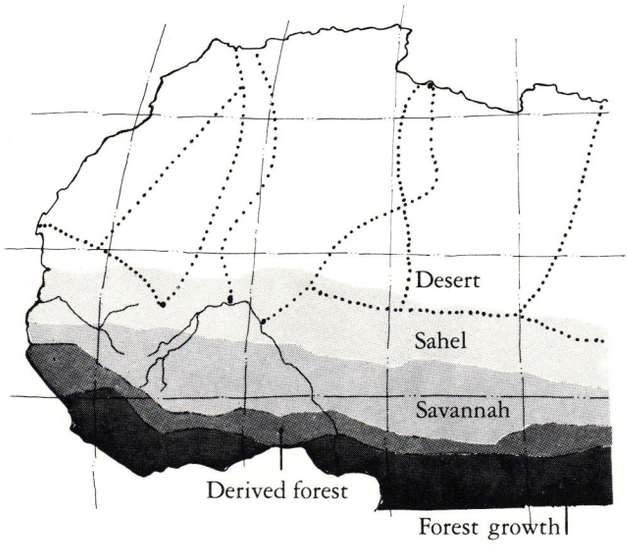


Manding culture is grounded in a sedentary, agricultural lifestyle. Foulbé culture derives from a seasonally nomadic pastoral lifestyle. The Islamic architecture that has emerged in each of these two cultures reflects not only the differential role of Islam itself vis-à-vis each culture, but differences in their traditional lifestyles. As elsewhere, the mosque structure, which incorporated both traditional cultural values and aesthetic preferences, emerged as the singular expressive statement of the Muslim presence and integration. By comparing the mosque prototypes that have emerged from each culture, this paper attempts to determine those stylistic and iconographic elements that account for both their apparent formal variation and those elements uniting the two prototypes into an identical Islamic expression.[1]

Among the Manding, the mosque is a heavy earthen structure, approximately square or rectangular in shape, with projecting earthen buttresses and pinnacles, wooden reinforcing members, and a precisely square interior *sahn*, or courtyard (Fig. 2). Among the Foulbé of the Fouta Djallon, the mosque appears as a vast thatched circular dome with a peripheral ambulatory, a completely enclosed square interior, strong cardinal axes, and wooden entrance posts (Fig. 3).[2]

Quite contrary to long-accepted European interpretation, indigenous cultural traditions exerted considerable influence on the bearers of the new religion, and contrary to assumptions often made by Africanist historians, reality suggests that the imagery and iconography of traditional, pre-Islamic altars, shrines, and housing served as the foundation for the new architectural form that Islam required.[3] Urbanites and elites drew heavily on the imagery of the rural hinterland for their systems of visual communication; traditional iconography gradually incorporated new meanings introduced by Islamic adherents.

The Manding Tradition

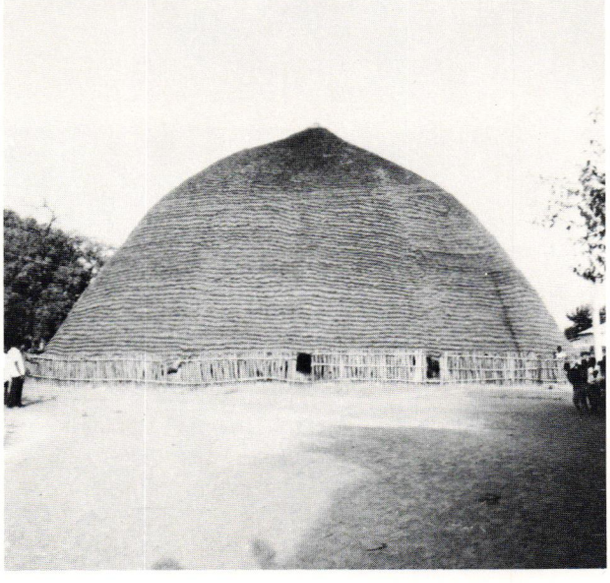
Moving out from a residential core in southwest Mali in response to both external stimuli and internal developments, the Dyula, or Islamized Manding, began to establish a network of commerce in the seventeenth century that spread from Sénégal to Nigeria, from the Upper Niger Bend to the coast of Guinée. This trade network was the southern extension of and counterpart to the long-range routes across the Sahara that had already contributed to the formation and growth of Islamic centers such as Timbucktu and Djenné.

This Manding network was also the vehicle for the spread of Islamic sciences and mysticism. Traditionally, the lower savannah was inhabited by cultural groups whose myths of origin came from the earth below them. Sedentary agriculturalists, the Manding have belief systems that place man at the center of the natural universe, and the ancestral worship on which their belief systems rest is related to a patrilineal inheritance system. Because knowledge is orally

1. Map of West Africa indicating the sahel, *the savannah and the rainforest environments, over which are imposed the medieval caravan routes linking North and West Africa.*

2. The Great Mosque at Djenné, Mali.

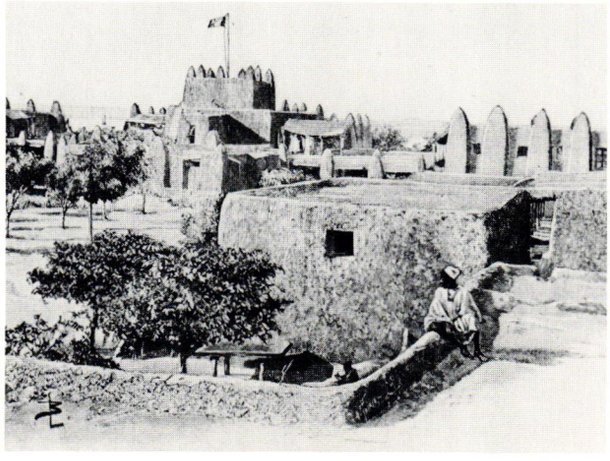
3. The Friday mosque at Dingueraye, Guinée.



transmitted, the elders were (and are) the most respected members of society. They are considered to be closest to the ancestors and are the carriers of traditional wisdom and knowledge.

The ritual act of convocation and invocation centers on the ancestral pillar or shrine, a "house" of the ancestors (Fig. 4). This pillar, validated through genealogies and earthbound cosmologies, is associated with chiefs, elders, and sages in a range of architectural contexts. A symbol of sacred ritual, vitality, status, and beauty, it is used singly to mark ancestral burial sites and in conjunction with sacred trees and stones associated with ancestral habitat. Ancestral pillars are used in pairs to flank entrances, protecting the openings and indicating family viability, and in clusters as fortifications, buttresses and palace or *donjon* wall systems (Fig. 5). The attached earthen pillar became, over time, the singular key to the architectural symbol system of the Manding.[4]

Indigenous non-Islamic belief systems also found physical expression in the sacred tree that always marks the founding and center of a lineage and its founding village (Fig. 6). A focal point for sacrifices to the ancestors and for social interaction, various species of tree figure prominently in mythology and ritual. In like manner, the tree stands at the center of bounded, hidden initiation sites (Fig. 7). The assignment of a given locality, a fixed point, a center in space, is essential to any ancestral cult. Thus, among the Manding, the *dasiri*, an ancestral cult, is embodied in a tree that links a founding deity to the founding of a human community.[5] The Manding also have an initiation society specifically linked with human knowledge. Associated with this society is a funerary custom in which a branch of the *toro*, or fig tree, is buried with the deceased, i.e., the new ancestor.



4. An ancestral male pillar and female mound at the entrance to a family compound in the region of Bobo Dioulasso, Haute Volta.

5. The donjon *or fortress-palace at Segou, Mali, recorded immediately after the French conquest in 1895.*

6. A majestic baobab tree marking the center of a village in eastern Guinée.

A third feature of the residential savannah environment is the organization of living space within a circumferentially bounded but open interior courtyard. Life unfolds not within the enclosed house units that bound the space, but within the courtyard itself; its spacial organization parallels that of the initiation site described above. This courtyard is far more important in the minds of the compound residents than are the built units that encircle and define this family habitat.

The three features that emerge, then, from pre-Islamic and non-Islamic tradition are the ancestral pillar, the sacred tree, and the open interior setting for daily life. The transformation and geometric regimentation of these traditional architectural features in the Islamic Manding context is illustrated by examples drawn from various Manding locales. Rather than considering them in temporal sequence, I will consider them in a sequence demonstrating their increasing, self-defining adherence to normative Islam.

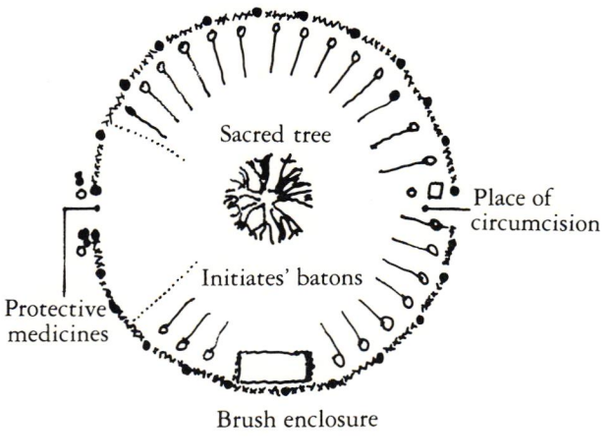
The mosque at Kawara, northern Côte d'Ivoire, reputed to have been built in the seventeenth century, illustrates a non-Islamic iconographic repertoire most succinctly (Fig. 8). Echoing the gestalt of a cluster of pillars in a traditional shrine, the mosque has almost no interior space. It is, rather, analagous to a sculpture to be viewed only from the exterior. The traditional shrine is also a marker for a sacred center rather than a gathering place to house people. At most, traditional shrines house only the paraphernalia associated with ritual.[6] The Friday prayer is observed in the open ambulatory between the peripheral line of teeth-like ancestral pillars and the mosque structure, itself a cluster of earthen pinnacles. Thus, there appears to be a direct visual analogy between the wisdom of the ancestors and elders (the newly Islamized elites), and that of their Muslim advisors and mentors. The projecting wooden pickets, called *toro(n)*, suggest a direct linguistic reference to the Bambara funerary custom, referred to above, of embedding branches of the fig tree into the ancestral earthen marker.

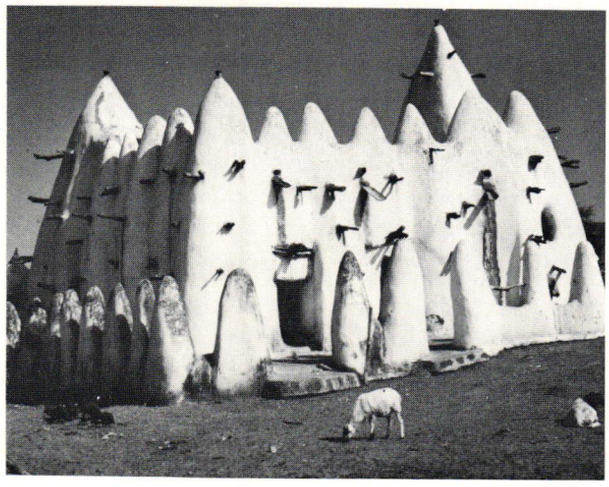
At Safané, Haute Volta, the mosque carries the traditional imagery a step further, since the entire traditional shrine façade has been incorporated into a new context (Figs. 9 and 10). Safané's reputation as a center of Islamic learning dates back to the late eighteenth century, when Safané developed as an entrepôt on the major Dyula trade route linking Djenné, Mali, in the north to trade networks in the south. The mosque's two entrance façades, recalling Manding shrines, lead one into an open interior courtyard. In the foreground rises an acacia tree marking the founding of a community. The conical *mihrab*, studded with *toron*, rises beyond in the form of a single earthen pillar. While the iconography of knowledge, continuity, centrality, and social cohesion has been retained, the meaning of each symbol has been translated into the new Islamic context.

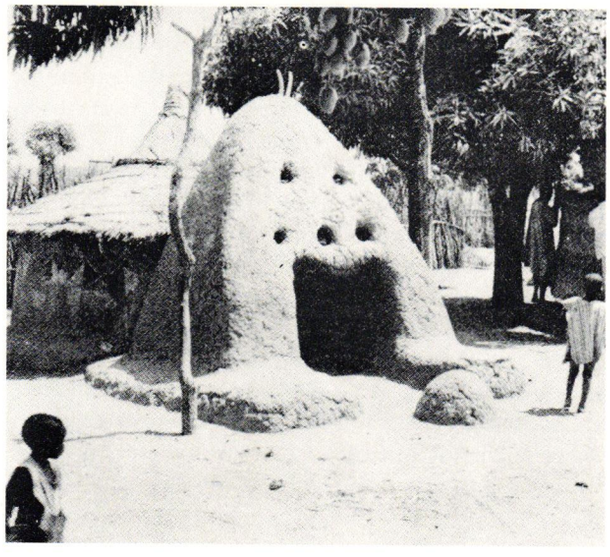
The examples of Kawara and Safané come from a region where Islamic affiliation is somewhat loosely defined. Adherence is characterized by ritual rather than by widespread intellectual commitment. Further north, however, in cities such as Timbucktu and Djenné, the political, economic, and religious elites held a stronger intellectual commitment to Islam. They were also in closer contact with intellectual currents and counterparts in North Africa. Nevertheless, non-Islamic symbol systems continued to prevail in the mosques.[7]

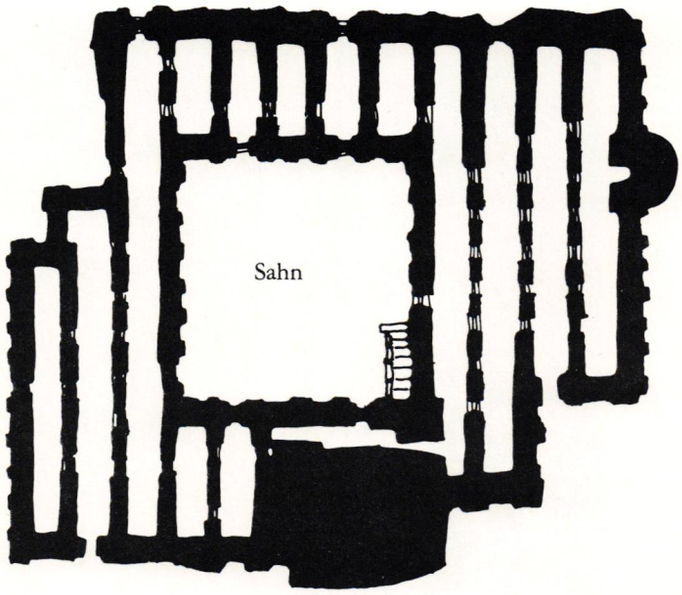
One of the most famous Islamic monuments in West Africa is the Sankoré mosque at Timbucktu, a city renowned in the Middle Ages as a great center of Islamic learning and piety (Figs. 11 and 12). According to the *Tarikh el-Fattach*, the Sankoré mosque was built in 1581 by the Cadi Al-Aqib on his return from the *hajj*, but like all earthen monuments in West Africa, it has been heavily modified over the centuries.[8] Although tradition claims that the Cadi fixed its dimensions to correspond precisely with that of the *ka'ba* at Mecca, its stylistic features correspond closely to features of the pre-Islamic architectural heritage. The *mihrab*, circular in plan, rises on the exterior exactly like a tapering, conical earthen pillar; the open, interior *sahn*, now reduced in size and simulating a square, recalls the strong indigenous emphasis on open, interior space, and the solid mass of earth tapering up pyramidally in three levels as a minaret may well have been the ancestral tomb of the founding Islamic notable.[9]

Djenné was, historically, a sister-city to Timbucktu, but because it developed on a crossroads between the Manding and the trans-Saharan trade routes, it merged southern Manding traditions with northern Sahelian influences somewhat differently than Timbucktu had (Fig. 13). The former mosque of Djenné, reputedly dating from the fourteenth century when the king, or *djenné-koy*, converted to Islam, was hypothetically reconstructed by a French visitor who witnessed its ruins in 1895.[10] Perfectly square, its corners carefully emphasized with quoins, it had on each of its four faces three sets of three engaged earthen columns that tapered into acroteria above the parapet. The clusters of ancestral pillars were ordered into a more precise geometry. Exactly in the center of the bounded square rose a colossal truncated pyramid, reputed to have been a minaret. The meager available sources suggest, however, that this central tower may have been the original tomb of the *djenné-koy*, and that the mosque was built on the site of his palace, which he demolished on conversion to Islam.[11]

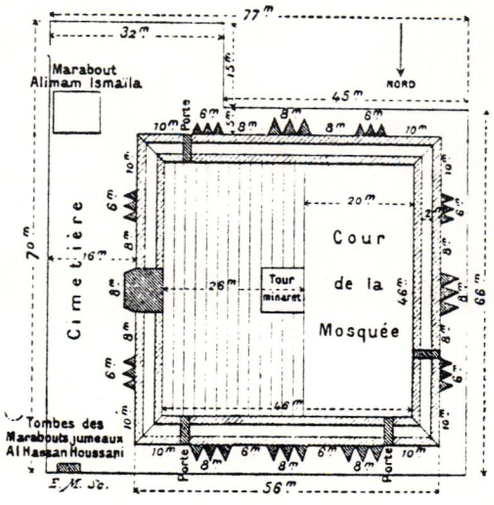

Sacred tree
Place of circumcision
Initiates' batons
Protective medicines
Brush enclosure







Minaret



PLAN DE L'ANCIENNE MOSQUÉE.

7. Circumcision enclosure among the Gourma of northern Togoland. Note the tree centrally located within the circular palisade; the initiates stand in a circle within the palisade, their batons pointing towards the tree.

8. The Friday mosque at Kawara, northern Côte d'Ivoire. The cluster of freestanding and engaged pillars recalls the groups of ancestral pillars which are often found at the entrance to a chief's compound in northern Ghana and the Côte d'Ivoire. For comparison, see Labelle Prussin, "Introduction to Indigenous African Architecture," Journal of the Society of Architectural Historians, *33, No. 3 (1974).*

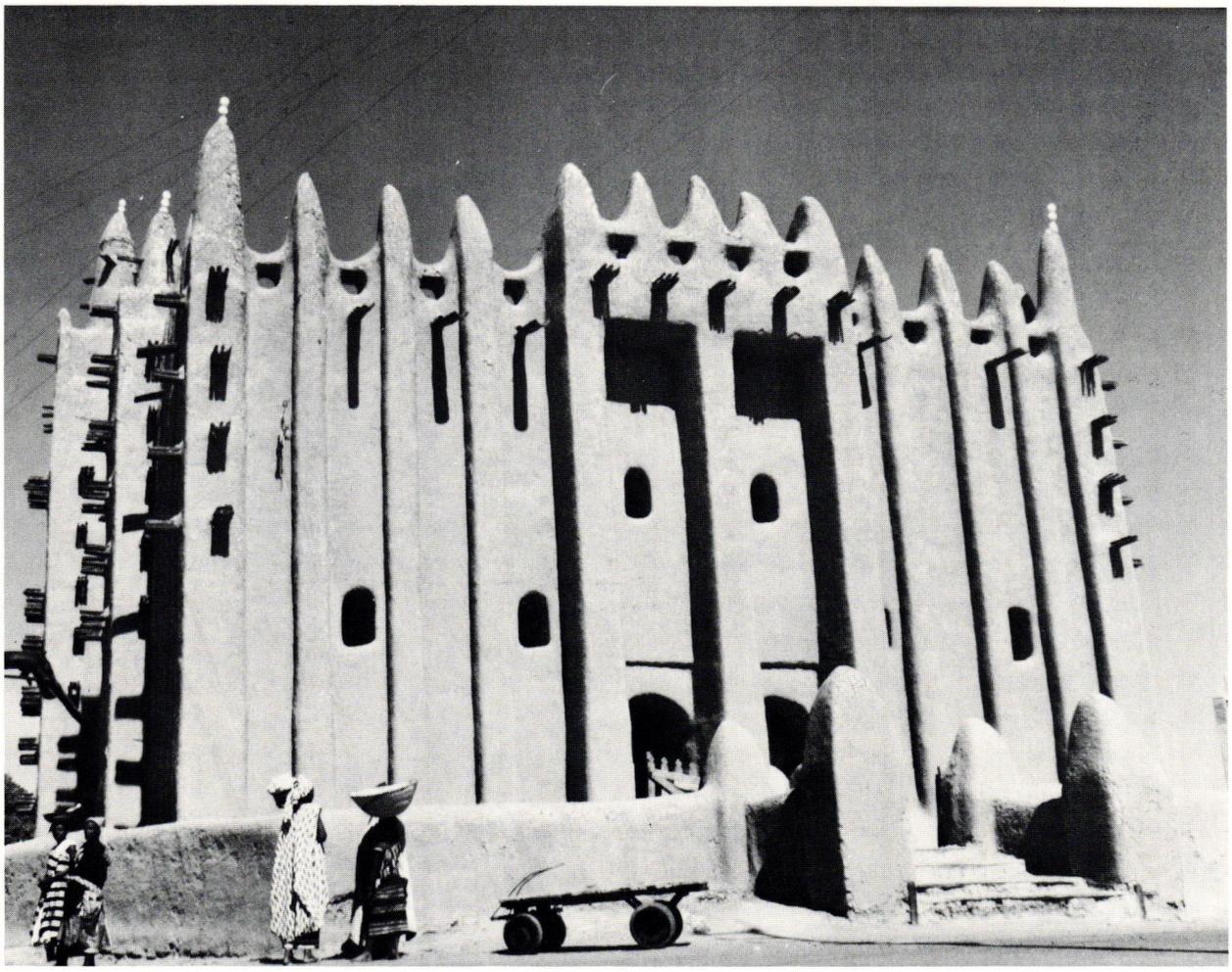
9. The Friday mosque at Safané, Haute Volta.

10. An altar shrine among the Bambara.

11. The minarét of the Sankoré mosque at Timbucktu, Mali.

12. Diagrammatic plan of the Sankoré mosque.

13. Plan of the reconstruction of the ancient mosque at Djenné.



14. The Friday Mosque at Mopti, Mali.

15. A Dogon mask. The relationship of solids to voids is similar to that of the façade of the Friday Mosque at Mopti.

The present mosque was built on the same site shortly after the turn of this century. Although sponsored and paid for by the French colonial administration, it was built with the help and advice of the *ulama* in the city, still bearers of the Manding building tradition.[12] Thus, while the eastern *mihrab* façade echoes the symmetry, proportions, and tripartite arrangement of Beaux Arts monuments, the major entrance to the mosque on its north façade recalls the gestalt of innumerable masking traditions in the Upper Niger Bend (Figs. 14 and 15). At the same time, the acroteria (or *sara fa har*—in Manding, literally, "respect for the male ancestors") have been imbued with new meaning: they are the five pillars of Islam.

