THE RESONANCE OF PLACE
a journey into the world of visual associations

BY

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submitted in partial fulfillment of the requirements for the degree of Master of Architecture at the Massachusetts Institute of Technology September 1979

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ABSTRACT

have long been interested in a design process which
has at its base a compatibility with the ways in which people
associate with and use their environment. At the same time
as the design and building processes demand a level of com-
petence in the skills of organizing, abstracting, epitomiz-
ing, and ordering—to meet the demands of efficiency and
economy—people's lives are seldom as obedient to the same
rigors.

This thesis is an exploration into some of the ways
people perceive, relate to, and use their environments.

The first part explores a design process which uses
images of places one remembers being in; that one may have
seen; which one likes and feels good about; wants to be part
of; enjoys being part of. Sometimes these images speak of
relationships of form and use which can be analyzed, extracted,
and abstracted into working principles. Sometimes these im-
ages generate a "sense of place:" a certain quality, a feeling
of engagement, which is much more difficult to define. I be-
lieve that it is possible to use these images of "place" very
directly, to inform and be incorporated into the design proc-
есс.

The second part explores a range of issues relating to
the ways in which one perceives his environment; ways which
have informed and influenced the design of the projects
described in Part 1.

This thesis is an attempt to communicate a wide range
of thoughts and feelings which are still in their infancy.
For me, they seem to have great potential for a better under-
standing of the complex relationships between man and his
environment. Properly nurtured, they will grow; hopefully,
they will become healthier and more articulate as they do.

********
ACKNOWLEDGEMENTS

As always, this is the most difficult part of a thesis. The number of people who have had input in this work, whether they are aware of it or not, are endless. Bits of ideas, flashes of insight have come to rest in me through a vast number of untraceable journeys among people, places, events.

If you, the reader, find in this work thoughts or feelings which have a particular resonance with thoughts and feelings of your own, I may have first gotten them from you. There is often no way of knowing.

Being unable to really give credit where it is due, I choose to acknowledge a few persons whose involvement with and influence on this thesis were both direct and indispensable:

Shun Kanda, my advisor, who, when my direction was only a preconscious collage of thoughts and feelings, maintained the optimism that they were valuable.

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Imre Halasz, who has watched me struggle the longest.

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Randall Paulsen, who was there to lend a gentle ear as I struggled to give the formless form.

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My sister Mary, who, when I was very young, shared with me the joys of walking over giant macaroons which crushed under our feet-sensitizing me to a richly associative realm of experience which has taken me far beyond the ice-covered snow of that winter evening.

and finally,

Nancy Evans, my wife, whose emotional support and constant help was essential in assembling this thesis.

*******
To Nancy,

my friend, companion, and wife,
who has given form to my feeling.
A man... has a troublesome time of it when he tries to build a novel. I know this from experience. He has no clear idea of his story; in fact he has no story. He merely has some people in his mind, and an incident or two, also a locality. He knows these people, he knows the selected locality, and he trusts that he can plunge those people into those incidents with interesting results. So he goes to work. To write a novel? No — that is a thought which comes later; in the beginning he is only proposing to tell a little tale; a very little tale; a six page tale. But as it is a tale which he is not acquainted with, and can only find out what it is by listening as it goes along telling itself, it is more than apt to go on and on until it spreads itself into a book. I know about this, because it has happened to me so many times.

— MARK TWAIN
on some level of abstraction--on a systemic order imposed by the rational processes--whether one engages in them, or responds to them. Certainly, a primal grunt, a contented sigh, or a scream of terror cannot be considered to be rational constructs, for, like building, they are equally direct, powerfully real.

Yet the time when such expressions defined the entire range of human verbal communication has faded into oblivion. We are only reminded of the possibility of such a world during the first few months of each newborn life. But even for the newborn, the dominance of rational control comes rapidly: it is the fate of the species.

Likewise, we have all been alternatively bored and chided with the notion that the pen is mightier than the sword--for words do have the power to determine the fate of nations. Such is the resolute hope of the Begin-Carter-Sadat triumverate today as I sit typing, and innumerable lesser and greater men throughout the ages--such is the power of civilization. We are learned at an ever earlier age that "sticks and stones can break your bones," but words... yes, words, with all their potency, which have led to the moving of mountains, to the destruction of innumerable
innocents, are still not real in the same sense the sword is, or the sticks and stones.