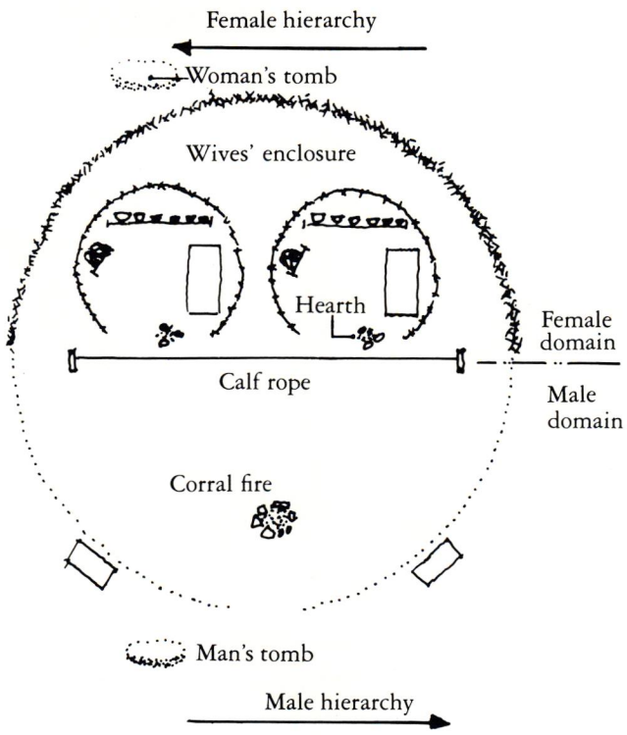
The Foulbé Tradition

For several millennia the Foulbé-speaking peoples have been moving westward across a once-fertile Sahara into the Upper Niger Bend as far as the banks of the Sénégal River. Wherever they were and wherever they went, they carried with them a strong sense of cultural identity, one grounded in an emotional attachment to the virtues of a nomadic lifestyle. Foulbé cosmologies and myths of origin continue to reflect this attachment to seasonal nomadism and to a previous matrilineal inheritance system. Despite the Foulbés' settlement in many parts of West Africa, the iconography of nomadism persists to this day.

In the course of the eighteenth and nineteenth centuries, the Foulbé were instrumental in launching and successfully waging a series of *jihads*. These *jihads* were critical to the development of permanent settlements among the Foulbé, and to the emergence of a Foulbé aristocracy and political hegemony. Cohesive political structures were heavily imbued with Islamic belief. Despite these radical changes, the visual symbols of previously egalitarian and nomadic lifestyles persisted; indeed, they were reinforced by Near Eastern Islamic imagery carried back in the minds and hands of those making the *hajj*.

In considering the relationship between traditional and Islamized Foulbé building forms, two aspects of the Fulani concept of space merit mention: the *wuro* and the *suudu*. The *wuro* is a residential unit in the social sense; it is a site of human occupation that includes both an extended family and its herd. Sometimes demarcated by a *tapade*, or palisade, sometimes by an acacia hedge, sometimes, depending upon the season, by social behavior itself; it is the physical area within which daily life unfolds (Figs. 16 and 17). The *wuro* circle is divided by a calf rope that demarcates male and female residential space.[13] Even among permanently settled Foulbé today, the calf rope continues to be used symbolically in a number of ritual contexts.[14]

Each *wuro* contains at least one *suudu*, or house unit, situated in the female half of the space. The *suudu* is a place where a being (or thing) finds shelter; conceptually it carries with it the notion of a compartment, and the idea of hiding. Thus, the term can be used in reference not only to the place in which a person



16. Diagrammatic plan of a wuro *and its* suudu *among the Foulbé nomadic groups.*

17. A wuro, *or cattle kraal compound, in northern Sierra Leone.*

sleeps, but also to the envelope of a letter or to a box or a case in which objects are stored or hidden.

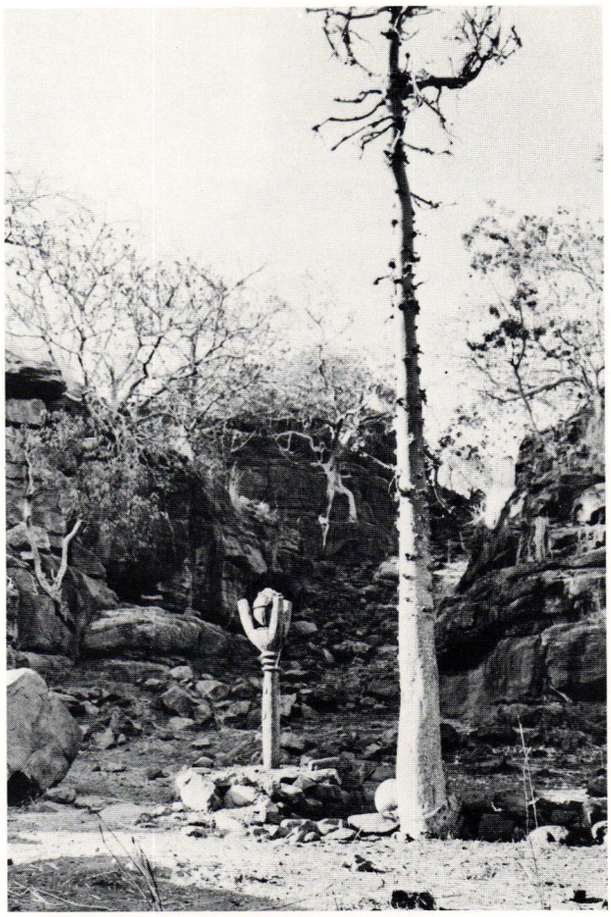
In contrast to the Manding tradition of open interior courtyards enclosed by heavy earthen walls, the Foulbé tradition is characterized by small enclosed residential units within a fairly open area. While Manding imagery had its roots in the ancestral earthen pillar, the Foulbé tradition derived its imagery from the domical or conical mat frame *suudu*. Materials of construction, rather than coming from the earth itself, consisted of vegetal resources structurally combined for easy transport. Foulbé nomadism generated a portable architectural prototype. In contrast to the stationary center of the sedentary Manding is the Foulbé "moving" center as spatial organizer in traditional lifestyles and belief systems. At the same time, nomadism implies, and indeed depends upon, direction and lineality. The four cardinal directions are essential to orientation in long-distance travel.

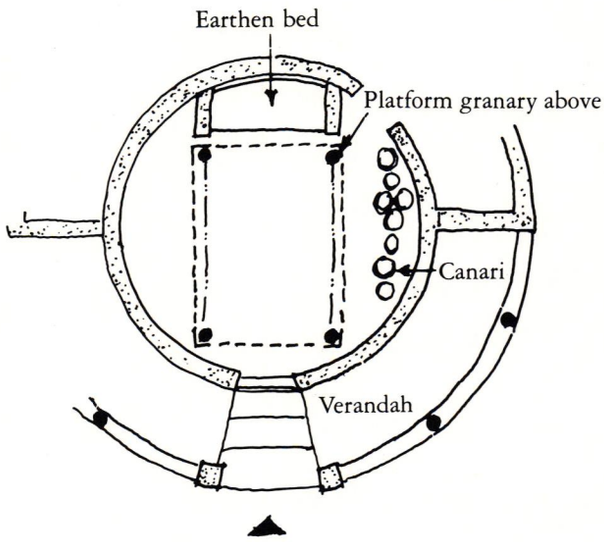
The Foulbé equivalent to the earthen pillar is a forked post supporting a calabash of sacrificial artifacts that is planted in the ground or on a dais (Fig. 18). Called a *do ba*, i.e., "place of the ancestors," it is often found in association with a sacred tree marking a burial site or the center of a village. Frequently carved, this post also performs a multiple role in various functional contexts both inside and outside the *wuro* and the *suudu*.

In traditional non-Islamic contexts the plan of sacred space is circular. Thus, a diviner sits within a sacred space circumscribed by a pair of concentric stone circles in order to efficaciously perform his function (Fig. 19). The tomb of the deceased chief, located in the ruins of his own house unit, is an equally sacred space. At the time of burial a tree was planted, creating a conceptual link between the ancestors, the trees, and the space sacralized by occupation and ancestral presence. Housing for both ruler and commoner alike was laid out in a pair of concentric circles at the center of which was the traditional hearth. As nomadism was gradually abandoned, vegetal walls were enveloped in mud, and a square platform granary supported by four corner posts provided storage for the agricultural harvest (Fig. 20). Each of the four cardinal directions established within the house circle had a discrete name.

Thus, the features that characterize traditional Foulbé iconography are the carved wooden pillars in association with the sacred tree, the thatched dome enveloping a "hidden" space, and a circular plan for all kinds of sacred spaces. The transformation of these traditional architectural features into the Islamic Foulbé context and iconography is again best illustrated by the mosque prototype.

The nomadic tradition itself is reflected in the ubiquitous fulfillment of the most minimal definition of sacred Muslim space: a circle of stones in which the *mihrab* and *qibla* wall are barely discernible, and from whose center rises a majestic tree of one or another species. Subsequently the bounding stone circle is



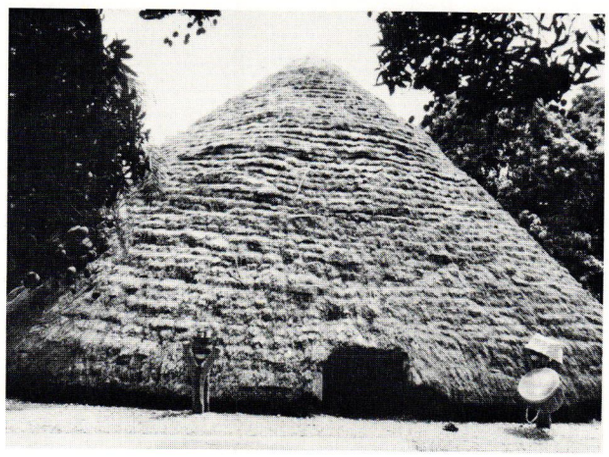


18. A do ba *in Niger.*

19. A diviner sits in his sacred space demarcated by a pair of concentric stone circles.

20. Plan of a typical sedentarized Foulbé suudu *at Timbo, Guinée.*

21. The tapade, *or palisade, bounding an Islamic prayer space near Dalaba, Guinée.*



22. *The women's mosque at Koin, Guinée.*

23. *The men's mosque at Sareboido, Guinée. Note the two carved entrance posts supporting the ablutions vessel and the* tabala *or drum.*

24. *The French reception at Fougoumba, 1888.*

Prussin

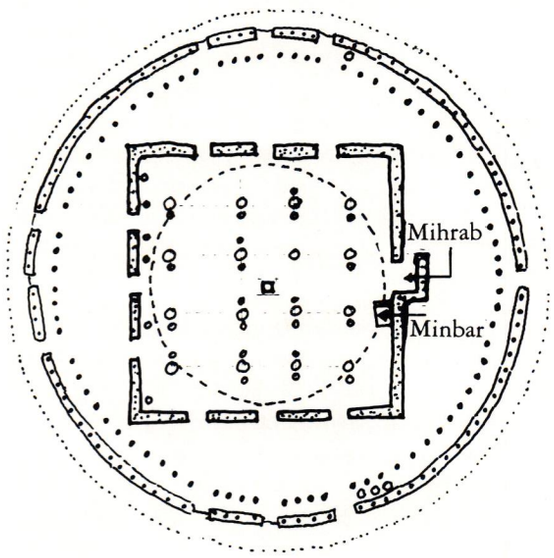
often replaced by a palisade in which the tree itself may be used to establish the direction towards Mecca (Fig. 21). To the uninitiated visitor there is little to distinguish the palisade wall of such a "mosque" from the *tapade* that encircles a family *wuro*.

One of the oldest mosques that I observed was the women's mosque at Koin, Guinée (Fig. 22). It is a precise replica not only of the thatched *suudu*, but of the shelters traditionally used for all village gatherings on the occasion of socio-political decision making or of the reception of strangers and guests. It merely consists of a low, earthen wainscot from which a circle of wooden pillars projects in support of the thatch dome.

An older mosque often remains to become the women's mosque when a new, magnified replica is built adjacent to it. Both are then enclosed by a palisade wall demarcating the sacred space of Islam, as is the case at Sareboido, Guinée. Sometimes the older structure is used as a shelter for deliberation and adjudication, or as a "reading" room.[15] With the Islamization of the traditional political structure, the chief's drum or *tabala* was duplicated (or merely moved over from his own compound) and hung from a forked post at the mosque entrance. In the absence of a *muezzin*, or minaret, it was used to call the faithful to prayer (Fig. 23).

The mosque's function as a site for political deliberation and social decision is still viable today, and is fulfilled in the late Friday afternoon gatherings of men in the courtyard of the mosque enclosure. Perhaps the best illustration of this association between traditional ruler and Islam comes from Fougoumba, reputed to have been the first site of a Foulbé mosque in the Fouta Djallon (Fig. 24).[16] Although the literature is not explicit, the passing reference to the reception of the French delegation that visited Fougoumba for the first time in 1888 suggests that the reception took place at the entrance to the mosque. When I visited Fougoumba the audience, or entrance hall of the chief of the town, originally the residence of the Alfa Ibrahima, was directly across the way. The complex of the mosque, its enclosure, and the chief's compound were considered as a unity, and the audience hall was indistinguishable from the mosque itself.

Although the exterior form of the mosque at Fougoumba has been considerably altered, it undoubtedly was only a smaller version of the Great Mosque at Dingueraye, Guinée, whose thatch dome has been maintained and preserved for close to a century (Fig. 25). The mosque was built in 1883 by the family of El-Hadj Umar Tall, the Tijaniyya leader of a major nineteenth-century *jihad* in the Fouta Djallon of Guinée. But, although the exterior form closely resembles the earlier mosques and audience halls, the hidden interior, like a *suudu* or box, expresses a totally new form: the cube. As defined by its users, the mosque is not what is visible on the outside, but *only* the earthen cube within. The thatch dome, I was told, "is only for protection" (Fig. 3).[17]



25. Plan of the Great Mosque at Dingueraye, Guinée, 1979.

26. Ambulatory of the mosque at Dingueraye. Note, on the left, the earthen walls of the mosque cube, and on the right, the encircling pillars which support the thatch dome.

The thatch superstructure is framed by means of a radiating rafter system; the rafters in turn are carried by a ring of wooden pillars forming a circular ambulatory (Fig. 26). A single central post carries a core of secondary rafter ribs that flare out, umbrella fashion, above the flat earthen ceiling of the mosque proper. The central post, the perimeter columns and the thatch superstructure are structurally discrete from the earthen cube within.

The cube itself has heavy earthen walls and an earthen ceiling supported by four ranks of columns in each direction. These form a grid, creating a kind of magic square with nine *suudu* within. There are three openings on each of three sides of the cube (the fourth side has only one entrance for the Imam) in line with these interior spaces. Then there are four sets of three openings in both the domical frame and in the circular *tapade* beyond, all repeating and emphasizing the four cardinal directions and the faces of the square.

The flanking posts at each entrance are carved in a manner identical to that of the traditional entrance to the *wuro* of a traditional chief, and the same motifs are also found on the four supporting columns of interior platform granaries of each residential *suudu*. There is also a magnificent spreading tree rising to the left of the Imam's entrance in the *mihrab* wall face of the mosque. This tree, I was told, was planted at the time the mosque was built.

The Islamic Heritage

On the surface, the Manding and Foulbé mosques that I have considered appear to be vastly different in form. The iconographic imagery appears totally unrelated. But on closer scrutiny, the same set of Islamic tenets appear to have structured the finished form in each case.

In order to understand the role of Islam in restructuring the traditional pre-Islamic form, we should turn to several aspects of Malekite law, whose prescriptions permeate much of the West African Islamic heritage, and we should also consider several aspects of Sufism, which was a major vehicle in the spread of Islam into West Africa.

One of the Malekite prescriptions is that the ideal form of a mosque is a square or cube, in emulation of the *ka'ba* at Mecca.[18] Space is enclosed by a cube just as the soul, which encompasses the spirit, is enclosed by man's body. The internal, hidden but open courtyard *sahn* of the Sankoré mosque at Timbucktu expresses this concept in material form just as the hidden cube within the thatch dome does at Dingueraye. The solid cube is merely the inverse of the bounded square courtyard.

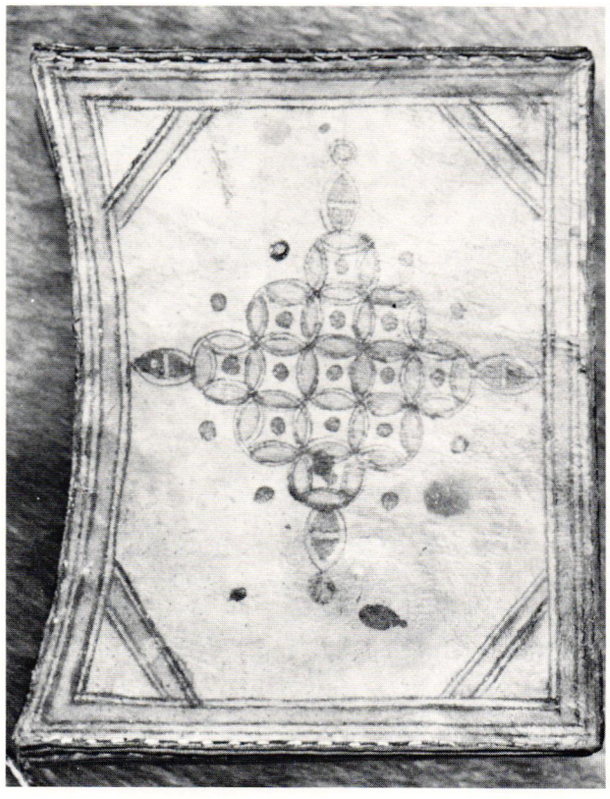
Another Malekite prescription sets forth the condition of consecration and validity for a mosque: intent to remain in a fixed place.[19] Further, the construction must be of substantial building materials and it should have a permanent roof. A tent is not considered a fixed residence, but is a mobile shelter which is readily transported. Not only does this prescription explain the attempts, as at Djenné, to roof over open courtyards, but it also explains the distinction made between the thatch superstructure (symbolic of the nomadic, mat frame Foulbé structures) and the earthen walls and roof of the newer Foulbé mosques, such as Dingueraye.

In the Sufist tradition, universal metaphysical symbols—particularly in architecture and calligraphy—stem from the Koran. If the secret of all created things lies in the Word, i.e., the Koran, created through its letters, it also lies in the relationship between letters and their numerical values. Some Sufist groups, it has been suggested, consider numbers as the principles of being and the root of all sciences. It is through geometry and numbers that architectonic form is generated. Despite soft architecture and low technology, the transformation of non-Muslim, casual form into that of Islamic sacred ritual was effected, in great measure, through the geometrization of built elements and the use of key number combinations such as three, four, seven, etc., in association with them.[20]

This strong preoccupation with numerology and with its relationship to the written word finds ubiquitous expression in the West African use (by both Muslims and non-Muslims alike) of all kinds of *khatime* and *djedwal*, many of which incorporate the script into a geometric pattern. They are used in the widest range of contexts: enclosed in amulets of leather or metal to protect the body; hung or mounted over door lintels as protection for interior space; dissolved into bowls and drunk for medicinal cures; and, in divination, in effecting good will and influence and, generally, for "good luck."[21]

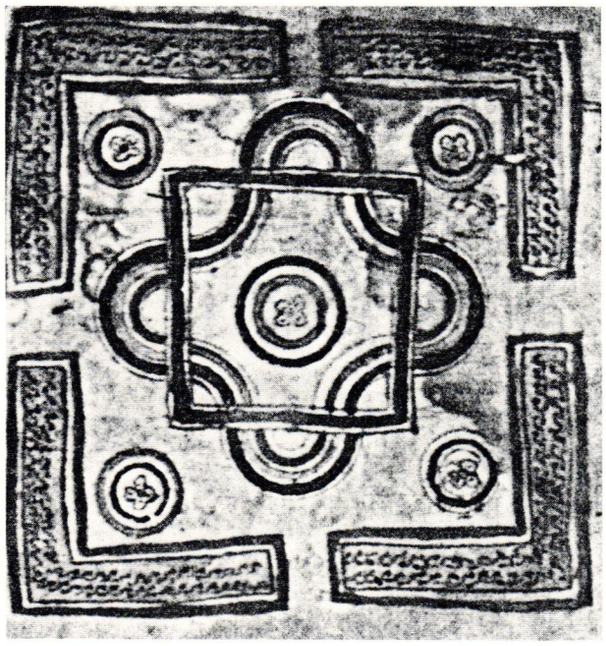
The potency and pervasiveness of these written "charms" can be explained in large measure by the efficacy of the written word in traditionally nonliterate societies. There is a famous Foulbé proverb that says that "all those who write are magicians." The preparation of charms by Islamic savants as well as by mystics was wrapped in secrecy. Since the meaning of the letters was not intelligible, the visual design itself became the message. In the Fouta Djallon today, the term *hatimere* (singular for *khatime*) is used to designate *any* design, whether it be embroidery, a design on leather, or a design on a wall surface (Figs. 27 and 28). The geometric order of these khatime also served as a template for a new spatial organization and a new kind of built environment.

When I visited Dingueraye, I was shown an old Tarikh that came from the hand of El-Hadj Umar himself. Hidden between the loose pages within the leather envelope were two drawings made by the *jihad* leader. One was a "plan" used to build the present-day mosque (Fig. 29). The other was an elevation drawing of what the mosque would look like one hundred fifty years hence.[22] The plan drawing was obviously not a working drawing, but, vaguely recalling the mandala of Vairocana, a conceptual model expressing a new architectural construct.



27. A hatimere *design embroidered onto the pocket of a Foulbé tunic by an elder, an Islamic savant, in the village of Daralabé, Guinée, 1979.*

28. A hatimere *design on the leather cover of a Koran, executed by the senior leatherworker (and Imam) in the village of Dionghassy, Guinée, 1979.*

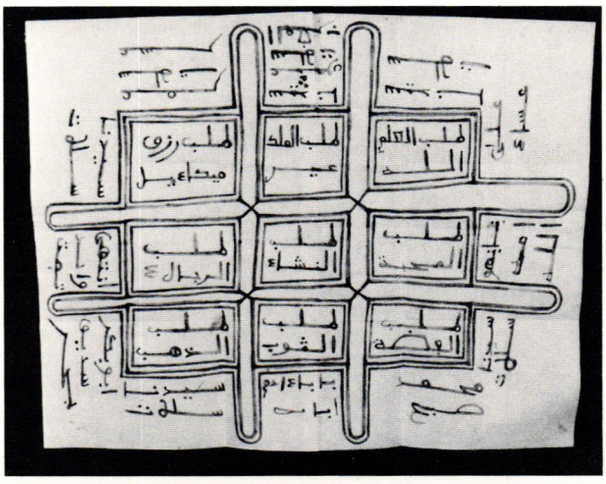


Two further illustrations provide an even more tangible analogy for my argument. The first (Fig. 30) comes from Bafodea, northern Sierra Leone, and the second (Fig. 31) from Conakry, Guinée.[23] The first, made by Alpha Djallo, is a "poster of a mosque," made for personal protection. There are nine rooms in it; the center room is the prayer room. At the same time, each room is the house of an angel reputed to have the power to effect particular desires or requests. The mosque design is put over the inside lintel of the doorway leading into the place where one lives. Although the savant obviously was not familiar with the Western principles of orthographic projection, his *hatimere* is a close approximation of the framing plan of many smaller West African mosques, in which transverse beams rest on a set of four pillars and on the square perimeter walls.

The second illustration, by Balde Tierno Abdul, was made to be carried inside one's pocket or one's car for good luck. The concentric circles of script recall the perimeter ambulatory of the traditional Foulbé mosque, and within are the intersecting squares of the solid earthen walls. The *djedwal* pattern in the center (sometimes called a wise man's knot) has the name of Mohammed written within it. Surrounding this core square are the four archangels, various other angels, and leading historical figures in Foulbé Islamic history. The numbers that are scattered within the core are considered particularly propitious for the purposes that this particular *hatimere* serves. In this instance, the square is enveloped, hidden within the series of concentric circles, evoking the conceptual relationship between *wuro* and *suudu*.

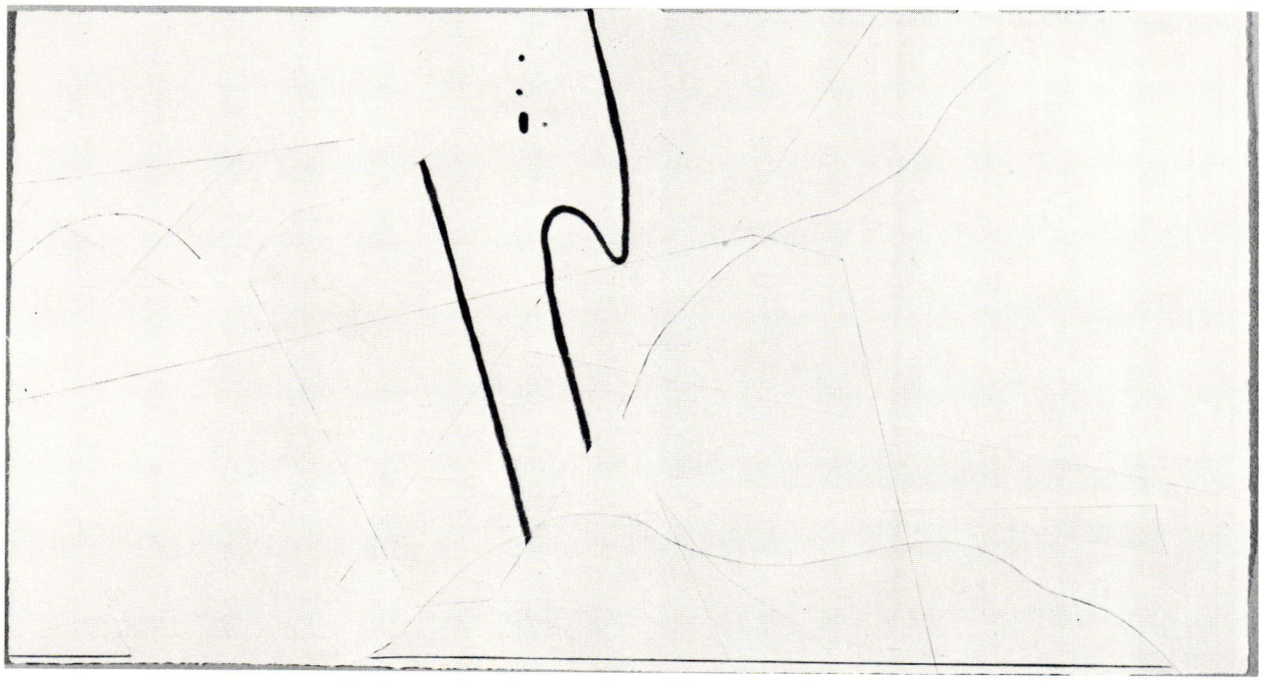
I have tried in the briefest fashion to suggest the process whereby Islam in West Africa absorbed traditional architectural elements and iconography into a new repertoire of building forms, and at the same time how the written word of Islam influenced and changed the traditional cognitive structure.[24] The elements of change derive from Islamic traditions that stress the geometric concepts of center, circle, dome, and cube, and the mystical relationship between letters and numbers. In some instances these concepts coincided with or elaborated upon indigenous precepts; in other instances they superseded and transformed them. The result has been that despite the seeming formal variation of West African structures from our preconceived notions of what Islamic architecture should look like, the principles that governed the development of Islamic architecture in West Africa are identical with those of the Islamic world at large.

29. Plan drawing of the Dingueraye mosque by El-Hadj Umar Tall, 1978.



30. A hatimere *made at Bafodea, northern Sierra Leone.*

31. A hatimere *made at Conakry, Guinée, 1980.*



CHANGES AND DISAPPEARANCES

John Cage

"Changes and Disappearances" is the result of John Cage's fourth visit to Crown Point Press. The project began January 1, 1979, and will probably extend through 1981, because of the complexity of the work.

This work is in progression from Cage's previous work at Crown Point ("Score Without Parts," "Seven Day Diary," "Seventeen Drawings by Thoreau," and "Signals," all done in 1978. Using consultation of the I Ching, *the artist subjected to chance determination an ever-increasing number of variables that are inherent in the etching process.*

Cage's point of departure for the project was the selection of an unusually shaped and colored handmade printing paper. Eight copper plates, each the exact size of the paper, were cut into sixty-six smaller plates of varying size and shape. To determine the curved edges of these smaller plates, Cage made use of a greased string, which he dropped from various heights onto the original eight plates (he mentioned his homage to Marcel Duchamp's use of the same method). The straight edges of the plates were lines cut between chance determined quadrants.

Each plate was assigned an identifying number. As the project progressed and plates were selected for appearance in an etching, the plates accumulated lines and images of three types: curved lines engraved by the artist; straight drypoint lines drawn by the artist; and photographic images of drawings from the journals of Henry David Thoreau. As of this date, when he is halfway through the project, only a third of the sixty-six plates have been used in an etching. It is possible that some of the plates will never be used.

The number of plates used in any one etching is chance-determined. Theoretically a print could contain from one to sixty-six plates. In composing each print, Cage allowed the selected plates to rotate 360° around the point of intersection of two quadrants of the printing paper. While some portion of every selected plate would appear in the etching, often a large section of the plate could be rotated off the paper. John Cage has described this process as "fishing": using the paper as a net to catch different parts of different plates.

Cage uses the same analogy to explain his method for "catching" the photographic images of Thoreau drawings. (It happens that most of these drawings "get away.") In the darkroom, Cage subjected to chance all photographic variables: lens, F-stop, exposure time, enlarger position and etching time. At times "nothing" resulted from a particular combination of photographic variables. This inspired Cage to add the word "disappearances" to the title of the work, which was originally simply "Changes."

Cage consulted the I Ching *(which is sometimes called* The Book of Changes*) to determine whether any given plate would change during the printing of an etching. When mobility was indicated, he added an engraving or a drypoint. A plate could appear several times in successive runs of a single etching, changed each time by the addition of another line. Thus the plates were altered irrevocably, not only from one print to the next, but, within the print, from one pass through the press to the next. Each time two plates are overlapped in an etching, a separate run or pass through the press is required. It is possible to print more than one identical impression of these prints only by pulling the first run on all the sheets, then adding the second run, etc. Because this was so time-consuming, only two or three impressions were made of each print.*

Although the same plates may be used in several consecutive etchings, their positions and colors are newly composed each time. The increasing number of images has meant an increasing number of colors in most of the etchings. In addition to inking the images, Cage inked selected plate edges *with color. One etching required 178 colors. As the work progresses to the projected thirty-five prints in the series, it will likely (but not necessarily) become even more complex.*

Lilah Toland, Printer
April, 1981

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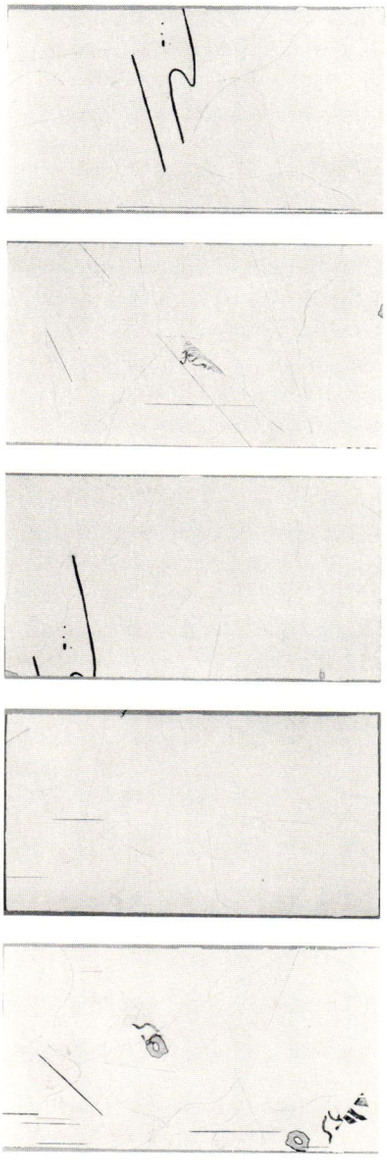
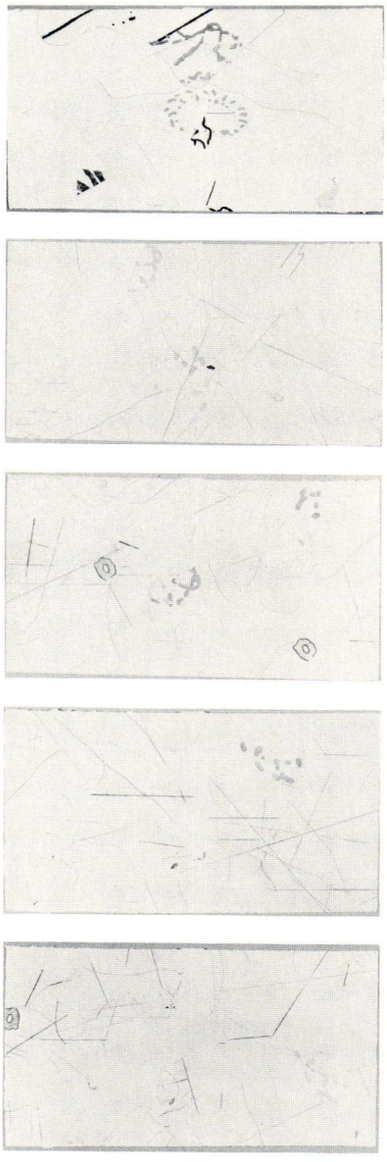
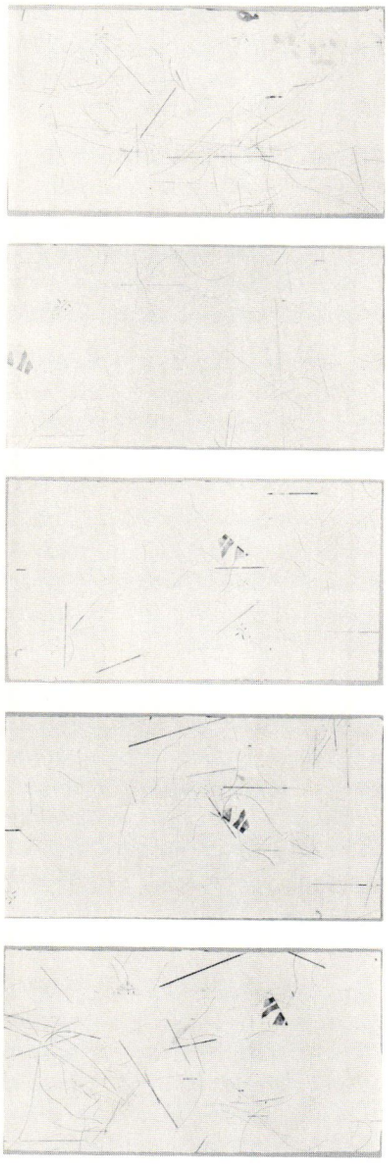


Images 1 through 5.

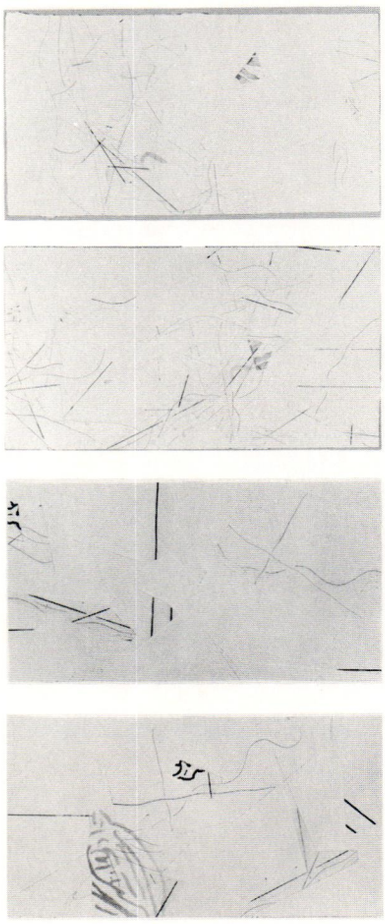


Images 6 through 10.

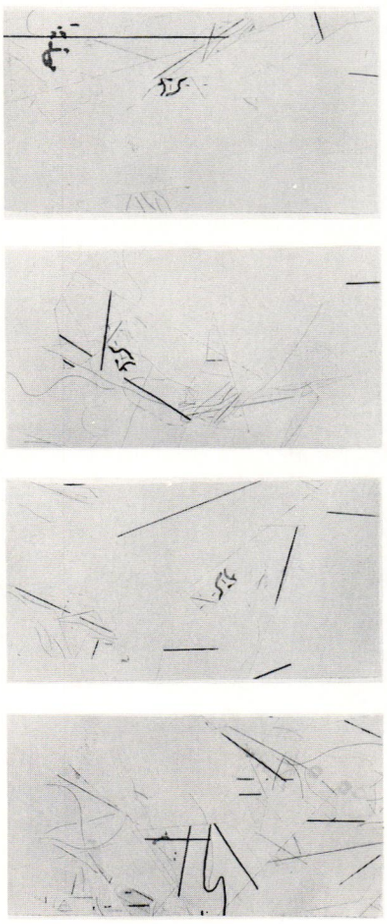


Images 11 through 15.

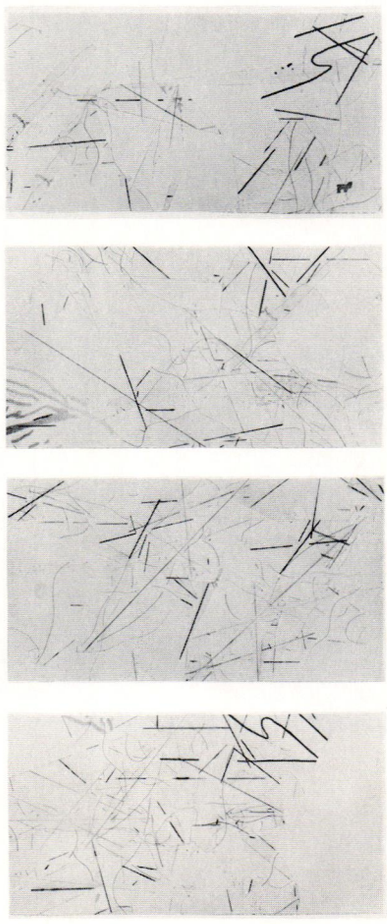
The completed series of "Changes and Disappearances" will consist of thirty-five etchings; the twenty-seven etchings reproduced here are those that were available at the time of publication.



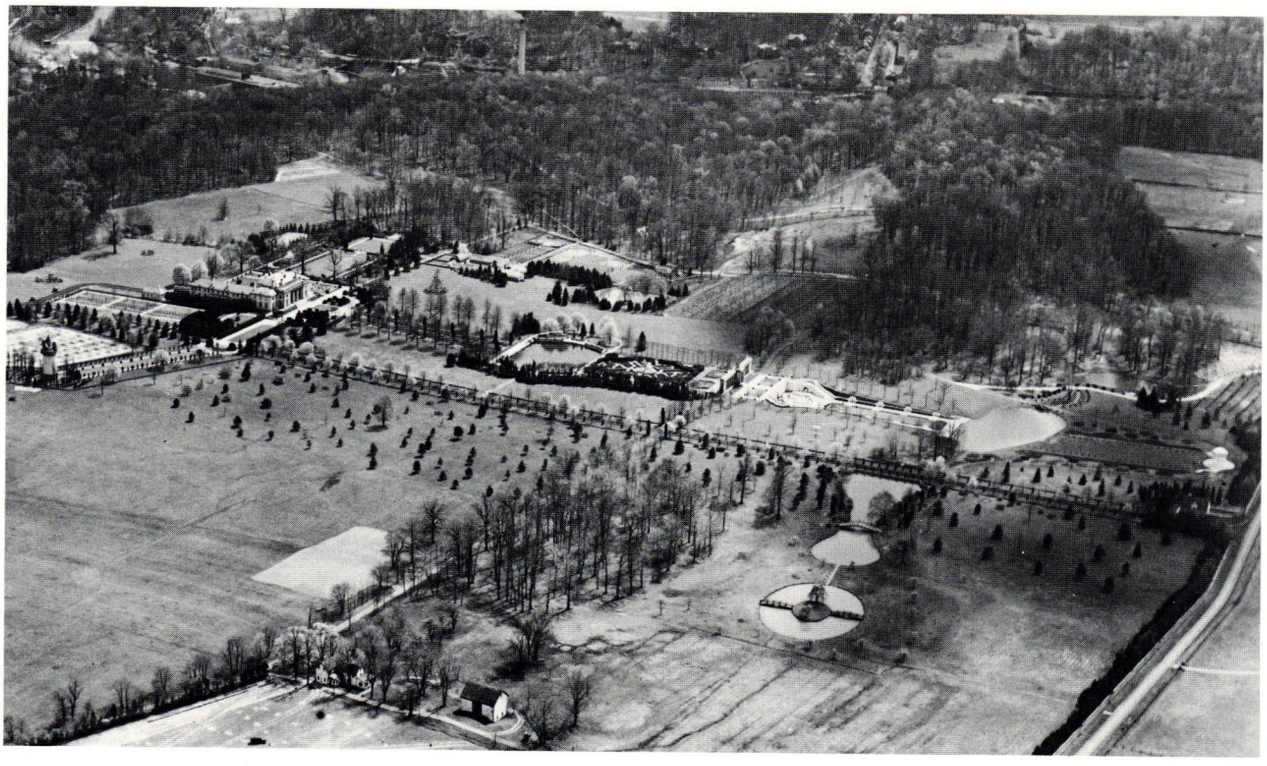
Images 16 through 19.



Images 20 through 23.



Images 24 through 27.



THE BRANDYWINE: A CASE STUDY OF AN ECOLOGICAL STRATEGY

Dan Rose

I wish to pursue an intuition, a belief, based on my reading in the literature of the social sciences and on my direct involvement in the lives of people, people who have been the objects of my anthropological investigations. The belief is this: that there is an ancient relationship between the powerful figures in human society, the natural environment that is the source of their power, and the imagery (art) of men. Where the most powerful people in a society are found, there will be located also the greatest concentration of resources that the society considers scarce, valuable, and necessary for life itself, and there, too, will be located the artwork of the society.

I use the Chadd's Ford area of Chester County, Pennsylvania, to study this relationship. The principles were derived from Reichel-Dolmatoff's research into primitive cosmology. His interpretation of the Tukano Indian society in terms of an ecology underlines the importance of art in maintaining economic and social stability:

My chief concern will be to trace some connections that exist between the cosmological concepts of these Indians, and the realities of adaptation to a given physical environment. In so doing I shall try to demonstrate that aboriginal cosmologies and myth structures, together with the ritual behavior derived from them, represent in all respects a set of ecological principles and that these formulate a system of social and economic rules that have a highly adaptive value in the continuous endeavor to maintain a viable equilibrium between the resources of the environment and the demand of society.[1]

I would argue that the "cosmology" of the Chadd's Ford area is the "ideology" (system of motivating attitudes) of the region's elite, and that the "mythology" is the system of imagery of a prominent local artist. Important institutional backdrops to (aspects of) the "ritual behavior" derived from this ideology and expressing its structure are the Brandywine Valley Association, the Brandywine Conservancy, and the Brandywine Museum. The relationship between the powerful elite, local institutions, and a prominent local artist fit together into an ecology of this particular society in this small region. This relationship manifests some of the social and economic rules of that society.

The complex of relationships embody an ideology I call "the moral order." I use the term to indicate the

1. Aerial view of the A. I. DuPont estate Nemours *near Wilmington, Delaware. Also visible are a neighboring Quaker farmstead (at bottom of photograph) and industry along the Brandywine (at top of photograph).*

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aspects of necessity and desirability attributed to certain combinations of symbols, institutions, and physical elements. Most importantly, the moral order is like a complex document that states how all these elements ought to be combined. Certain combinations are established as being best for that society, and are in turn encouraged or demanded by the powerful, who privilege the "oughts"—the obligations and counter-obligations—that maintain the desired combinations. Among these obligations and counter-obligations are canons for the way artworks must be made, displayed, experienced, thought about, and critically reviewed.