Still, being educated first to speak and to write is not an uncommon experience. Most of us share the experience of being run through an educational system, the focus of which has been the development and refinement of our verbal and written skills, and the fine tuning of the more rigorous analytic and abstraction-oriented skills of mathematics and science. The three Rs formed the foundation of that education: Reading, 'Riting, and 'Rithmetic; while visual skills were seldom seriously developed. It was no small matter that the visual and emotional imagery associated with learning the three Rs has been memorialized in the children's ditty, where they are "taught to the tune of a hickory stick"; in this bit of imagery, guilt and fear abound. It is no small matter that the prevalent system of sorting out the most qualified for a front-running position in the race to "higher education" is in the form of Scholastic Aptitude Tests, which have two main parts--the "verbal" and the "math." In our younger days, the activities which were meant to develop our visual and emotional awareness, or establish an experiential directness to our awareness of the

It has been my experience that after students have spent sixteen or more years in our education system they have been so brainwashed that it is impossible to get them to go out and simply observe and report back what they heard, what they felt, or what went on before their eyes. Most of them are helpless in the face of real life, because they have to know beforehand what they are going to discover and have a theory or hypothesis to test. Why? Because that is the way they have been taught.

— EDWARD HALL
There are two worlds essential to man's awareness. One is the world of books, the social heredity of steadily accumulating knowledge, of science and techniques and business, of words and the stock of second-hand notions which we project upon external reality as a frame of reference, in terms of which we may explain, to our own satisfaction, the enigma, moment by moment, of ongoing existence. Over against it stands ... the world of sheer mystery, the world as an endless succession of unique events, the world as we perceive it in a state of alert receptiveness with no thought of explaining it, using it, exploiting it for our biological or cultural purposes.

— ALDOUS HUXLEY

world, were "art," "music," "field trips"; all were akin to recess: such activity was something to be done to have fun, and having fun was not to be confused with learning. In the student's mind, these activities were fun because one could escape from the more serious activity of learning.

Architecture, too, suffers from this same paradox. Although it is well recognized that the ability to deal with visual information is a fundamental tool of the architect, so much attention seems to be paid to the analysis and abstraction of this information, and so little paid to how one feels about what one sees. Certainly, abstraction and analysis are indispensable tools for an architect, without which the ability to design or build anything would be a disastrously random activity.

Yet, too often it seems as if this process of abstraction and analysis is glorified as an end in itself; the pinnacle of architectural achievement seems too often to reside in the ego-centered expression of some ideal abstraction of all the forces brought to bear on a design problem, or the achievement of an "essential form" as a design solution. It is in this way that an Aldo Rossi can use a
rigorous and sophisticated typological analysis to ration-
alize his architectural forms; or a Richard Meier or a Peter Eisenman can use a highly sophisticated overlay of mathematical systems, analyzing and assembling formal elements with the rigor of *logical positivist* thinking, to create a rational construct. Although it may have an impeccable internal consistency, it is truly an act of faith to suggest that it is fitting for human habitation.

Perhaps I suffer from a lack of understanding of the beauty and harmony of such architecture, or a lack of sophistication about the elegance of the rules being followed. But that really isn't the issue. When I go to the theater, or to an art museum, I bring with me an eager willingness to suspend my disbelief, to share in the expression of a person's, or many persons' art. Yet, the same suspension of disbelief is not so readily available to me in the experience of living. I guess that, for me, architecture is much more about life than art, and in attending to life and the living of it, architecture is meant foremost to be commodious. By the same token, the tools of abstraction and analysis are to be available and necessary to serve this end, but are not an end in themselves.
When I experience a place, I am seldom able to jump into a discourse on what I think of it. I am much more readily aware of how it makes me feel, what it allows me to associate with--places which are recalled from the memory of my experience, or from my world of fantasy. Some of these associations can be logically thought out, others are less rational, more personal. Yet, there is something enriching about the range of associations that are possible, and the fact that I am allowed to make them. I find this to be important, for when I feel limited to a very few, or feel that my associations are being controlled, my experience is much less active. Once my role becomes passive, I somehow feel less alive. As I mentioned earlier, I can think about an environment; I can talk about it; I can "read" it. But most of all, when I am allowed to feel it, and associate with parts of it at different times, and in different ways, then is when I feel most alive.

It is this devotion to the primary processes of the senses, and the resultant feelings, which has directed my search in this thesis: a devotion to the importance of their input; a rampant curiosity about the human functions by which this input is filtered, organized, and stored;
and a sense of awe at the manifold ways in which this information is recalled, at strange times and in strange places, to enrich one's understanding and feeling about one's self, and one's environment.

********

Earlier I stated that I enjoy building more than speaking, or writing. Well, I also enjoy communicating--by whatever processes are available to me. It is most satisfying when it is through building. But I struggle the best I can with speaking, or, in this case, writing. It is more enjoyable to communicate than it is not to write, or not to speak; you see, it is all relative. I enjoy it because there is always the thrill of hope, and the satisfaction of success, in sharing the things I think, I feel, I see....

This thesis is an attempt to communicate some of these things. It is an attempt to do so in as direct a way as possible, using images and associations to convey some of the thoughts, feelings, and attitudes I have tried to bring to my designing and building.

Section A of the thesis concentrates on some of the visual associations which stirred my imagination and work in
as direct a way as I can. The three projects I have selected to use in Part II of this section are all very modest, and as I go back over them, it is almost painful to confront the weaknesses and to remember the frustrations, grimace over good intentions still unfulfilled, blanch at the thought of issues which are important to me now which weren't even issues then.

I hope the reader will grant me these things, and focus not so much on the stuff itself as on the processes and patterns of how it came to be: on the connections between the places I have come to know and like, and the ones I have helped to create. For the purpose of this thesis, they share one common element. They are all real. They have each been built, rather than remaining unrealized designs, for better or for worse. Because of this, I am able to be as direct as possible in associating images of real places, which exist, with other real places, which were in part generated by the qualities I found in the first. Certainly, in the designing of each, many things were abstracted and organized, analyzed, reworked. Errors were made. Some were corrected; others were accepted according to mechanical, political or economic expediency; still others were never apparent.
The fact that they have been built, and do exist, is important to the purpose of this thesis for the following reasons: I am not going to attempt to shower you with marvelous imagery, or use any graphic presentation to convince you of some marvelous fantasy. The stuff is there; some connection between the stuff and the visual associations are implied; if there is no connection, you don't have to wait until it is built to be disillusioned. It is either there, or it isn't.

The hope is that there are places that one likes, of which one has fond memories, and that these places have qualities which can be transferred to the design of another place. Not exactly the same place, but the same qualities. I have depended on the images, rather than words, because often these qualities cannot be given a name; they defy analysis. Yet, it is possible to "sense" whether any of it has been captured, or not. I have tried to be as direct as possible in these assemblages of place. I hope some of it comes through.

In Section B of this thesis, I have attempted to put together an assemblage of thoughts and feelings which also have had a certain resonance for me as I have come across
them. They are less direct than the images, and are not meant to express a definitive "thesis" in the true sense of the word. The "thesis" in this thesis is to be found in the first section; here one can find the projection of an hypothesis, and the demonstration of it. A resolution is not meant to be found anywhere. The connections between the two sections have to do with my thoughts and feelings about the process of perception, particularly visual perception, from a variety of different excursions. If it sometimes appears particularly dense and confusing, or naive and simple-minded, it probably is. If it has moments of insight or the appearance of brilliance, it is purely accidental; or some of the images which are my references managed to come through unscathed.

In preparing you for the journeys ahead, I will state very simply that visual perception is the nexus around which this thesis revolves. Yet, as an admonition to myself and others about what this thesis is trying to do, I will use the words of one who shares my fear about discussing things in purely visual terms: "I don't want to say visually, for that implies some sort of aesthetic." 1

In many ways, the thesis itself is organized in much the same way as the process I am attempting to discuss.
It is an assemblage of many associations I have had, and I continue to have, as I interact with my physical environment. I hope I have given it enough structure that the reader can find his way through it with some small amount of pleasure.