In post-industrial capitalist societies elites do not control the subject matter of art. But they do control the art marketplace through purchases. The possession of art reflects elite social standing and the proper acquisition of high culture, as Peckham has suggested:

The high arts and high culture are economically dependent upon the centers of power, since they cannot command a market wide enough nor remunerative enough for self-support. But the centers of power depend upon high culture and the high arts for their survival. The explanation is this: the control of meanings by arbitrary power (that is, the control of the directions for peformance) is necessary for human survival; it is also a failure.[2]

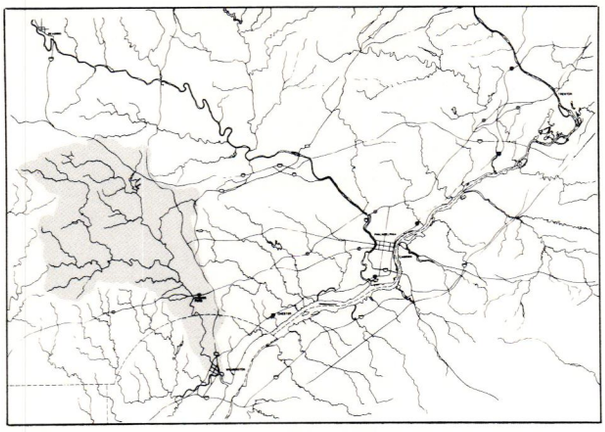
The powerful in a society characterized by resource competition thus take on the responsibility for direction of meaning because the art world is tied to the marketplace. Their direct involvement in the control of other resources in the society permits them to assume this responsibility and establishes the economic priorities underlying the moral order, which determine the causes artwork and its associated institutions are made to serve.

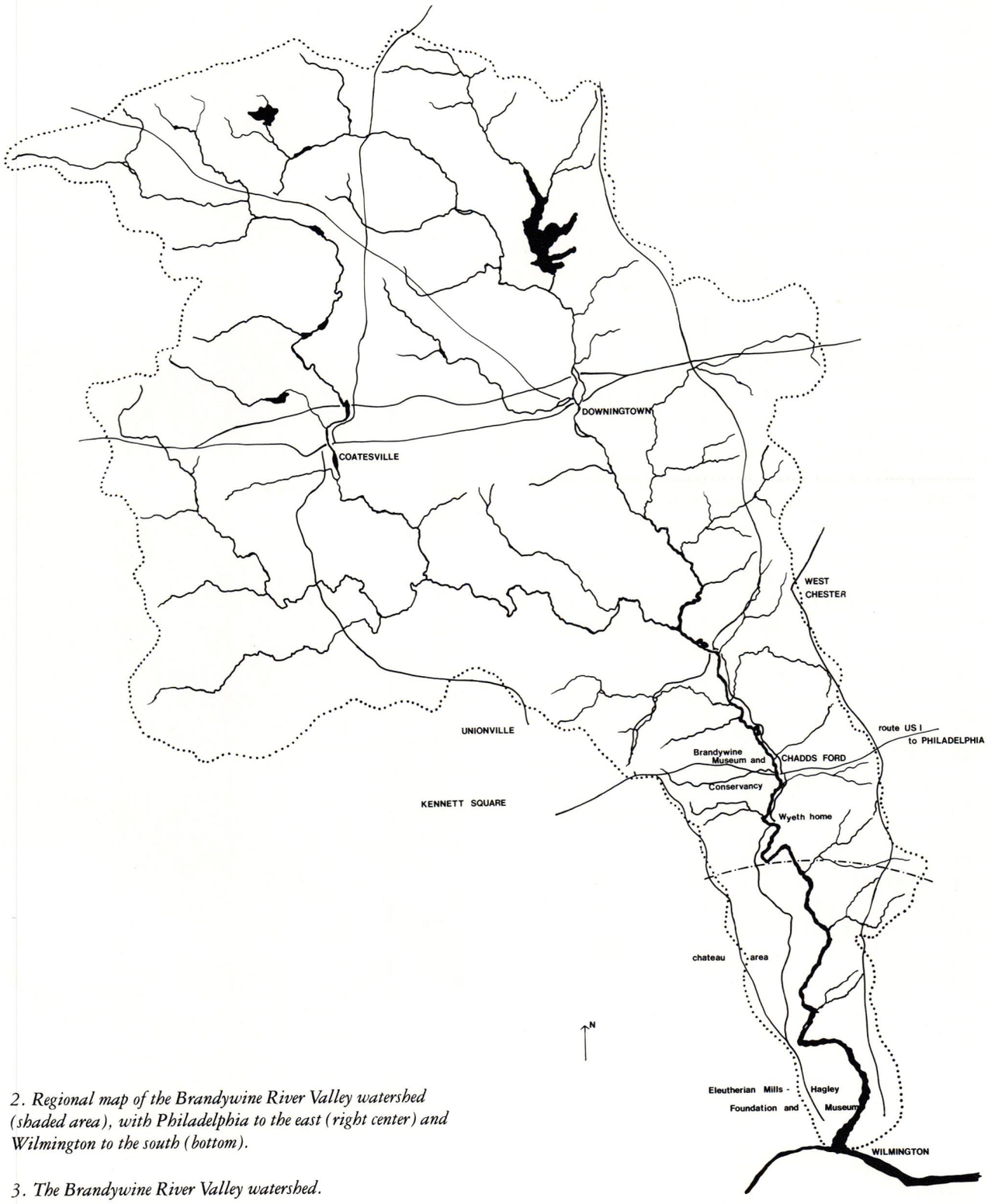
Chadd's Ford: History, Land Use, and the Du Ponts

Southern Chester County is west and south of Philadelphia's noted Main Line and directly north of Wilmington, Delaware, a city now synonymous with the Du Pont name. The undulations of the county's piedmont hills are underlaid by gneiss, quartzite, marble, and schist, geological structures that provide excellent parent material for fertile, well-drained, but highly erodable soils. The hills and the scattered stands of trees—chestnut, oak, yellow poplar, beech, white oak, and red maple associates—contribute magnificently to a built-in privacy of the land, which bears a remarkable resemblance to the seventeenth-century English landscape.[3]

The area of Chadd's Ford and its surrounding villages contains nearly three thousand people and includes two school districts. There are two major economic land uses: agricultural and industrial. These land uses have dominated the Chadd's Ford area since the eighteenth century. They were determined first by the English Quaker farmer-merchants and then by the Du Ponts, who fled the French Court at the time of the French Revolution. Prosperous Quaker agriculture has expanded to include large dairy farms, huge cut flower operations, the world's largest and most concentrated mushroom industry, orchards, and cattle herding. The Du Ponts, who built gunpowder mills along the Brandywine Creek, were phenomenally successful. Their company is now the largest chemical company in the United States.[4] Because of limited surface water resources, successful agriculture, and, especially, the domain of the Du Pont manufacturing concern, there is no other real manufacturing presence in the immediate Chadd's Ford area, and commerce is restricted to Wilmington and the villages.

Settlements in the region are largely a function of the two land uses described here.[5] An estate district, beginning north of Wilmington along the Brandywine Creek, is contiguous to Chadd's Ford. There the very richest of the Du Ponts have built opulent chateaux and public gardens and museums that preserve the family's aristocratic heritage. Bordering the estates and mixed with the other agricultural land uses are new subdivisions belonging to the mobile, salaried affluent who have chosen to locate near the authentic gentry. Old agricultural service villages are strung along Highway One, the oldest north-south route in the country, which runs through the middle of Chadd's Ford and crosses the Brandywine at that point. The competition for living space and natural resources has increased with the importation of unskilled agricultural workers into the area. Community life is complex, stratified, and highly differentiated by income, cultural heritage, religion, place of residence, and occupation.





2. Regional map of the Brandywine River Valley watershed (shaded area), with Philadelphia to the east (right center) and Wilmington to the south (bottom).

3. The Brandywine River Valley watershed.

The Relevant Environment

The use of the land, the arrangement of settlements, and the formation and continuity of communities require the incorporation of nature into culture, and are functions of the political economy of the environment. Science and human values create from nature what the cultural ecologist Julian Steward has termed "the relevant environment":

Relevant environmental features depend upon the culture. The simpler cultures are more directly conditioned by the environment than advanced ones. In general, climate, topography, soils, hydrography, vegetational cover, and fauna are crucial, but some features may be more important than others.[6]

The relevant environment comprises, in other words, the objects of resource competition that constitute the sources for a moral order. Much in the Chadd's Ford environment is relevant to humans: the exotic and native plant material; the benign climate; the richness of the class one and class two soils; the long growing season; and, of course, the Brandywine. The Brandywine Creek is critical on at least two grounds. First, it is a highly valued body of water because it is the home of a family tradition that goes back nearly two centuries—a symbolic entity to the wealthy families of the region. The chateau district, with its wildlife preserve and controlled hunting along the creek, would not be the same if the creek stank and were fouled with wastes ejected upstream.

The second ground is economic. The Du Pont research and development division just north of Wilmington is located at creekside; the creek's importance to the firm is inestimable. (Du Pont spends a greater percentage of its corporate investment on research and development than does any competitor; the research facilities are dependent on water.) The city of Wilmington, where the Du Pont corporation headquarters, also relies on the water of the Brandywine Creek. In addition, then, to preserving tradition and amenity, the Brandywine Creek water is an economic necessity to the Du Pont concern.

These double realities according to which the demand for water resources in the area is defined constitute the basis of a relevant environment. Both demands—symbolic and practical—are housed in institutions designed to maintain psychological and physical necessities at levels that are deemed sufficient. It is through these self-determined institutions that Du Pont's awesome power has effectively shaped land use by limiting competition for natural resources within the prescribed moral order.

4. The imagery of the Brandywine: "Evening at Kuerner's," a drybrush by Andrew Wyeth, 1970. From a private collection, courtesy of the Brandywine River Museum.

The Brandywine

The Institutions and the Local Arts

The anthropologist John Bennett observes that, "In all cases, the physical environment components become inextricably fused with the institutional."[7] At Chadd's Ford, imagery, ideology, and resource competition have coalesced since World War II into a complex of institutions that not only realize a world view, but also affect the allocation of resources and structure the form that settlement takes.

Those who have access to scarce resources have available a myriad of possible actions that those without access do not have. This power is developed and maximized by institutions, whether public, private (like a chemical company), or nonprofit, because it is the bureaucratic institutions in complex societies that are the main structures by which human interests are achieved. Institutions are vehicles of power through which ideology is generated and disseminated, as well.

Institutions have been established in the Chadd's Ford area to deal with competition over a critical element of its relevant environment: water. Downstream, Wilmington and the Du Pont residential estates are dependent upon sources of water upstream that lie within the Commonwealth of Pennsylvania. As a result of this physical and jurisdictional arrangement, competition for control of the Brandywine is fierce. In addition to the Du Pont firm and the city of Wilmington, upstream municipalities use Brandywine water for both drinking and disposal of treated sewage, and landfills and agricultural concerns also seek to control surface waters. Most of these competitors have some active involvement with one another in relationships of cooption, coercion, and, sometimes, cooperation—hence the rise of institutions to compete for control of the watershed. I concentrate on the nonprofit institutions established by the Du Pont family and company members between 1940 and 1970.

Three nonprofit institutions were established to bridge the gap between the local affluent and the Du Pont Company and the public sector. In the name of public interest, they seek to regulate competing demands. These institutions, actually powerful voluntary associations, are the Brandywine Valley Association (established 1947), and the Brandywine Conservancy and Brandywine Museum (both incorporated in 1969). One of the regulators of the ideology of the environment bound up with these institutions is the rural imagery of the artist Andrew Wyeth.

The Brandywine Valley Association, the first such association in the United States, was formed during the economic uncertainty and optimism of the nation after World War II. Spearheaded by the Du Pont Company, which anticipated that its future expansion would require enormous quantities of water, the Brandywine Valley Association was to develop strategies to acquire land and water rights in the watersheds of Delaware and Pennsylvania.[8] Its strategies demanded a socially acceptable ideology.

In this period, ideology and institution were constructed simultaneously to reduce the vulnerability of the firm and the family in developing land uses affecting the watershed. The ideology was an environmental one, conservation-oriented, and genteel. The role of this ideology was all-important, for firm and family could not permit blatant self-interest to prevail. It would have been against the grain of a democratic society to boldly exercise power and to destroy, by whatever means, competing Pennsylvania users of watershed resources. Clifford Geertz has explained the power of an ideology such as that promoted by the Du Ponts after World War II:

Ideology names the structure of situations in such a way that the attitude toward them is one of commitment. Its style is ornate, vivid, deliberately suggestive: by objectifying moral sentiment through the same devices that science shuns, it seeks to motivate action. Both are concerned with the definition of a problematic situation and are responses to a felt lack of needed information.[9]

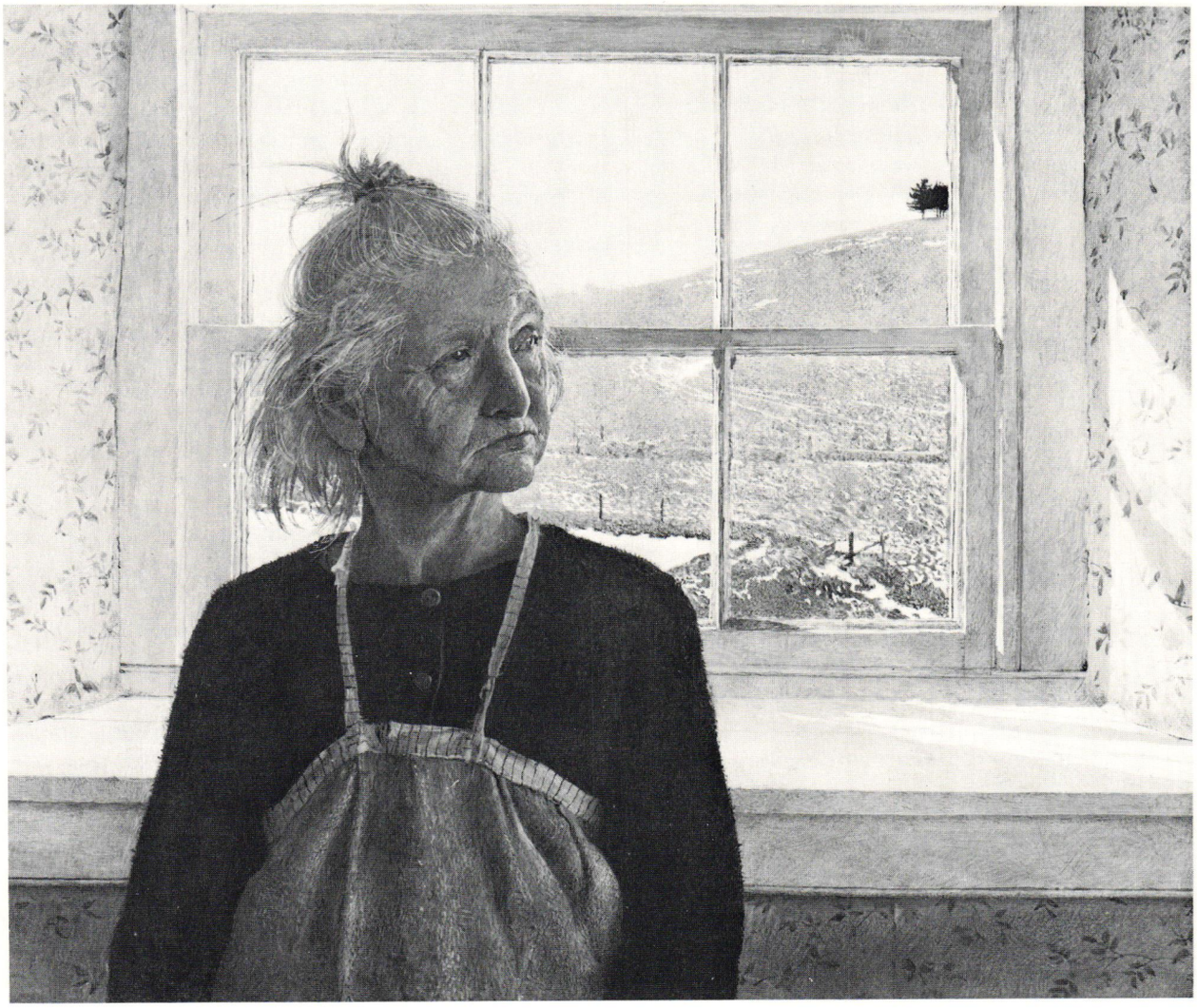
Watershed associations in general create strong ideological attitudes toward conserving natural resources. The institution that is formed consists of very affluent homeowners drawn from a given watershed who have the aim of preserving a semi-agrarian landscape. This strategy ensures exclusivity, slows suburban development, and guarantees water quality and quantity. The Brandywine Valley Association is a natural outgrowth of Du Pont interest. It exists today more than thirty years after its establishment as a successful locus of ideology dissemination and collective sentiment formation, focusing on such issues as water resources, land use, settlement patterns, and even community.

The Brandywine Conservancy and the Brandywine Museum were established at the time when Chadd's Ford, directly upstream from the chateau district, was about to become the location of an industrial park. Such an environmental threat to downstream interests could not proceed unmet, especially when a social threat also existed in the possibility of an increase in the resident working class population. Tactics to maintain control of the physical source of energy—Brandywine water—were brilliant, ideological, persuasive, and masked; the elites again countered the threat through institution-building.

A member of the Du Pont family organized a conservancy and a museum to be located on the land originally allocated for industrial park development. Potential laborers who might have been employed in the factories of the industrial parks and the communities that would have been built to house them were thus preempted by this environmental-symbolic strategy. Specific environmental and social patterns were thus selected.

The membership and the board of the corporation directing the Conservancy and Museum were drawn from the local affluent suburbanites and dairy farmers, from Du Pont family members and friends of the Du Ponts, and from a regional-national elite that included an industrialist who was a former governor of Pennsylvania. The Brandywine Conservancy and the Brandywine Museum were incorporated as nonprofit institutions, and the Conservancy was able to acquire a number of grants from both the public and the private sectors. The Conservancy—a kind of upper class watershed association—hired a staff of scientists and planners for management of the watershed.

The Du Pont ideology now had a more powerful presence in Pennsylvania. The activities of the Conservancy included a nature education program for children, a legal aid program for local township land zoning, local historic district creation, publicity campaigns, and dissemination of scientific information on water. Most important, the Brandywine Conservancy acquired actual properties in the watershed as people deeded their land to form permanent trusts. Ideology, institution, and ecosystem had been neatly packaged and constituted a major force to be reckoned with when new land uses were proposed for the watershed. Resource use in the watershed was carefully monitored, concentrating on new residential developments, water use by upstream towns such as the county seat, impact on stream quality of Luken's steel at Coatesville, and various sanitary landfills along the stream that accepted Philadelphia waste. The manipulation of settlement form and societal composition was realized through environmental management.



5. Andrew Wyeth's portrait of Chadds Ford resident Anna Kuerner. The tempera painting is from a private collection, courtesy of the Brandywine River Museum.

The institutional structure of the Brandywine Museum and the artist Andrew Wyeth are very much at the center of the formal (institutional) realization of elite values in Chadd's Ford.[10] The Brandywine Museum is first a Wyeth museum and second a place for the display of the illustrator art of Howard Pyle, who established in the Chadd's Ford area the "Brandywine Tradition" out of which Wyeth comes. (There was no self-conscious Brandywine Tradition prior to the 1969 institution-building.) Pyle's most notable student was N. C. Wyeth, Andrew's father. In addition to N. C. and Andrew Wyeth, there is a third-generation Wyeth, James, Andrew's son, who is also an artist. Of all the illustrators trained by Pyle, and of all the Wyeths and their kin who paint, and there are a good number, Andrew has become the most widely recognized and surely the most prolific and practiced. The Wyeth presence in Chadd's Ford made it possible to initiate both an historical moment and an institution to house and serve it.

Wyeth's imagery is suited for such institutionalization because it serves the ideology of the elite. The privacy revealed in Wyeth's imagery is one of a landscape with few built structures. This privacy, created by distance between dwellings, can be mapped from a definition of community requiring that people be separated from one another morally as well as physically.[11] Wyeth's images portray a landscape at Chadd's Ford that is charged with profound aesthetic and social attitudes, almost elevating the vicinity to the status of a sacred landscape, one that is charged with great power and beauty—even danger. It is not at all mysterious that the image system and the local value system coincide on ideological preferences for nostalgia, rusticity, exclusivity of settlements, and privacy. The ideology of both the elites and the imagery remain diffuse, however, unless there are institutional means by which they are made accessible. The Brandywine Museum serves this purpose.

The environment is rarely affected directly by imagery, but is affected indirectly by this great source of symbolically masked real social power. It is the minds and behavior of people that are most affected by the ideology. But power over the environment is derived from the great sentiment and belief in the ideology that is stimulated by Wyeth's imagery, the social occasions sponsored by the Brandywine Museum, and the chances that suburban dwellers have to rub shoulders with rich, colorful Du Ponts who make the society pages of the newspapers when they attend these events. The suburbanites are now caught up in active environmental work with public agencies or with private concerns. The design process is not a part of local consciousness any more than the uncritical values they hold are; these adherences and practices, like religious faith, are left implicit in the round of occasions and activities.

Summary

The direct use and allocation of natural resources at a site shapes the landscape along economic, ecological, and cultural lines. By taking an inventory of land uses one can gain knowledge of an environment and perhaps even discern elements of cultural meaning and of local values. The two major determinants of land use that give a specific geographical place its particular form are: first, the system of production, that complex of resources, the technology to exploit them, and manufacturing processes that shape resources into commodities for households; and, second, the history of the peoples' ideas about that location and about their local economy, culture, and preferences within a given network of natural resources and productive processes.

The very rich, who preemptively determine land form, have often hidden their strategies behind public works. In so doing they have built both a structure of symbols and institutional mechanisms to develop public support for values that on the surface it seems all can agree with. Perhaps the most striking feature of these processes is the disjunction between the industrial machine (including what it has done to natural systems) and the images than an artist like Wyeth portrays. Or perhaps there is indeed a subtle irony and critical ecological commentary in Wyeth's nostalgic vision of the natural world. To wit: only the preserved landscapes of the past are worth painting because contemporary ones are despoiled by the industrial machine. But if this criticism is even implied, it is lost upon the natives of Chadd's Ford, and does not alter in any way the Du Pont ecological strategy for acquiring the water Du Pont needs from the Brandywine Creek.

PROTEAN GUISES: SOME THOUGHTS ON THE NATURE OF WATER

Sir Peter Shepheard

Water is the chief sculptor of the landscape. It carves valleys, flattens plains, establishes its level; water forms its own edge, cutting rocks, depositing mud, forming lakes behind obstacles. It has worked long at this, and though all rivers, lakes, and shores are constantly changing, there is a complete inevitability about the lie of water in the land and the shape of the margins that contain it.