As John and Margaret Myer so appropriately chose the words for the recent draft of a book they are working toward, this thesis reflects the patterns of association between my inner and outer landscape.\(^2\)

I hope that at the conclusion of your journey through this thesis, or from a visit to any part of it, it will have the same "resonance of place" for you that it has for me.

******
Vision... evokes our memories and experiences, those responsive emotions inside us which have the power to disturb the mind when aroused.

— GORDON CULLEN

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people in our culture talk photographs rather than experience them visually. Whatever is being looked at, photographs or anything else, the input is visual while the tagging is verbal. So for most of us words, words, words, overwhelm and warp any significance appropriate and becoming to visual perception. Some students claim, that unless they name it — until they name it — the thing seen has no meaning!

— MINOR WHITE

...a desirable image is one that celebrates and enlarges the present while making connections with the past and future.

— KEVIN LYNCH
... unless you use images of some kind, yourself, your own creation will itself be chaos. And why are you afraid of that? Is it because people will laugh at you if you make chaos? Or is it true, perhaps, that you are most afraid of all that if you make chaos, when you hope to create art, you will yourself be chaos, hollow, nothing.... The fact is that this seeming chaos which is in you is a rich, rolling, swelling, dying, lilting, singing, laughing, shouting, crying, sleeping order. Only allow this order to guide your acts of building, and the buildings which you make, the towns you help to make, can be the forests and the meadows of the human heart.

— C. ALEXANDER

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Sweet is the lore which Nature brings; Our meddying intellect Mis-shapes the beauteous forms of things — We murder to dissect.

Enough of Science and of Art: Close up those barren leaves; Come forth and bring with you a heart That watches and receives.

— WILLIAM WORDSWORTH
In the short time I have been studying architecture, I have had a few fortunate opportunities to have actually built some things. In the process of both studying and building, I have learned much about architecture, and about myself. About architecture, I have learned more than my mind can comfortably embrace. For myself, it is only through exploring, designing, building, observing, and using, that some of these things I have learned begin to take form. It is only through doing, through an infinite process of trial and error--through testing, observing, and retesting--that I have found it possible to start to understand what architecture is all about. It is a process where one takes that which is outside one's self--all that one perceives and from which one learns--with that which is inside one's self--all that one feels and comes to believe.

Through designing, and more so, through building, this combination--a volatile mixture of perceptions, feelings, beliefs, associations--gets projected outside myself, and into the physical "stuff" called architecture. At this point, it is possible to take stock of how this cloudy
mixture manifests itself, and I really begin to learn about architecture, and myself.

As I pointed out in the preface, I was educated first to read and write, as most of us are. Rather than finding this an asset to the learning of architecture, it too often formed a barrier, acted as an intricate camouflage to the actual doing of architecture. From my experience and observations, although limited in time and scope, I have not found this to be a situation unique to myself.

In this thesis, I would like to share many of those perceptions, feelings, beliefs, and associations. For me, the images I include in the thesis are the primary vehicle for sharing these things. Yet, among all the associations one has with a particular place or environment, are included the memory of books read, phrases remembered, thoughts constructed from feelings felt, verbal expressions of thoughts and feelings shared. So words are used to focus the images, to contribute to the ways in which the images are perceived, and used.

Section A of this thesis will present images of many of these associations. It is an attempt to get closer to a working process which uses real places to help generate other

CALL IT LABARYNTHIAN CLARITY.

...Right-size goes hand in hand with it; it harbours bountiful qualities; scope for what is small yet large - large yet small; near yet far - far yet near; open yet closed - closed yet open; different yet the same - the same yet different; scope for the right delay, the right release, the right certainty, the right suspense, the right surprise, the right security. And, withal, scope for multi-meaning.

There is a kind of spacial appreciation which makes us envy birds in flight; there is also a kind which makes us recall the sheltered enclosure of our origin. Architecture will fail if it neglects either the one or the other kind. To gratify Ariel means gratifying Caliban, also for there is no man who is not both at once. Labarynthian clarity, at any rate, sings of both!