The grassy banks of a lake speak of unchanging placidity; the brimming of a spring gives promise of abundance; the stream with its bed, its sand bars, its boulders, and its worn banks offers visual proof—even in high summer—that the floods of fall and spring will return.

Nature is the artist's model. But, as Humphrey Repton said, "if nature be the model for art . . . we must imitate her process as well as her effects." In the same breath Repton quotes Burke: "a true artist should put a generous deceit upon the spectators and effect the noblest designs by the easiest methods . . . No work of art can be great but as it deceives; to be otherwise is the prerogative of nature only." Always the designer must seek to maximize the effect of his water to enhance its reflections, its movement, its stillness, and its mystery.

1. Perfect reflections: Amsterdam.
The water of the canal may be dirty, but the conditions for reflection are ideal: the buildings are near the water's edge and in full sun; there is much contrast of light and dark; the action of the water is just enough to keep the reflections in motion without completely destroying the image.

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2. A surface gently disturbed: The Thames at Greenwich.
In 1954, when this picture was taken, the Thames was totally polluted, an open drain for a quarter of the sewage of England; but the beauty of the reflections off the surface is not marred by the filth below.

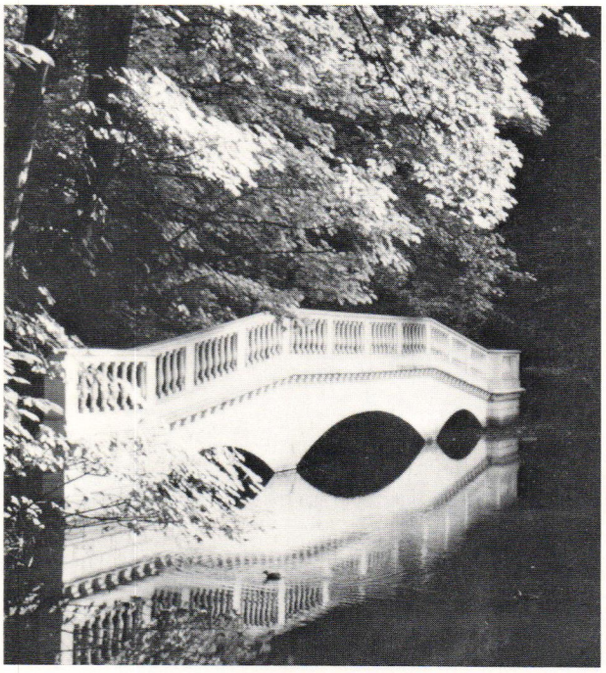
3. Shimmering reflections: The Mekong River at Bangkok.
The river is yellow with the mud from inland farms, and its reflections have a bronzy sheen. The waves turning towards us reflect the bright sky behind us; those turning away reflect the black thundercloud; here and there wavecrests bear flashing reflections of the sun.

4. Quiet reflections: A stream in the Pine Barrens of New Jersey.
In nature, water is first a rich biosphere. Healthy natural water contains a balance of vegetation and animal life that gives it a limpid clarity. The dark, muddy bottom, rich in various forms of life, makes the surface brilliantly reflective.

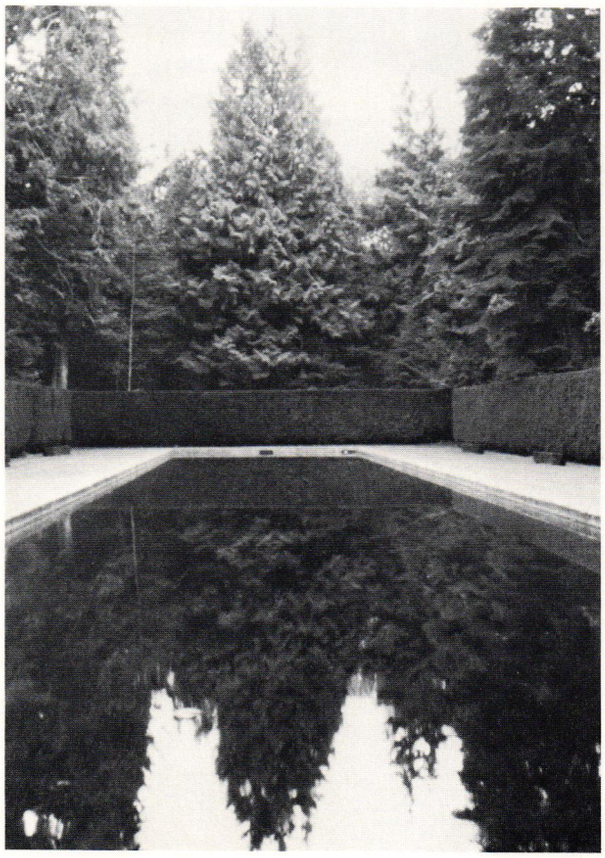
The water, unruffled by the wind, reflects the dark underside of the bushes which shelter it; the black peat bottom reflects no light, and therefore the reflections are not dimmed.

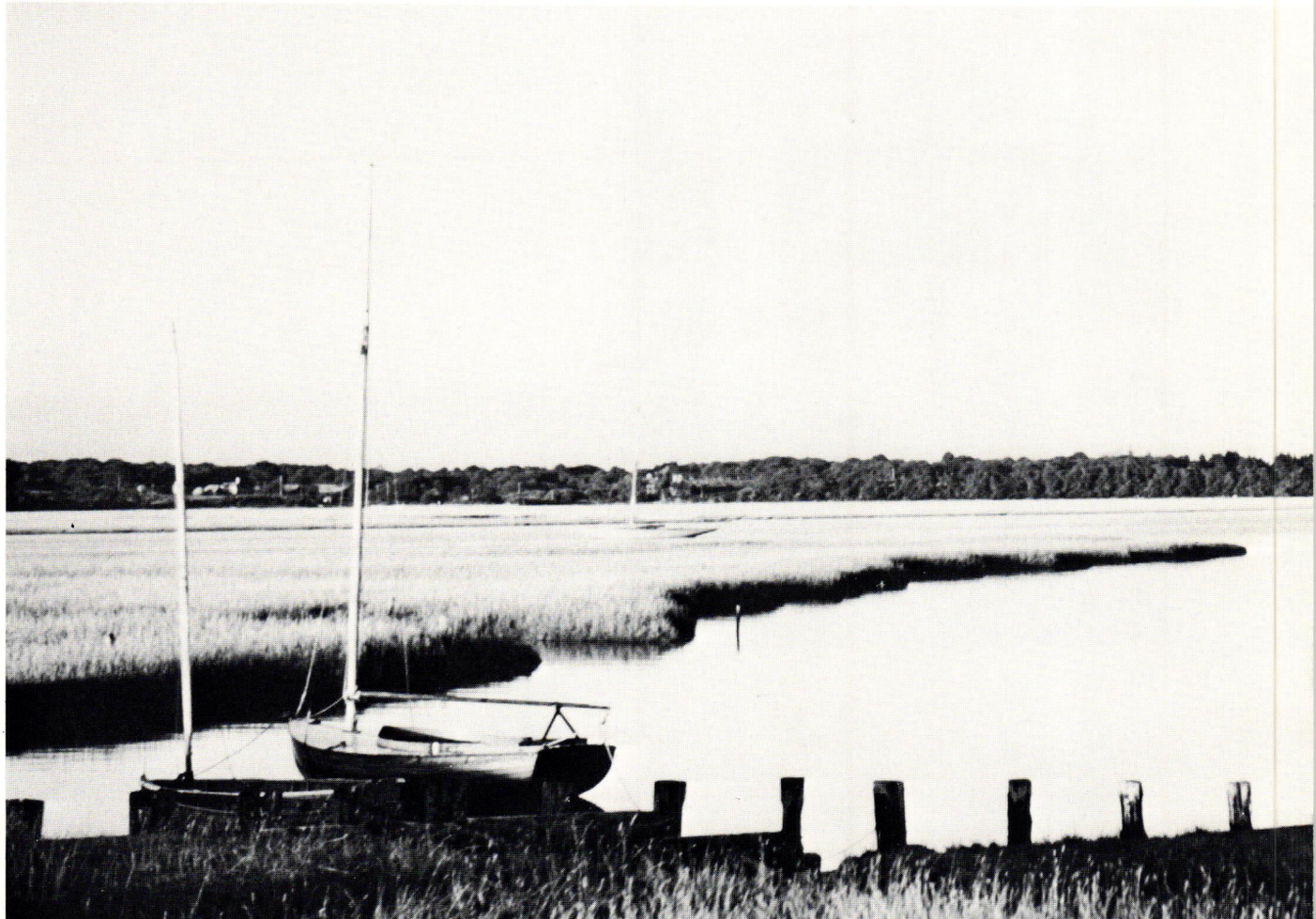
5. Drama: Hampstead Heath, London.
The "bridge" at Kenwood is simply a two-dimensional stage set built of wood concealing the dam which forms the lake. One can see how brilliant is the reflection of a light object in a natural pond with a dark bed.

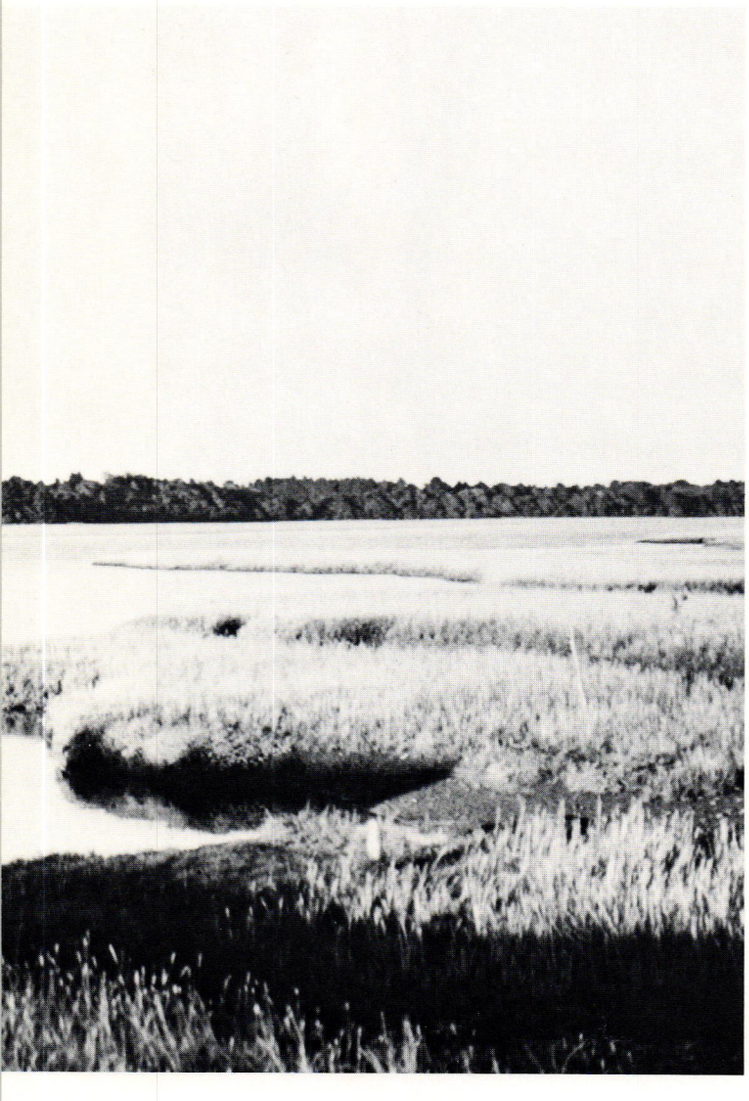
6. A lesson missed: The Rothko Memorial, University of Texas.
Barnett Newmann's broken column fails to be reflected in this pool. There are two reasons: first, the bottom is painted white; second, the water is being taken over by diatones and algae which have so clouded the pool that one can actually see the shadow *of the column in the turbid water.*



7. Success: The Bloedel Reserve, Bambridge Island, Washington.
Here the reflection of dark objects against the sky succeeds perfectly in a clear pool with a natural dark, muddy bottom.







8. A coast extending into the sea: Beaulieu River, Hampshire, England.
The land is winning the struggle with the sea. As the river enters its estuary, it is slowed by the tide and drops mud to form shallow banks. These banks are colonized by eel-grass and other underwater plants which trap more mud until the banks are exposed at low tide. Then land plants start to take over and build up the dry land as a salt marsh. The water nibbles at the edge of the salt-marsh in the channel, creating wonderful changing shapes, but always the land edges outwards as the marsh extends and dries.

9. A coast eroded by the sea: Hilbre Island, Cheshire, England.
Every stone, every grain of sand and mud has been put there by the sea. As the rocks are torn from the cliff, the water distributes them in what seems a random pattern. But the heavy ones lie near the cliff, the lighter ones further away; others, caught in the currents, lie in channels formed by the tides. With time, all are ground to sand, becoming mud as the process comes to a stop. Every element of the scene demonstrates the force of the water that put it there.

10. A stream cuts its own edge: A stream in the Welsh hills.
Below the water the limestone rocks are carved and polished smooth; above, they are stripped of vegetation by the spring floods; plants clothe them as far as they can.

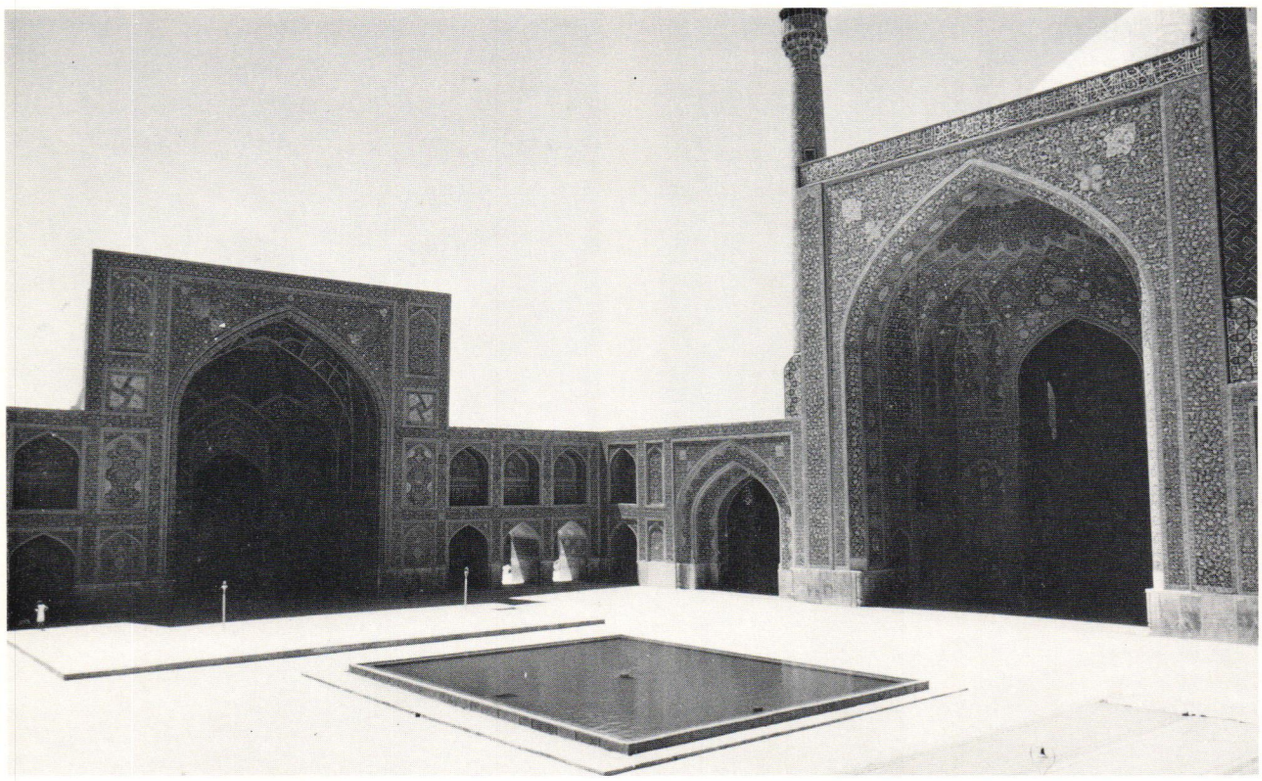
There is a beautiful light on the water: the bank casts a shadow on the bottom; there is a reflection of the bushes on the bank, and the reflection allows us to see the rocks on the bottom; there is also a reflection of the sky, and some wavelets sparkle with a reflection of the sun itself.

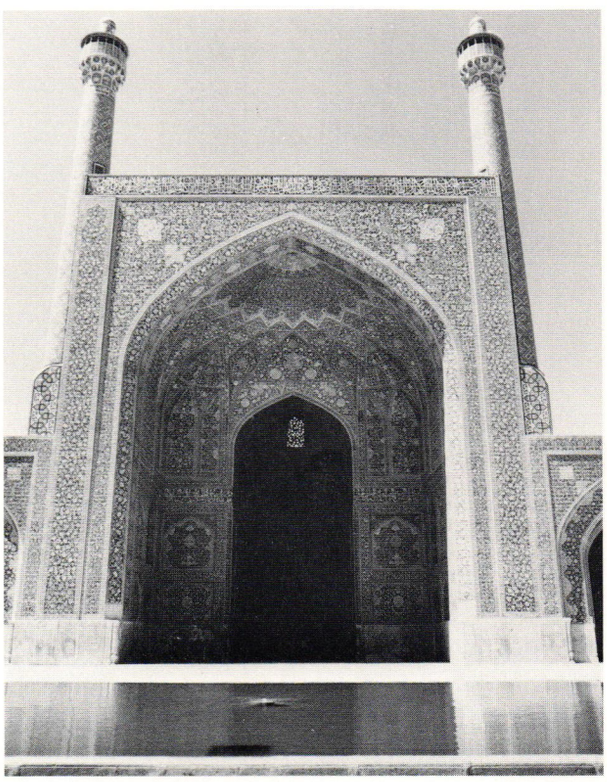
11. Nature recreated: A pond in Sento Gosho, Old Imperial Palace, Kyoto.
A masterpiece of the Japanese tradition in which the designer, Kobari Enshu, recreates the spirit of the mountains, rivers, and lakes of Japan. The story goes that Enshu placed every single pebble on the big shore himself. I doubt whether he did this, but certainly he considered the effect of the pebbles, the rocks, the sloping grass, and the line of the water—with wonderful effect.

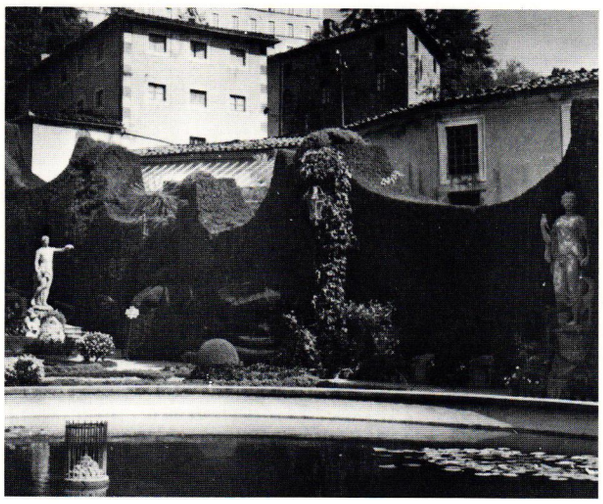
12. Sloping water: The Medici Fountain, Luxembourg Gardens, Paris.
The sloping lines of the garden are deliberately stressed by the design of the margin, the vases, and the ivied chains, to the point where the level water appears to slope. This effect can be created, as here, for fun, but if it happens by mistake—which it often does on sloping ground—the water may look awkward and incongruous. The designer of this fountain took much care to ensure that the water, which issues from a single source, quietly descends toward the pool at the end of the vista in a series of cascades such that the reflection—an integral part of the design—is not disturbed.

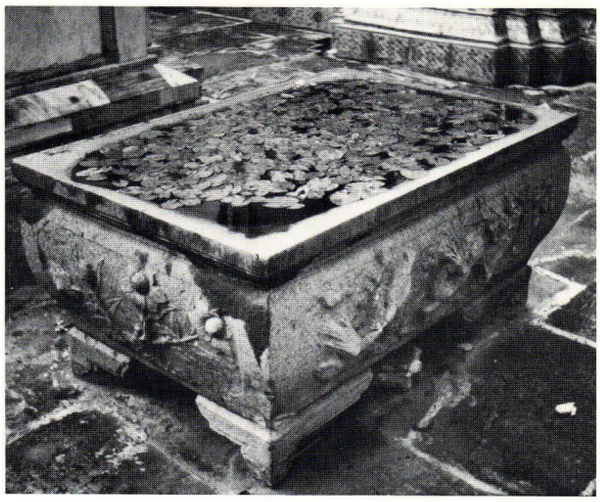
Shepheard

13. Abundance: The reflecting pool at the Mosque of the Shah, Isfahan.
Holy water of great symbolic value. The water touches the brim of the granite-curbed tank and overflows into the surrounding gutter. To make the brimming effect doubly certain, the inner edge of the curb is rounded three-quarters of an inch so that the curb is not reflected should the water drop even a fraction of an inch.









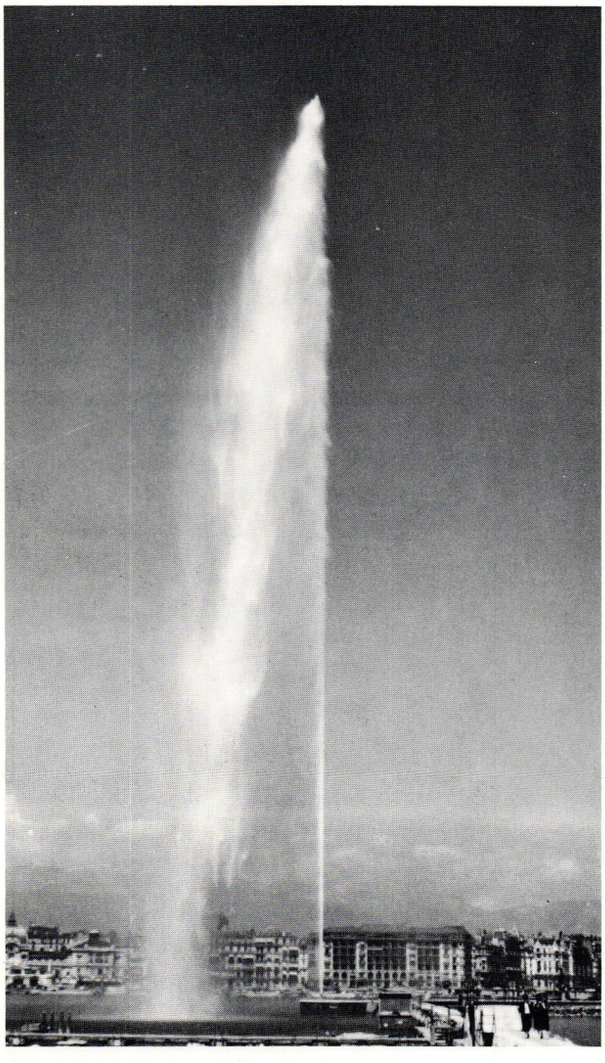
14. A sense of loss: A pond at the Villa Garzoni, Collodi.
The water sinks; at once it suggests drought instead of abundance. When water sinks against a vertical edge, the reflection of the edge doubles the apparent depth of the loss, and the edge, as the water rises and falls, becomes stained and dirty.

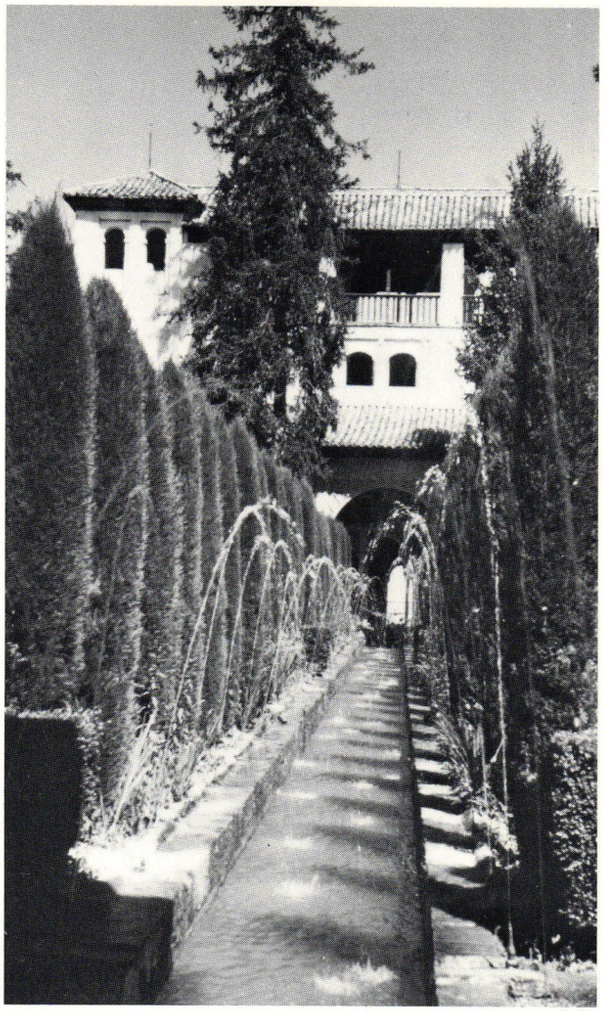
15. Richness in a small compass: A tank in a Temple, Bangkok.
Tiny, but with its gently brimming water and its floating plants, this stone tank is a potent symbol of luxuriance.

16. Dropping veils: A waterfall of the Lauterbrunnen Valley, Switzerland.
Each drop of water bears a starlike reflection of the sun. Tennyson was enchanted with these falls—"slow dropping veils of thinnest lawn":

Wreaths of dangling water-smoke
That like a broken purpose waste in air.
And like a downward smoke the slender stream
Along the cliff to fall and pause and fall did seem.

17. Le Jet d'eau: Lake Geneva, Switzerland.
The downward motion of this great jet reproduces that of the falls of Lauterbrunnen, and of course of Yosemite and other glaciated valleys.



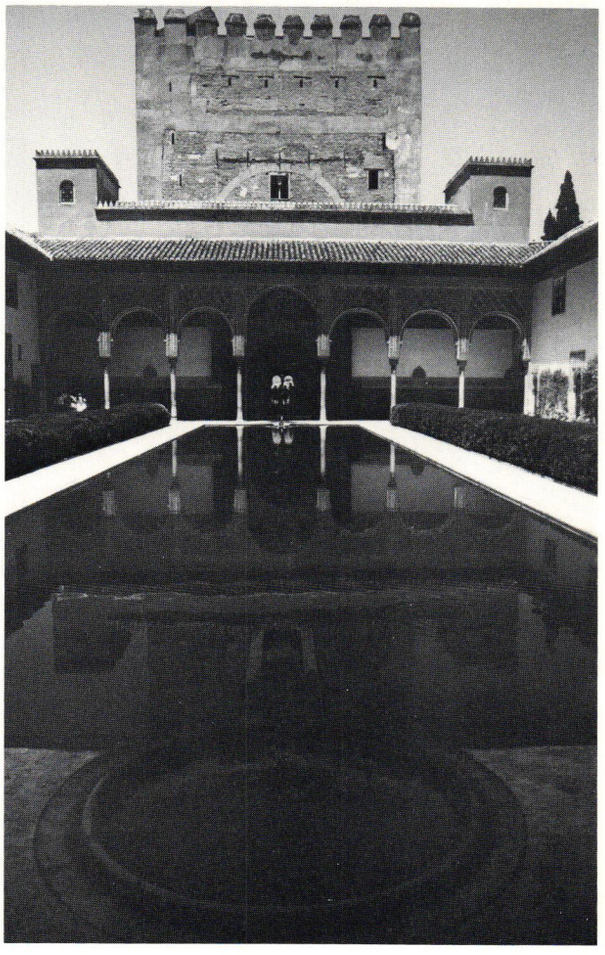


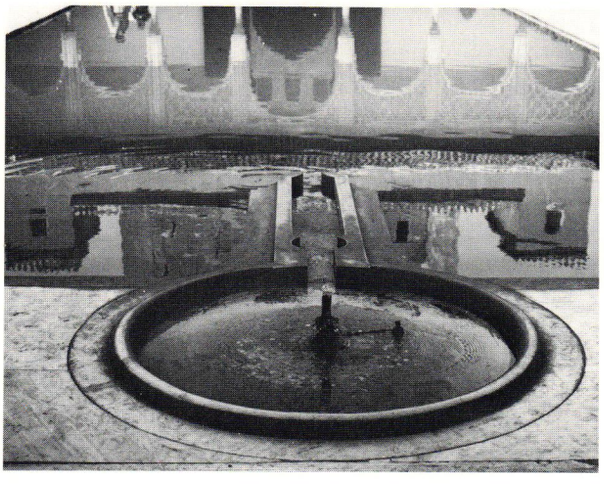
18. and 19. A precious element intensified: The Generalife and the Alhambra, Grenada.
The greatest examples of water design come from the Moslem tradition of arid areas. It takes but little water in a desert to make a green paradise which, contrasted with the natural landscape, is of surreal intensity. The best preserved examples of the tradition are the Moorish gardens of Spain.

The sources that supply the gardens of the Generalife and the Alhambra are tiny compared to those of Tivoli and Caserta. Here the precious water is led from above through a series of gardens which step down the hillside, at each step acquiring a sufficient head for a new set of fountains.

If a small water source is projected into a thin jet, it will produce a shrill and piddling sound, but when turned as at the Generalife into many even thinner jets, its sound fills the canal with a soft roar.

The Court of the Myrtles in the Alhambra has two fountains, one at each end of the reflecting pool. The jets in the round stone basins are low and thick, making a rich splashing sound which is echoed off the cusped vaults above. The ripples of the fountains are stilled in the round basins. Water is released through a little channel in a stone tongue that just kisses the surface of the pool to avoid the least disturbance of the reflection of the arcade.





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20. Ingenious play: Fountain of the Three Rivers, Logan Circle, Philadelphia.
Philadelphia has perhaps the best fountain of the twentieth century, designed by Alexander Stirling Calder. Here there are no reflections of course, but a play of abundant water.

21. A modest masterpiece: The River Teifi, Wales.
The builders of this small hydro-electric dam guaranteed to the trout fisherman a flow of water at least equal to that of a full nine-inch pipe. The designer, Colwyn Ffoulkes, spread the water out to fall over his serpentine concrete weir in a smooth curtain, breaking on the natural rocks below. Water displays all its qualities at once: reflective stillness above, the smooth surge over the dam, the noise and white water on the rocks, the ripple on the pool below.

NOTES AND ACKNOWLEDGMENTS

Notes

1. For a fuller analysis of the Aristotelian conception, see Abraham Edel, *Aristotle and His Philosophy* (Chapel Hill: University of North Carolina Press, 1982), chapters 5, 7, 8.

2. Quoted and discussed in Rudolf Arnheim, "Gestalt Psychology and Artistic Form," in *Aspects of Form*, ed. Lancelot Law Whyte (Bloomington and London: Indiana University Press, 1966), pp. 197-98.

3. Such speculations on the amphora are in effect stabs at the complex problem of the relation of technique (perhaps even technology) and art. Compare what Franz Boas says of primitive art: "Nature does not seem to present formal ideals—that is fixed types that are imitated—except when a natural object is used in daily life; when it is handled, perhaps modified, by technical processes. It would seem that only in this way form impresses itself upon the human mind." Franz Boas, *Primitive Art* (Cambridge: Harvard University Press, 1927), p. 11.

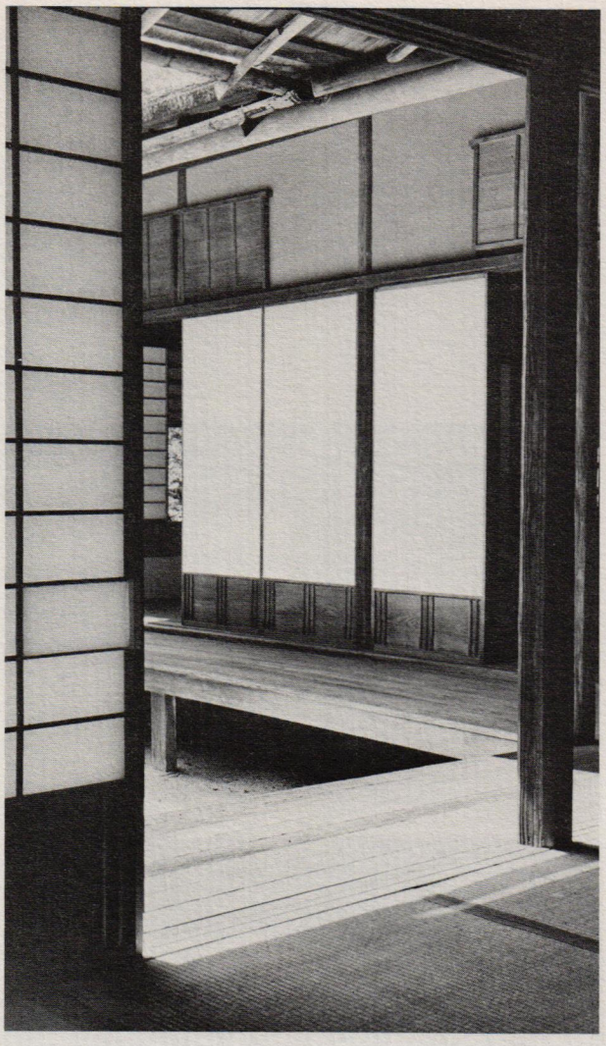
4. R. G. Collingwood, *The Principles of Art* (New York: Oxford University Press, Galaxy Book, 1958), p. 142.

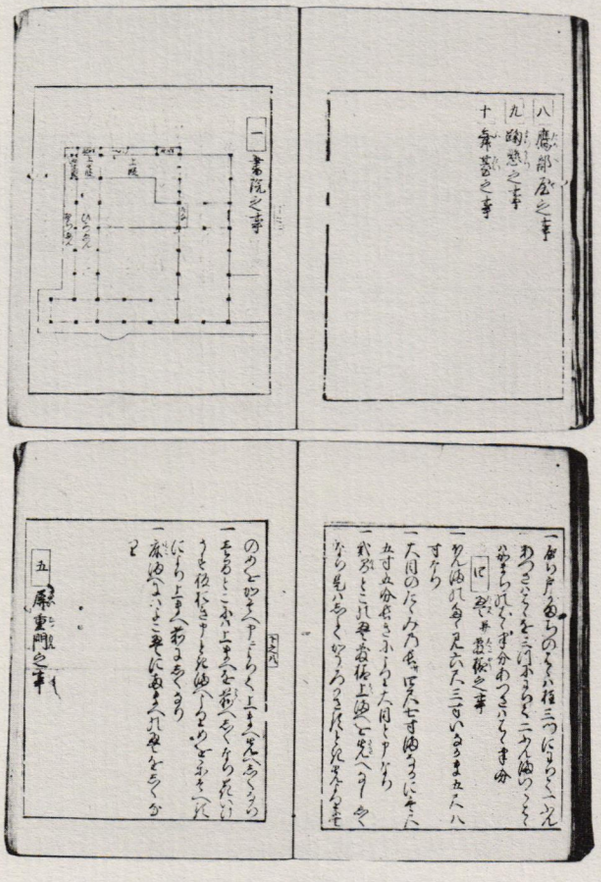
5. The character of this movement in contemporary painting has been clearly presented in the recent exhibit "Chromatic Structures" at the Philadelphia College of Art, November 5-December 13, 1980.

6. Edmund N. Bacon, *Design of Cities*, revised edition (New York: Penguin Books, 1976), p. 314. Compare his comments on the tragedy of London (pp. 214-215), the ruin of delicate design structures through lack of understanding and lack of protection. Thus neither planlessness nor a simple overall plan will do.

7. *Ibid.*, p. 319.

8. David P. Billington, "Technology and the Structuring of Cities" in *Small Comforts for Hard Times*, ed. Michael Mooney and Florian Stuber (New York: Columbia University Press, 1977), pp. 182-198; Mario G. Salvadori, "The Aesthetics of Technology: In Response to David P. Billington," *ibid.*, pp. 199-203.





Four pages from the Sukiya Koho-shu, *a manual of the cottage-style construction method.*

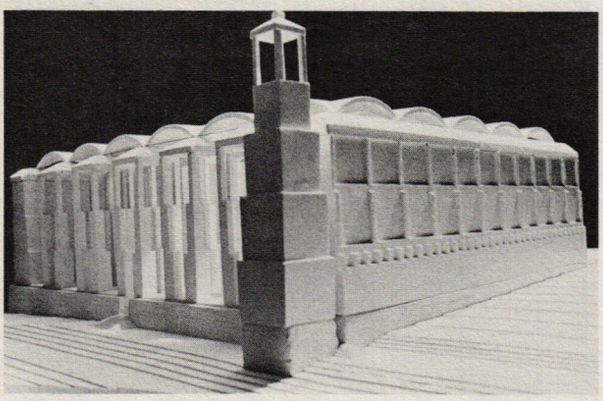
Notes

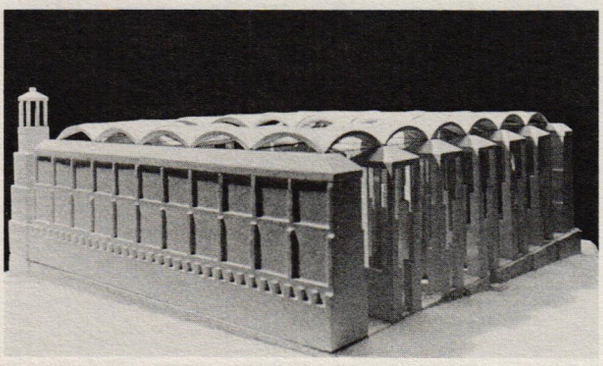
1. The term *kiwari* came into use during the Edo Period. Prior to that time it was called *kikudaki*, literally "lumber crushing." This translation is nearly literal; that is, following determination of the dimensions of design, the stock to build a structure was hewn from a log.

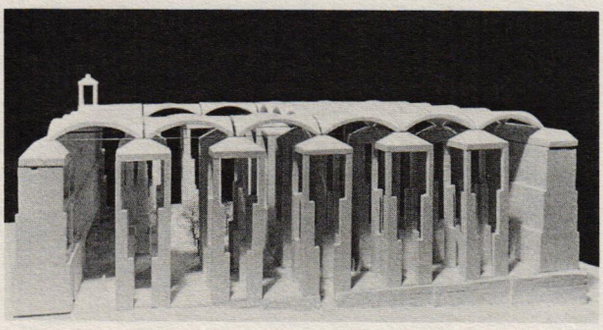
2. *Sandaikan* was written by the carpenters Yoshisada Fujiwari, Nawashigi Fujiwari, Shungan, and Seichin. It was revised in 1613, 1638 and a third time in 1640. In 1682, it appeared in its final form as the *Gushi Kanki*.

The content of the work differs from the *kiwari* books of later times—more than half of the book occupies itself with the origins of the craft of carpentry, its religious roots, and religious ceremonies associated with it. Very little of the work involves technology, and it is more a memoir of the first two carpenters who wrote it than a manual; it is thought that the work was then copied by the two other carpenters in 1498. About ten volumes of this book, dating from between the Muromachi Period and the Edo Period, have been located, so it appears that *Sandaikan* had a fairly widespread distribution.

3. A representative book on *kiwari* during this period was the *Shomyo Denya-shu*, meaning "The Old Method." The book codified the design method for the Shoin Tsukuri. In more modern times, the design method for the Shoin Tsukuri has been written as the *Tose-Ho* (*Present Day Method*). The *Tose-Ho* was written in the year 1608, upon the direction of the feudal government in Edo (now Tokyo), as the method for the Shoin Tsukuri; its roots are traceable to the *Shomyo Denya-shu*.







A series of photographs of the project model, moving from the minaret, above, around to the entrance portico which was shown in detail in the article frontispiece. The wall facing Mecca is to the right, bottom photograph.

Notes

1. Notable exceptions include: Denise Scott Brown, "On Architectural Formalism and Social Concern: A Discourse for Social Planners and Radical Chic Architects," *Oppositions* 5, Summer 1976, pp. 99–112, and Eduard Sekler, "Formalism and the Polemical Use of History" (Boston: *The Harvard Architecture Review*, Spring 1980), pp. 33–41. Scott Brown suggests reasons why formal and aesthetic concerns are conceived as antithetical to social concerns, but ultimately stresses their reconcilability. Sekler focuses on the uses of history in architectural design and criticizes the practitioners who, in manipulating aesthetic formulae, disregard original meanings and contexts.

2. "Foregrounding" is a term used by the Prague School and articulated originally by Yury Tynyanov to refer generally to the "promotion of one group of factors at the expense of another" ("la forme dynamique ne se manifeste ni par leur réunion, ni par leur fusion . . . mais par leur interaction et, en conséquence, par la promotion d'un groupe de facteurs aux dépens d'un autre,") Yury Tynyanov, "La Notion de Construction" in Tzvetan Todorov, *Théories de la litterature, Textes des formalistes russe, réunis, presentés et traduits par Tzvetan Todorov* (Paris: Éditions du Seueil, 1966), p. 118. The notion is particularly apt for our discussion (for a complete discussion with respect to literary criticism see Paul Garvin, *A Prague School Reader on Aesthetics, Literary Structure and Style*, selected and translated from the original Czech (Washington, D.C.: Georgetown University Press, 1964).

3. While it may be a rather simple point, one must keep in mind that the characterization of a work of architecture as an exercise in formalism is in no way a determinant of whether or not that work is good or bad on an aesthetic level, pleasing or displeasing, functional or not functional. And conversely, a work of architecture that is neither suited to function nor aesthetically pleasing is not *necessarily* an exercise in formalism. In other words, the line between what does and what does not constitute formalism is not clearly drawn, and in evaluating works, one often finds oneself in the gray areas.

4. Whether the formalist invokes a past he remembers or a far more distant past is immaterial to the argument.

5. Jean Piaget, *Structuralism* (London: Routledge and Kegan Paul, 1971), pp. 5–17.

6. The proponents of Russian Formalism included among their number Viktor Shklovsky, Boris Tomasjevsky, Roman Jakobson, Boris Eichenbaum, and Yury Tynyanov. The Formalists were predominantly literary historians, critics, and linguists.

7. For a complete discussion of Shklovsky's contribution to Russian Formalism, see Victor Erlich's *Russian Formalism* and his "Russian Formalism" in *Journal of the History of Ideas*, 34, no. 4, 1973, pp. 627–638.

8. Frederic Jameson, *The Prison House of Language* (Princeton: Princeton University Press, 1972), pp. 50–51. On the premise that understanding of the world and existence is determined to a large extent by the models used to organize perceptions and facts thereon, Jameson invokes a 'linguistic model' to survey Russian Formalism and literary structuralism and to criticize and compare their essential methodologies.

9. *Ibid*, p. 61.

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Note

1. Periferia dei dormitori *is a derogative term for residential complexes at the outskirts of a city. The only real function of the* periferia dei dormitori *is to give shelter during the sleeping hours.*

The two essays by Paolo Portoghesi, "Roma-Amor: Difference and Repetition" and "For the Redesigning of the Existing Italian City," were translated from Italian into English by Barbara LaPenta.

FOR THE REDESIGNING OF THE EXISTING ITALIAN CITY

Paolo Portoghesi

With a rhythm unprecedented in history, building construction in the last sixty years has transformed most of our cities. Until the beginning of this century, the rising middle class considered the design and reorganization of the city as a means of strengthening and perpetuating its dominion, and created in the great European capitals and industrial cities of America outstanding examples of urban structure adapted to the new organization of production. In the last few decades, however, the prevailing urban design, reflecting an ever greater subdivision of work and production, has been that of an analytically partitioned city conceived as a sum of separately reproducible parts.

A new term defines that part of the new urban structure that surrounds and envelops our old cities: *periferia dei dormitori*, a term that has become synonymous with degradation and alienation. Typical of this urban growth today—that is, of the generation and regeneration of the *periferia*—is the consistently more private characterization of urban life. In past societies there was a relationship between community and urban structure such that the structures of collective use at times actually balanced and in certain cases quantitatively exceeded the structures of private use. Is seems evident that the growing private characterization of the city—for example, the reduction of whole urban areas to dormitories where the only public services are those indispensable to sanitation and the survival of the population—is both the cause and effect of a profound decadence of civic society. This decadence is expressed in the weakening of family and group relations and in the reduction of means that spontaneously associate the citizens and stimulate collaboration and cooperation. As a counterpart to this slow erosion of the traditional bonds of community life, we find a strengthening of the administrative presence of urban institutions, which are taking the place of collective social exchanges.