ARCHITECTURE NEED DO NO MORE THAN ASSIST MAN'S HOMECOMING.

— ALDO VAN EYCK
The fact that this quality cannot be named does not mean that it is vague or imprecise. In fact, it is impossible to name because it is unerringly precise. Each word you choose to capture it has fuzzy edges and extensions which blur the central meaning of the quality.

— C. ALEXANDER

The criterion for good art is its power to command one’s contemplation, and reveal a feeling which one recognizes as real, with the same “click of recognition” with which an artist knows that a form is true.

— SUZANNE LANGER

real places. Yet, the most important condition of this process is that the images are not used exactly in cause/effect or in stimulus/response kinds of ways. The images which generate the making of a new place may be very specific; they may be vague or hard to define. The hope is that they are quite direct.

Attempting to be this direct in terms of a working process is to approximate what I refer to as the "resonance of place." In the accompanying quotations, Van Eyck uses the term "labyrinthian clarity"; the philosopher Suzanne Langer calls it the "click of recognition"; Christopher Alexander calls it the "quality without a name." It is what has been referred to as "empathy" by numerous aestheticians.

For my purpose, this "resonance" is generated by the multivalent associations which are stimulated by a given environment. This is to go beyond merely what associations a designer brings to bear on his design, and those he incorporates in it. Although this is the realm that I will be focusing on in the thesis, as I will be talking primarily about a design process, there is always the intention to go beyond the dictates or the wishes of the designer; to get beyond the point where the resulting places are merely
suggestive of other places one knows or likes, enjoys or appreciates. There is also the desire to build in ways which allow others to find associations with and uses for these places on their own. Not to have the user say merely "the designer must have been thinking of this," but to be able to have him say unself-consciously, "this makes me think of this," or "this is the perfect place for this."

Some of the terms which have been used to suggest this condition, both figuratively and formally, are "openness," "looseness," "slack," "incompletion," "reciprocity," "ambiguity." Of course, each of these words has its particular meaning, depending on the context in which it is used. But taken together, they all seem to direct themselves to the degree to which a physical element or environment has the potential to generate an association, or a set of associations for the user or observer.

******

We are all familiar with buildings, or sets of buildings which immediately suggest visual associations.

Take, for example, Jörn Utzon's Sydney Opera House, the form of which was conceived to suggest the sailboats with which it shares the harbor. The windswept curves and
billowing forms of sails in the wind, surrounded by water, are as unavoidable as they are intentional.

Likewise, Kenzo Tange's Kagawa Gymnasium, Takamatsu, Japan, is inescapably a boat beached in sand, right down to the portholes and the drainage slots along the gunwales. Even the use of materials is not so fictional as it might seem when compared to the accompanying photograph of a concrete boat, built in Holland during the nineteenth century.

These are but a couple examples of a vast plethora of buildings the form of which has been directly generated from an associated form.

What this thesis is hoping to discuss is neither as grandiose a vision as these, of celebrating an associative object on (sic) the landscape. Nor is it suggesting that one should generate with such a resolute single-mindedness an associative form which controls, in an exclusive way, the images with which one is allowed to associate, to the exclusion of all others. Rather, I am hoping to discuss the much more humble use of visual associations of place--those images which recall memories of feelings and insights which seem appropriate, or are desired in a place one is designing.

Another aspect of associative imagery which has always
intrigued me are the less self-conscious visual associations which buildings generate.

These seem to result most frequently when the object-like quality of a building combines with man's tendency to want to caricature or epitomize a large and complex event into a simple diagram of its most obvious or "impressive" features.

As Levi-Strauss, in the accompanying quotation, describes man's tendency to search for epitomizing analogues, it is difficult to escape comparison with recent cover of Time magazine (fig. 8). Philip Johnson, with all due pomposity, chooses to patronize his audience by foisting upon them his banal epitomization of a complex environment, which encloses and affects thousands of people daily, as a Chippendale reproduction. In this image one sees people as so many pairs of socks. And it is not even original, for Saul Steinberg has already presented us with this surreal juxtaposition (fig. 9). What Johnson is trying to get us to swallow as reality, is the same thing that Steinberg was pointing out to us as a banal and dehumanizing fantasy.