The *periferia* is invading the countryside that surrounds our urban centers. This new cancerous growth has generated a latent conflict between the urban centers and the outlying regions. In fact, we can no longer speak of a rural culture that could in some way counterbalance the urban culture. The culture of the outlying regions has become a passive object of exploitation on the part of the dominant, urban culture. The attraction of the city as the place where important decisions are made and in which social life is centered has resulted in an urban growth proportionally correspondent to the abandonment of the rural areas.

This contradictory situation not only dims any hope for easy readjustment, but even calls into question the very means by which such a readjustment is usually pursued. The culture that came into being with the crisis of the city and contributed to the foundation of urban planning as a discipline is now obsolete and must be submitted to a thorough self-criticism. This means attacking the problem of decentralization and local independence by rejecting a technology of unlimited development, a program by which any development is synonymous with progress.

The Modern Movement, fighting its heroic battles in the name of the socialization of cultural values, in the name of the city conceived as the supreme symbol of civilization, in the name of equality and the fight against waste, did not realize that it was itself partly responsible for an undertaking destined to other ends, an undertaking that accentuated and aggravated the process of alienation. Modern architecture, with its renunciation of symbols and rhetorical significance and its renunciation of the communicative and representative role of architecture, involuntarily became an accomplice in the destruction of the collective functional skeleton that still structured the nineteenth-century metropolis.

Looking at the urban periphery today we see only chaos. We must, however, accept that this is the city we have created, and its many contradictions are found, likewise, within ourselves. Hiding these contradictions or seeking refuge in a temporary espousal of the past is not sufficient. Since the periphery is *ours*, we must mobilize our forces to modify it and to invert the process of impoverishment of civic society that has been directly reflected in the impoverishment of architectural language.

We must develop a non-mythical approach to the redesigning of the existing city, an approach that offers an alternative to the consumer theory, according to which everything that has exhausted a certain economic function can be destroyed and substituted for without damage. We must also assume as equally constructive and courageous an attitude to the *periferia* as that which we assume toward the historic urban centers. The work carried out on Bologna's historic center, for example, is in my opinion a very positive experiment, primarily because it has succeeded as a realized project, a tangible idea. I firmly believe that the same spirit in which modifications have been made to accommodate the needs of Bologna's population could also be fruitfully applied to the urban peripheries.

How is this possible? It is possible first of all through the establishment of a critical relationship between the parts of the city and the urban organism in its totality. It is precisely in this endeavor that the historic urban centers, interpreted systematically in the light of a new science, can offer insight into the operations within the new city. In other words, the historic center as the image of the city's identity must be projected throughout the entire urban structure in order to counterbalance this long period in which a critical relationship between the old city and the new has been absent. If the passion for the rehabilitation of the historic centers that has characterized a generation does not exhaust itself in a monomania, it could develop into a logic of urban reintegration that involves the entire urban organism.

If we are to succeed in redesigning a city in terms of the population's needs, making it possible not merely to contain a greater number of citizens, but, above all, to offer them structures adapted to a relaunching of civic society, it is likely that the disciplines of architecture and urban planning in Italy would come out of this experiment renewed. They would emerge renewed because the confrontation of a hostile and difficult reality would be a *concrete* one, unlike the abstract enterprises based on theoretical spaces of unlimited liberty that the Italian authorities have promoted precisely to absorb and exhaust, in a distant utopia, energies that would otherwise create real alternatives.

The truth is that even in the *periferia* some significant elements can be given new value and can serve as a background to the continuous redesigning operation. This redesigning operation cannot, however, be exclusively an urban planning project based in a few localized undertakings aimed at providing collective services; it must also be an architectural project, defined in a concrete image, recognizable by the population, giving tangible form to latent aspirations. It should give formal identity to the possibility of consensus between a progressive administration and an urban population more sensitive to the great problems of civil community living. The urban periphery can still be redesigned to the extent that those human activities and encounters that confirm a social cohesion are tangibly expressed in buildings, roads, means of transportation, and installations adapted to work and recreation.

Redesigning the city means giving all parts of the city the same level of consideration. This naturally demands that the population of the *periferia* be considered not as second-class citizens to be left to their own fates because they are unfortunately housed in an irremediable part of the city, but as citizens who have an equal right to enjoy the city's good as it is expressed in a constructed reality.

It may be that the possibility of the city's very survival is directly related to just such an urban transformation. The fact is that even if we succeed in saving the historic centers, if we leave around them a barrier of citizens without a city, condemned to live in *dormitori*, sooner or later the contradiction between the city's two parts will take on such proportions that a mortal explosion will be imminent.

We must reconstitute those direct relationships between production and consumption that once made the organization of a region the clear reflection of the aims of human civilizations.

AN UNPRESENTED TEXT

Note

The text to which this is an introduction is Themes and Variations *published by Station Hill Press, Tarrytown, N.Y., 1981.*

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SOMETHING ABOUT THE WRITINGS OF JOHN CAGE

Jackson MacLow

". . . I myself feel more committed the more diverse and multiplied my interests and actions become."[1]

Writing about John Cage is like writing about the ocean. Writing about any aspect of Cage's work inevitably involves writing about most of the other aspects, about his actions and interests as musical composer, social thinker, mycologist, unorthodox Buddhist. . . .

. . . value judgement is a decision to eliminate from experience certain things. Suzuki said Zen wants us to diminish that kind of activity of the ego and to increase the activity that accepts the rest of creation. And rather than taking the path that is prescribed in the formal practice of Zen Buddhism itself, namely sitting cross-legged and breathing and such things, I decided that my proper discipline was the one to which I was already committed, namely the making of music. And that I would do it with a means that was as strict as sitting cross-legged, namely the use of chance operations, and the shifting of my responsibility from that of making choices to that of asking questions.[2]

Cage has often called the use of chance operations and the composition of works indeterminate as to performance "skillful means." This brings to mind the Sanskrit word *upaya*, a Buddhist term for means employed by Boddhisattvas to help all sentient beings attain enlightenment. I think he views the experiences of composing, performing, and hearing such works as being equally conducive to the arousal of *prajna* (intuitive wisdom/energy)—the essence/seed of the enlightened state—by allowing the experience of sounds in themselves, "in their suchness," rather than as means of communication, expression, or emotional arousal, or as subordinate elements in a structure. These considerations are as relevant to his writing as to his music—especially to his poems of the last decade.

Most of these poems are nonsyntactical collages of language elements—letters, syllables, words, phrases, and/or sentences free from the "arrangement of the army" (the original meaning, as N. O. Brown informed him, of "syntax")—able to be viewed with "bare attention" like the sounds in his music after 1950.

During the last two decades Wesleyan University Press has published four substantial volumes of Cage's writings: *Silence* (1961); *A Year from Monday* (1967); *M* (1973); and *Empty Words* (1979). In addition, the University of Tulsa has published his *Writings through Finnegans Wake* as a supplement to Volume 15 of the *James Joyce Quarterly* and as No. 16 in its Monograph Series. Cage himself, as a member of the publishing co-op Printed Editions, brought out a deluxe edition of both versions of *Writings through Finnegans Wake*. His writings have also appeared in magazines, anthologies, record brochures, exhibition catalogs, and as forewords to other people's books, but most are collected in the Wesleyan volumes.

The earliest work in them dates from 1937, but Cage has probably been writing all his life. His principal subject, of course, has been music, particularly modern experimental music, but also other music of the past, present, and future. And although he has written extensively on his own music, he has often discussed other composers: Brown, Cowell, Feldman, Ives, Satie, Schoenberg, Stockhausen, Wolff, and others. He has also dealt with visual artists such as Duchamp, Graves, Jasper Johns, Miro, Rauschenberg, and Tobey; with social thought and social and religious thinkers such as N. O. Brown, Fuller, McLuhan, D. T. Suzuki, and Thoreau; with dance and dancers—especially Merce Cunningham; with "something," "nothing," and mushrooms.

Much of his writing consists of elegantly composed expository prose and skillfully told stories—mainly from his own and his friends' lives. However, I will deal with his lectures and nonsyntactical poetry, writings he has composed by *I Ching* chance operations and related methods.

In the 1950s and 1960s, Cage composed several works for speakers, most of which he called "lectures." When asked why he didn't give a conventional informative lecture (which the questioner believed would be the most shocking thing he could do), Cage replied, "I don't give these lectures to surprise people, but out of a need for poetry." He added, "Poetry is not prose simply because poetry is in one way or another formalized. It is not poetry by reason of its content or ambiguity, but by reason of its allowing musical elements (time, sound) to be introduced into the world of words."[3]

In writing "Where Are We Going? And What Are We Doing?"[4] for delivery at the Pratt Institute, Brooklyn, in 1961, Cage used his *Cartridge Music* materials[5] to compose four texts to be heard simultaneously. They are divided into lines, twenty-five of which may be read in 1,′ 1¼,′ or 1½,′ so that the printed relationship among the four is only one of many possibilities. There are empty lines (silences), and much of the lecture (which I attended) was unintelligible because of the simultaneity. Two sentences in one of the four texts (*Silence*, p. 224, boldface italic lines from col. 1, line 2, through col. 2, line 5) tell us more about Cage's conceptions of poetry:

We who speak English were so
certain of our language and that
we could use it to communicate
that we have nearly destroyed
its potential for poetry. The
thing in it that's going to save
the situation is the high percentage
of consonants and the natural way
in which they produce discontinuity.

Discontinuity in the form of silences longer than punctuation pauses and abrupt shifts in subject matter, tempo of delivery, or other aspects have, in many cases, been brought about by use of chance operations or related methods. Thus these lectures are actually Cage's earliest published poems.

However, in about 1970 he began composing two types of work that are avowedly poems: nonsyntactical combinations of letters, syllables, words, phrases, and/or sentences drawn and arranged by *I Ching* chance operations from the *Journal* of Henry David Thoreau, the American philosopher and naturalist; and "Mesostics"—poems in which the capitalized letters of a name run down the center of each strophe and a given letter capitalized does not occur between it and the preceding capitalized letter. Many of the latter are Haiku-like poems that are syntactical, if often elliptically so (e.g., "36 Mesostics Re and Not Re Marcel Duchamp,"),[6] but the larger number are nonsyntactical compilations of phrases, words, and/or word fragments.

Cage's first nonsyntactical poems are the texts of *Song Books* (*Solos for Voice 3–92*),[7] which were begun in 1967. The irresistibly beautiful text #30 appears in *M* as "Song." Each solo is either "1) song; 2) song using electronics; 3) theatre; 4) theatre using electronics" and "is relevant or irrelevant to the subject, 'We connect Satie with Thoreau.'"[8] Each embodies one of the twenty-five possible combinations of the five language materials, all drawn by *I Ching* chance operations from Thoreau's *Journal*.[9] His first extensive nonsyntactical text was "Mureau,"[10] which employs all twenty-five possibilities and was written "by subjecting all the remarks of . . . Thoreau about music, silence, and sounds he heard that are indexed in the Dover publication of the *Journal* to a series of *I Ching* chance operations. The personal pronoun was varied according to such operations and the typing (in a number of different faces that often begin or end in the middle of a word) was likewise determined. Mureau is the first syllable of the word music followed by the second of the name Thoreau."[11]

This 1970 text differs significantly from those in the *Song Books* in that it is a poem to be read aloud or silently rather than a text to be, in some sense, sung. Listening to Cage read it aloud is perhaps one of the most available and in other senses accessible delights of his nonsyntactical poetry.[12] As he reads it in his calm, precise voice, this sequence of "unconnected" language elements and silences flows through us as naturally as the multifarious configurations of the water of a stream. It is curious and notable how this continuum of discontinuities seems always to be speaking to us directly: even the separated and recombined letters and syllables function as speech—enigmatic interjections in this stream of language and silence about sound and silence.

Subsequently, Cage subjected the whole *Journal*, eventually including Thoreau's sketches, to *I Ching* chance operations to produce the even more extensive four-part poem "Empty Words." In this work a transition takes place "from language to music," as Cage puts it: Part I includes no sentences, but mixes phrases, words, syllables, letters and silences; Part II includes the last four; Part III, the last three; and Part IV, only letters and silences. In all of the sections the language elements were drawn from the *Journal* by *I Ching* chance operations. They were variously combined and separated by these operations and placed on the page by them: he used such operations also to determine "Of the four columns on two facing pages which two have text?" and where in the remaining spaces, *which* drawings (as photographed by Babette Mangolte) were to be placed.

Cage has often performed one or more parts of this text, sitting quietly to one side of a small lamplit table with text, stopwatch, microphone, and (am I correct in remembering?) an ashtray. Usually, Mangolte's photos of Thoreau's sketches are projected.

Thoreau's writings—not only the *Journal* but also *Walden* and the essay *Civil Disobedience*—were also the sources of the college text (obtained by *I Ching* chance operations) of "Lecture on the Weather." This was a work commissioned in 1975 by the Canadian Broadcasting Company to celebrate the U.S. Bicentennial. Cage had returned to Thoreau after having looked in vain for a suitable collection of American aspirational writing. He "began to realize that what is called balance between the branches of our government is not balance at all: all the branches of our government are occupied by lawyers."[13]

The work's preface, from which these words come, is probably Cage's strongest and most direct political statement, along with his stated preference that the twelve speaker-vocalists (or -instrumentalists) for which the work is written "be American men who had become Canadian citizens,"[14] presumably in order to avoid having to fight in Vietnam.

He writes that although his use of chance operations might seem to "run counter to the spirit of Thoreau," who "speaks against blind obedience to a blundering oracle," they "are not mysterious sources of 'the right answers'" but "a means of locating a single one among a multiplicity of answers, and, at the same time, of freeing the ego from its taste and memory, its concern for profit and power, of silencing the ego so that the rest of the world has a chance to enter into the ego's own experience whether that be outside or inside."

"We would do well," he concludes, "to give up the notion that we alone can keep the world in line, that only we can solve its problems . . .

"Our political structures no longer fit the circumstances of our lives . . . I dedicate this work to the U.S.A. that it may become just another part of the world, no more, no less."[15]

Cage's first "Mesostics" (term suggested by N. O. Brown to distinguish them from acrostics, where a name or other "index words" run down one side rather than the middle of the verses) were somewhat akin to Mallarme's "Vers de Circonstance"—poems written for friends on various occasions. It was only when he came to write the series for Cunningham that he began to employ chance operations (or related methods) or to make nonsyntactical mesostics. In writing this series he subjected over seven hundred different typefaces and sizes available in Letraset to *I Ching* chance operations. "No line has more than one word or syllable" obtained from Cunningham's book on dance or from thirty-two other books on dance, and the "words were subjected to a process which brought about in some cases syllable exchange between two or more of them. This process produced new words not to be found in any dictionary but reminiscent of words everywhere to be found in James Joyce's *Finnegans Wake*."[16] Thus these poems foreshadowed the incredible series of mesostics constituting the *Writings through Finnegans Wake*.

In addition to the two *Writings through Finnegans Wake* already published, there is a third in progress now and two more projected. All except the fifth follow or will follow Cage's principal "Mesostic Rule": "the first letter of a word or name is on the first line and following it on the first line the second letter of the word or name is *not* to be found. (The second letter is on the second line.)" [17]

Writing for a Second Time differs from the first in that he "did not permit the reappearance of a syllable for a given letter of the name. To keep from repeating syllables, (he) kept a card index of the ones (he) had already used . . . (T)his restriction made a text considerably shorter [than the first *Writing*]." [18]

The third *Writing*—now in progress—follows a rule suggested by Louis Mink, a professor of philosophy at Wesleyan University. It does not admit *either* letter between any two letters of the name. In the fourth Cage will not only follow "Mink's Rule" but, as in writing the second, he will keep a syllable index and will not permit reappearance of a syllable for a given letter of the name. The fifth will be composed as was "Mureau"—not "writing through" the *Wake* but jumping from chapter to chapter in accordance with *I Ching* chance operations.

In writing the Joyce mesostics, the inclusion or omission of words on either side of the one with the name letter was (is) a matter of choice, as long as the rules are obeyed: "My tendency was toward more omission rather than less." [19]

Cage does not seem to consider the writing of these mesostics a kind of chance operation—probably not only because of the choices involved but because they are already there, *waiting to be found*, even though he cannot predict them, and because he strives for accuracy: "I read each passage at least three times and once or twice upside down." [20] "It was a discipline similar to that of counterpoint in music with a cantus firmus." [21]

However, the fact that he cannot predict the "core material" which his choices modify, mostly by omission, seems to place his process of composition as being at least akin to chance operations. Whether or not one considers finding mesostics a chance process, the primary fact is that the process is a discipline that meets Cage's need for "a means that was as strict as sitting cross-legged." Much of what is done is beyond the ego's control, and even the choices involved in admitting or omitting words on either side of the one with the index letter seem to me to involve faculties transcending mere taste or memory.

Notes

1. John Cage: "Lecture on Commitment," *A Year from Monday*, p. 116.

2. John Cage in interview conducted by Bill Womack at the Los Angeles County Museum of Art, 27 March 1979, *Zero*, Vol. III (Los Angeles: Zero Press, 1979), p. 70.

3. *Silence* (Middletown: Wesleyan University Press, 1961), pp. 146–192.

4. *Silence*, pp. 194–259.

5. Used to produce a program of actions causing amplification and modification of small sounds by insertion, use, and removal of various objects from a phonograph pickup and by manipulation of amplifier dials, as well as by production of auxiliary electronic sounds.

6. *M* (Middletown: Wesleyan University Press, 1973), pp. 26–34.

7. New York: Henmar Press Inc., 1970.

8. *Empty Words* (Middletown: Wesleyan University Press, 1979), p. 11.

9. Ed. by B. Torrey and F. H. Allen (New York: Dover, 1962).

10. *M*, pp. 35–36.

11. *M*, p. ix.

12. S Press Tonband/Tape No. 14, 65 minutes (Hattingen, West Germany: Edition S Press, 1972).

13. *Empty Words*, p. 4.

14. *Empty Words*, p. 3.

15. *Empty Words*, p. 5.

16. *Empty Words*.

17. *Empty Words*, p. 134.

18. *Empty Words*, pp. 135–136.

19. *Empty Words*, p. 135.

20. *Empty Words*, p. 136.

21. *Empty Words*, p. 135.

Notes

1. The comparative synthesis presented here results from my consideration of various aspects of West African architecture over a number of years. Two of my articles that in some ways comprise the background to this synthesis are "Sudanese Architecture and the Manding," *African Arts*, 3, No. 4 (1970), p. 12ff., and "Fulani-Hausa Architecture: Genesis of a Style," *African Arts*, 9, No. 3 (1976), p. 8 ff. I carried out more recent research on Fulani architecture under the auspices of the Council for International Exchange of Scholars and a Fulbright-Hayes Research Grant. Much of the data on the Foulbé in this paper is drawn from this recent research. I would also like to thank the Institut Nationale de Recherche et Documentation de Guinée for its help in making the research possible.

2. A possible comparison that would merit considerable attention is the variation in architectural style that occurs among various Foulbé groups across the savannah belt, particularly in Guinée, Nigeria, and the Cameroon, where the Islamized Foulbé have emerged as a dominant political power in the last two centuries. For a comparative study of social and political change in each of these three regions see Victor Azarya, *Aristocrats Facing Change* (Chicago: University of Chicago Press, 1978).

3. For two opposing interpretations see René Bravmann, *Islam and Tribal Art in West Africa* (London: Cambridge University Press, 1974), and J. Spencer Trimingham, *Islam in West Africa* (Oxford: Oxford University Press, 1959).

4. See Labelle Prussin, "The Architecture of Djenné," Ph.D. dissertation (Yale University: New Haven, 1973), for further illustrations of such pillars used in various contexts.

5. See Dominique Zahan, *The Bambara* (Leiden: E. J. Brill, 1974), for a full discussion of the *dasiri* cult and the *komo* society. The Bambara are part of the larger Manding linguistic cluster.

6. For a close formal analogy see Labelle Prussin, "Indigenous African Architecture," *Journal of the Society of Architectural Historians*, 33, No. 3 (October 1974), Fig. 19.

7. The remarkably close formal similarities between Islamized Manding architecture in the Western Sudan and the architecture in the M'zab region of central Algeria invites urgent consideration of and research into the ways in which the non-Islamic West African heritage may have influenced North African traditions. Although for the moment we are considering the north-south movement of architectural features, a consideration of the impact that West Africa had on this North African style as a result of centuries of population movement north is essential for a balanced interpretation. For comparison see, for example, Manuelle Roche, *Le M'zab; architecture ibadite en Algérie* (Paris: B. Arthaud, 1970).

8. Mahmoud Kati ben El-Hadj El Motaouakkei Kati, *Takikh el-Fettach*, French trans. O. Houdas and M. Delafosse, 1913–14 (Paris: Adrien-Maisonneuve, 1964), p. 222.

9. Although the *Tarikh el-Fettach* gives a precise date for construction of the Sankoré mosque, both the building and oral traditions suggest that there was already a considerable structure *in situ* "built by a woman," pious and rich, at some date lost in time. See Es-Sa'di, *Tarikh es-Soudan*, French trans. O. Houdas, 1913–14 (Paris: Adrien-Maisonneuve, 1964). Interpretation suggests that the 1581 date marks a reconstruction of the mosque into a more precise geometric configuration on an already consecrated ancestral site.

10. Félix Dubois, *Tombouctou la mystèrieuse* (Paris: Flammarion, 1897).

11. It is common tradition in the West African savannah for a chief or an elder to be buried within his own extended family compound or palace. The burial itself is an act of consecration, and although walls may be allowed to fall, the site itself remains sacred. A parallel can be found in the location of the Tomb of Askia Muhamed at Gao, directly in the center of the present-day mosque there.

12. Much of the Manding building tradition in West Africa is currently attributed to the *bari*, a caste of professional builders who were called upon by various rulers to effect both rebuilding and new construction. Meager sources suggest not only that the *bari* were literate and well versed in mathematics, but also that they worked closely with the leading Muslim savants to realize a given design construct. Djenné is considered the home of the most skillful and knowledgeable *bari*.

13. See Paul Riesman, *Freedom in Fulani Social Life*, trans. M. Fuller (Chicago: University of Chicago Press, 1977), Derrick Stenning, *Savannah Nomads* (London: Oxford University Press, 1959), and Marguerite Dupire, *Peuls nomades* (Paris: Université de Paris, 1962), for a fuller discussion of the habitat of Foulbé-speaking nomads.

14. Prussin fieldnotes, November 1979.

15. When the original mosque is replaced by a new mosque and becomes either the "women's mosque" or a "reading room," it is also apparently conceptually demoted to a secondary level in the hierarchical system of sacred Islamic space. Fewer prescriptions govern entry into it. The entire palisade-bounded space itself, within which the two mosques and a separate stairway-minaret sit, appears to function at a third level in the hierarchy.

16. Lt. Gallieni, *Deux Campagnes au Soudan Français* (Paris: Hachette, 1891). Although the original thatch dome of the mosque has been replaced by a second set of laterite block walls and a corrugated iron roof, the original "reading room" as well as the original stairway-minaret framed in wood remain.

17. Fieldnotes, January 1979. El-Hadj Umar Tall, actually a Toucouleur, came from the Fouta Toro on the banks of the Sénégal River. The Toucouleur migrated into the Fouta Djallon during a number of eighteenth- and nineteenth-century population movements. El-Hadj Umar first arrived at Dingueraye in 1849, and quickly converted the village into a capital of Tijaniyya Islam, as well as into a great religious center. See Yves J. Saint-Martin, *L'Empire toucouleur: 1848–1897* (Paris: Le livre africain, 1970), for a full discussion of the history of this *jihad*.

18. Khalil ibn-Ishak, *Précis de Jurisprudence Musulmane, selon le rite Malékite*, Vol. 1, trans. M. Perron (Paris: Imprimerie Nationale, 1847), p. 115.

19. Khalil ibn-Ishak, p. 137.

20. The idea of "geometrization" in aesthetic cognition emerged from several discussions with Professor Simon Ottenberg, who has recently completed several years of anthropological fieldwork among the Limba, a non-Islamized group in northern Sierra Leone. I would like to thank him for giving me the opportunity to visit among the Limba and to observe this transformation in a comparative study.

21. West African practices closely parallel those of North Africa. See, for example, Edward A. Westermarck, *Ritual and Belief in Morrocco*, 2 vols. (London: Macmillan, 1926), and Edmond Douttée, *Magie et Religion dans L'Afrique du Nord* (Alger: Adolphe Jourdan, 1909).

22. Prussin fieldnotes, January 1979.

23. As elsewhere in Islamic West Africa, these *alpha* men, *marabouts*, *tiernos*, and lettered men who provide the service of writing such amulets, make up a linked network of literates emanating from the traditional centers of Islamic learning in West Africa. Students will often inherit the original "recipe" for an amulet from their teachers and will use it as a model. The authors of both of these *khatime* studied for a period of time at Timbo, Guinée.

24. See Jack Goody, *Literacy in Traditional Societies* (Cambridge: Cambridge University Press, 1968), and more recently, *The Domestication of the Savage Mind* (Çambridge: Cambridge University Press, 1977), for a brilliant exposition of the role of literacy in effecting shifts in man's cognitive structure. Goody suggests that it is the graphic aspect of the written word that allows for "decontextualization" and subsequent manipulation of spatial organization.

Glossary

dasiri
Manding ancestral cult

djedwal
particular design used in the writing of an amulet or talisman

do ba
in Foulbé culture, a forked post supporting a calabash of sacrificial artifacts, planted in the ground or on a dais

hajj
pilgrimage to Mecca

jihad
Muslim holy war

ka'ba
sacred shrine of Islam at Mecca; literally, a square edifice

khatime (pl), *hatimere* (s)
in Foulbé culture, talismen as well as the design of them

marabout
in West Africa, an Islamic saint

mihrab
niche in *quibla* wall of a mosque

muezzin
in Islam, the crier who calls the faithful to prayer five times a day

qibla
wall of a mosque establishing the direction of Mecca

sahn
courtyard

sara fa har
Manding composite term used to describe the acroteria of sacred structures

suudu
house unit situated in the female half of a space; word also suggests shelter, compartment, hiding place

tabala
Foulbe chief's drum

tapade
palisade

tierno
Foulbe title of respect for a lettered person

toro (s), *toron* (pl)
fig tree; also, projecting wooden picket(s)

ulama
a community of believers

wuro
residential unit including extended family and its herd

Notes

1. Reichel-Dolmatoff, G., "Cosmology as Ecology Analysis: A View from the Rain Forest," *Man* 11, 1976, pp. 307–318.

2. Peckham, Morse, "The Arts and the Centers of Power," *Critique* 1971/72 (New York: The Cooper Union of Art and Architecture).

3. The Quaker agriculturalists who settled the area, supplanting the Leni–Lenape Indians, created in Southern Chester County a pristine landscape that to this day still reflects the once-dominant Quaker culture of Philadelphia and its environs.

4. From $36,000 borrowed to establish the company in 1801, The Du Pont Company has grown to be the largest chemical company in the United States. In 1979, it ranked sixteenth in the Fortune 500 with sales well above twelve billion and a net income a few dollars short of achieving the one billion mark. That same year, it ranked thirteenth among the 500 in number of employees (134,200); in terms of growth rate it was only two hundred seventy-third. Since 1966, Du Pont fluctuated from being the twelfth largest industry in the country to the eighteenth largest, but has hovered around the rank of sixteenth during the decade of the 1970s. Company sales in 1966 were over three billion dollars, but the firm's incredible post–war growth spurt was marked by a fourfold increase in the last fourteen years. Although Du Pont stock is considered blue chip, in 1979 the firm was only two hundred fifty-first in return to investors, falling almost exactly on the median of all corporations on the list. The company is today an impressive multinational with consolidated and affiliated companies widely placed (there are eight in North America, twelve in Asia and the Pacific, sixteen in Latin America and the Caribbean, and fourteen in Europe). In 1981, after much publicized bidding, Du Pont acquired Conoco Inc., the nation's ninth largest oil company.

This information was derived from the following sources: Du Pont Company, Public Affairs Department, "A Brief History of the Du Pont Company," March 1979; "The Largest U.S. Industrial Corporations," *Fortune*, 5 May 1980; *Du Pont Annual Report 1980*; and *E.I. du Pont de Nemours and Company Third Quarter Report 1981*.

5. One student of settlements has commented that: Each human settlement, be it an Indian village or a European metropolis, is a cultural product. In attempting to understand such a settlement, it is essential to use a holistic approach which comprehends the geographical setting, the world view, values, and behavior of the inhabitants and their material culture. [A.D. King, "Values, Science and Settlement: A Case Study in Environmental Control," in *The Mutual Interaction of People and Their Built Environment: A Cross-Cultural Perspective*; ed. A. Rapoport (Chicago: Aline, 1976), pp. 365–389.]

Settlements, which may indeed be the largest scale art forms made by human beings, are in the region largely a function of industrial production—Du Pont's chemical firm—and of agriculture. The suburbanizing process now taking over the farms cultivated by the Quakers since 1682 has subjected farming at the edges of the city to the expansion of Wilmington and Philadelphia. The use of the automobile has decentered the cities generally and has aided in the demise of adjacent agricultural provinces. Affluent suburbanites can buy into the culture of the horse and the Du Pont estate area, because they can drive from there on improved roads to work—not necessarily in the city, but at those company headquarters and large firms that now ring the edges of the metropolis.

The communities in this industrial-agricultural location are complicated, for both production and historical reasons. While the Du Ponts—and there are many of them—shed their French Huguenot past for New World Episcopalianism, the English Quakers maintained until the present time identifiable remnants of their religious organization and belief system. Quakerism is the most democratic of the Protestant sects in the Western World: Quakers tend to be militantly pacifistic; ideally, each member communes directly with God, and no member is subordinate to any other; there is no formal clergy. Quaker architecture—the meeting houses have no steeples and are not called churches—and settlement patterns reflect this decentralized value system and symbolic order. This order is still visible today, despite the ravages to the traditional Quaker way of life that their economic success and the suburbanization of the area have brought. [See Baltzell, Edward Digby, *Puritan Boston and Quaker Philadelphia: Two Protestant Ethics and the Spirit of Class Authority and Leadership* (New York: Free Press, 1979).]

6. Steward, Julian, *Theory of Culture Change: The Methodology of Multilinear Evolution* (Urbana: University of Illinois Press, 1955).

7. Bennett, John Williams, *The Ecological Transition: Cultural Anthropology and Human Adaptation* (New York: Pergamon Press, 1976).

8. At least two watersheds were acquired in Northern Delaware, with land purchases extending into Chester County. These streams were southwest of the Brandywine Creek and much smaller than it. The geography of the Brandywine proved to be a greater challenge than that of these streams. Outright purchase of the stream corridor was economically impossible and culturally inconceivable because of the Quaker land ethic upstream, because of the natural processes themselves, and because of the numerous competitors in Chester County.

The physical layout of the watershed sets the limiting and facilitating conditions on the competition among various water-consuming entities. The Brandywine watershed is 813 kilometers square (United States Geological Survey); the major problems affecting the creek area are pollution, flooding, and erosion. The thirty-two year average discharge of water from the creek registered in Wilmington at the gauging station is 144^3 meters per second. But there are great fluctuations between low and high flows that have stimulated local and national governments to initiate flood control measures. The maximum flow down the creek was 821^3 meters per second on June 23, 1972, while the minimum flow was a trickle of 1.59^3 meters per second August 23, 1957. These fluctuations intensify competition for resources and shock citizens, industry, and governmental bodies into action.

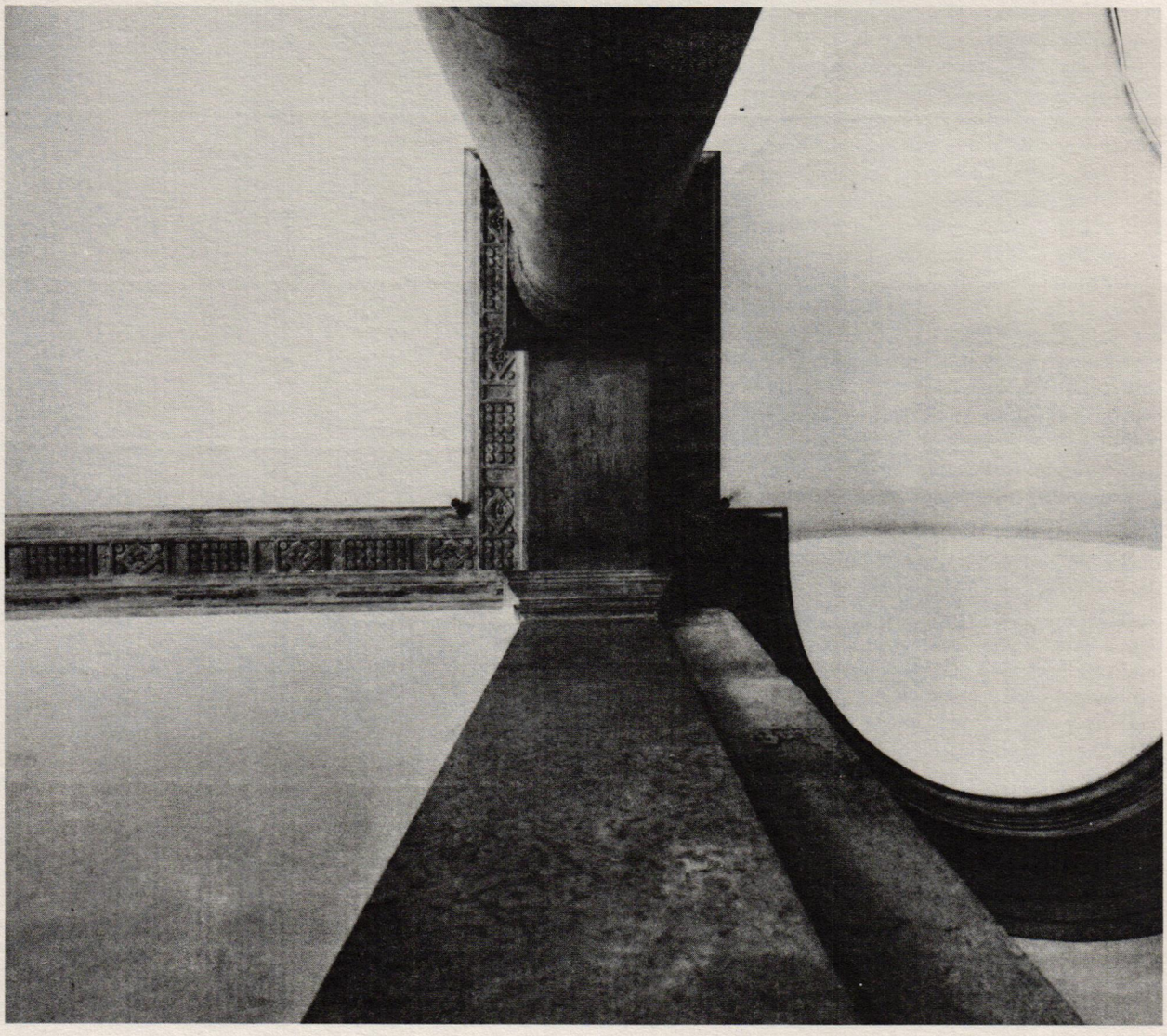
9. Geertz, Clifford, "Ideology as a Cultural System," in *The Interpretation of Cultures*, (New York: Basic Books, 1973).

10. Northern Delaware as a subcultural place associated primarily with very affluent Du Ponts has been noted for its collection of American furniture and illustration art. It is no radical break with local history for Frolic Weymouth—a Du Pont family member and central founding figure of the Conservancy and Museum—to continue to play up family interests by drawing on a preference for furniture collection and illustrators' art among Du Ponts and among many others of the region.

11. My strong impression is that the civil structure of Pennsylvania reflects a value of privacy and private property that is pervasive and that was bequeathed to contemporary inhabitants of the area by the Quaker proprietors under William Penn. When Pennsylvania passed out of the hands of the Penn family and attained the status of a civil entity among other like states, this entity became a three-tiered civil body. At the local level there are minor civil divisions; above them are the counties; and at the top presides the state of Pennsylvania. The minor civil divisions are called townships and municipalities. These smallest units are used to control the landowners' ability to isolate land. As contemporary legal entities, the townships control zoning, hence, land use. This design of the body politic has left control over many natural resources in the hands of township officials. Because township officials can choose the density at which buildings are built and can select the types of land use categories to allocate to their townships, they can permit industrial, commercial, or high-density residential construction regardless of the ability of the land to absorb the uses.

If zoning were located at the county level rather than at the township level, the practice of planning for the whole could be achieved and piecemeal planning by the local residents, that is, decentralized decision-making prevails, and the landscape becomes a patchwork quilt of conflicting, incompatible land uses. Land can be isolated quickly by the landowner, and central planning is thus thwarted. The value of private property is therefore preserved. The landscape and the natural resources, however, are not. For this reason the affluent have developed new institutions. The new institutions are under the control of the rich and the affluent suburbanites. They are incorporated under tax-exempt provisions as nonprofit, and their aim is to put pressure on the weak, somewhat anarchic minor civil divisions and upon the developers of new suburban houses in order to achieve a design of the environment that suits these two groups' interests.

Detail of the Tablinium in the Monastery of La Carita, Venice, designed by Andrea Palladio. Photograph is by Diego Birelli, courtesy of Electa Editrice, Milan.



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Paolo Portoghesi received a Dip. Arch. from the University of Rome in 1957. He is author of numerous publications including: *Borromini nella Cultura Europea*; *Roma Barocca*; and *Roma del Rinascimento*. He is currently Editor of both *Controspazio* and *ITACA*. Since 1964 he has maintained an active architectural and planning practice with Vittorio Gigliotti. Of his design work, Udo Kultermann stated in *Contemporary Architects*:

In the spirit of the revival of Baroque architecture (to which Portoghesi, one of the outstanding architectural historians, contributed immensely), his buildings rediscover space and movement as structural elements. In houses and large complexes he uses a geometric vocabulary in a disciplined manner, relating the uniqueness of the topographical conditions to the specific aims of the client . . .

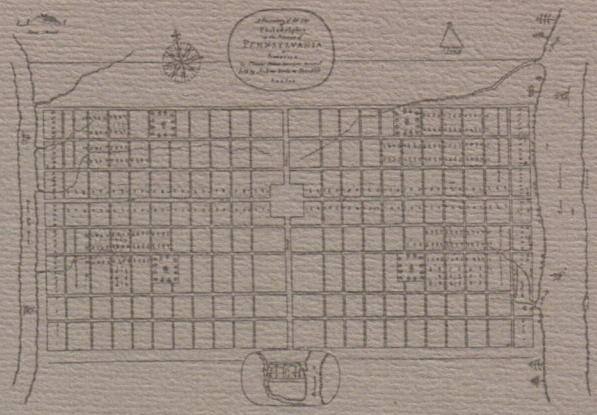
Since 1967, Paolo Portoghesi has been Professor of the History of Architecture at the Milan Polytechnic.

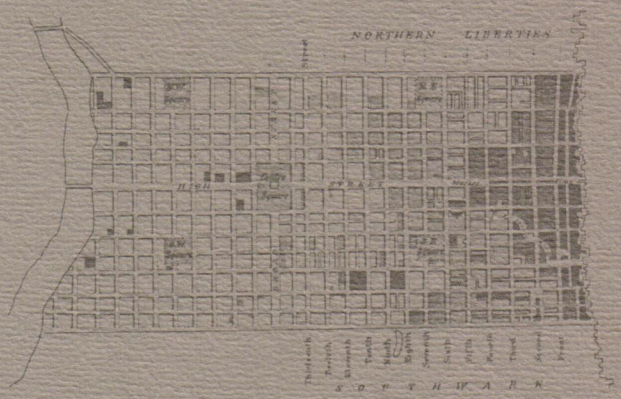
Labelle Prussin received a Master of Architecture degree from the University of California at Berkeley, and a Ph.D. in architectural history from Yale University. In addition to professional practice, her publications include *Architecture in Northern Ghana*, the forthcoming *Hatumere: Aspects of Islam in the Arts and Architecture of West Africa*, and numerous articles on African architecture. She is Associate Professor of Architecture at the University of Washington.

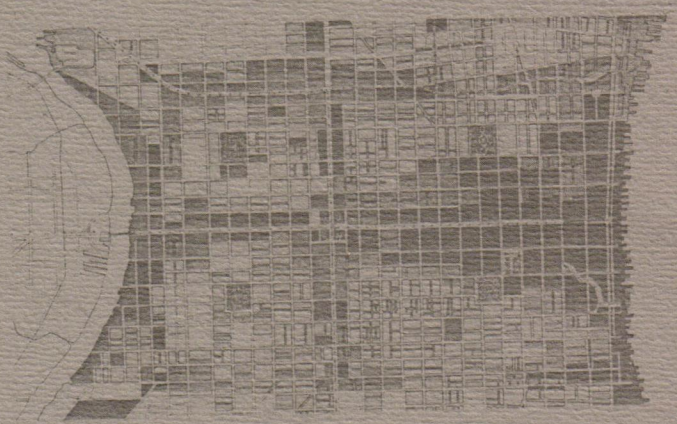
Dan Rose received a Ph.D. in anthropology in 1973. His publications include *Energy Transition and the Local Community*, and two books of poetry. Professionally interested in the relationship between human culture and nature, and between art and society, he has served on the Civil Systems and Emergency Board of the National Research Council, and has consulted to government, industry, and universities. He is Associate Professor of Anthropology and of Landscape Architecture at the University of Pennsylvania.

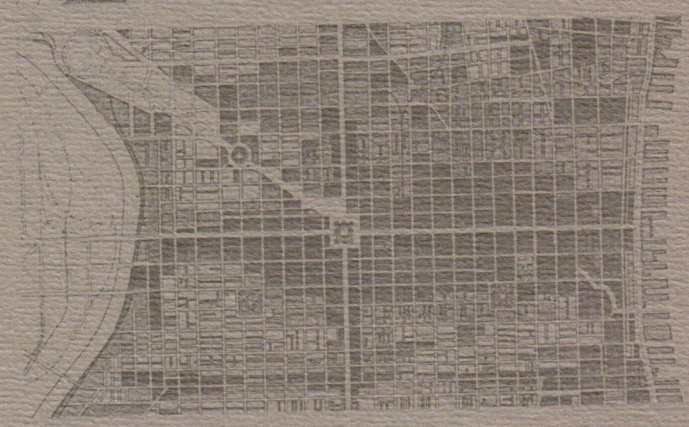
Sir Peter Shepheard graduated from the School of Architecture, University of Liverpool, in 1936. He has illustrated several books and is the author of *Modern Gardens* and *Gardens*. His practice has concentrated on housing, university and town planning, and landscape design. He is a partner in the firm Shepheard, Epstein and Hunter. Since 1959 he has been associated with the Graduate School of Fine Arts at the University of Pennsylvania, and is currently Dean Emeritus and Professor of Architecture and Environmental Design.

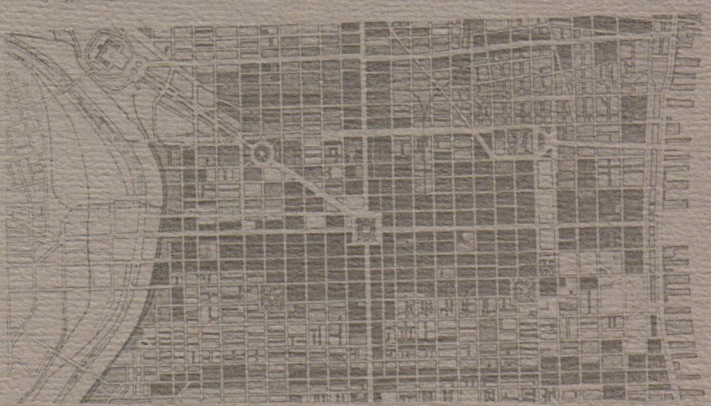
Susan M. Strauss received an A.B. in philosophy from Bryn Mawr College in 1975. Presently, she is in a doctoral program in architectural history at Columbia University, from which she received a Master of Arts degree in 1980. Her essays have appeared in *The Making of an Architect*, and she has contributed to the forthcoming MacMillan Encyclopedia of Architects. Her major fields are history and theory of Modern architecture and Renaissance architecture.











A City Between Two Rivers

William Penn's 1682 plan for Philadelphia (top), positioned at the narrowest point between the Schuylkill and Delaware Rivers, determined a city of four quadrants, each with a public square, and city hall at the quadrants' intersection.

From that plan the city developed, first along the Delaware (1776), then to the Schuylkill (1876). By 1920 city hall was completed and the diagonal Parkway cut. The mid 1960s saw the addition of a highway connection between the rivers.