Whether Mr. Johnson was intending for us to imagine ourselves as so many pairs of socks, or as fine pieces of

... the smaller the totality of the object, the less redoubtable it appears; by being quantitatively diminished, it seems qualitatively simplified. More importantly, this quantitative transposition increases and diversifies our power over an analogue of the thing, by means of which the thing itself can be taken hold of, weighed in the hand, comprehended with a single glance.

— CLAUDE LEVI-STRAUSS
silverware, the fact that he presents us with an object which can be so readily simplified makes it difficult for the person who is asked to experience the environment to actively engage in perceiving it in ways other than dictated by this caricature. Without being allowed to actively engage it, it becomes difficult to associate with it in any personal way.

This process of epitomizing through caricature is a well-known and highly successful tool of every political cartoonist, advertising agent, and social critic, to name but a few. Their success is equally dependent on the "resonance" of the associations they suggest. These associations are most profound when the object being caricatured powerfully suggests such an epitomization, and the resulting image dominates the more human and personal associations of place. For me, a more ideal environment would be much more difficult to epitomize in this way. Hopefully, it would allow for a greater variety of the more human and personal associations which would be rich enough to make it difficult to sum up in such a singular way.

When the first scheme of Rockefeller Center was proposed back in 1931, the most prominent building proposed on Fifth Avenue was cylindrical and on axis with the suggested
direction of movement on the site. The hope was that the curved sides would gently lead the public around this building and into the heart of the complex. As soon as this proposal was released to the public, this building became known as "Rockefeller's oil can," associating the shape of the building with Rockefeller's monopolistic oil interests. This image association was so powerful, that the scheme had to be abandoned; it was considered to be politically wise to prevent the association from becoming forever memorialized.

Some more recent examples of "object association" which have been built include Boston's Federal Reserve Bank, which has been variously described as a "transistor radio" and a "cheese grater." The Dreyfus Building of Chemistry on the campus of the Massachusetts Institute of Technology has been memorialized for me as "the bus turning left." Once exposed to these image associations, one can never engage the building without recalling these images.

This kind of image association and the surreal world they project of people as pairs of socks, droplets of oil, tiny transistors, bits of cheese or ants on a bus, reflect a dehumanized world. It is a highly disassociative world, in terms of the joys and pleasures of human experience. They
all suggest the confrontation with a superhuman world devoid of human qualities; the shared experience is that of the insignificance of human life.

In order to celebrate life through associations, it seems essential to engage people in both the generating of the associations, and the participation in them. When Halprin speaks of events (see p. 72), it is exactly this potential for participation that lays the groundwork for the most positive kinds of associations.

The pigeons or the flower pots which were made Brobdignagian for this housing project in France (figs. 14 and 15) have the same self-conscious, statement-oriented character of some of the buildings-as-objects I have cited earlier. I find them to be terribly disassociative, for they do not allow for any personal engagement with them. The most powerful association the pigeons have for me is the fear of looking up and being pelted by two tons of guano served up by its low-flying mate.

On the other hand, I find the animals in the children's playground at Expo '74 in Spokane, Washington (figs. 16 and 17) wonderful. They allow the possibility of acting out childhood fantasies of being miniature and crawling through
the entrails of a gigantic beast. The sun peeks through the scaly body to illuminate the way. You emerge from the fantasy with the elation of reemergence into reality, reinforced with the physical sensation of the free fall down the slide. You can jump up, run around, and do it again. Associations with Jonah, or Pinnochio, and the whale come readily; or with the film "The Incredible Journey"; C. S. Lewis's Narnia books; Alice in Wonderland. These are all feelings one can feel, because one is engaged in acting out the fantasy.

Recently I came upon the two accompanying images in a book called Varieties of Visual Experience. The author, an art historian, juxtaposes the two images, an Indian pueblo (fig. 18) and an apartment house in Israel (fig. 19), and boldly states that his comparison "proves that modern technology can generate the same feeling of community and human interdependence that we sense in the adobe pueblo..." For me, this statement defined the wide chasm between the perception of art and the perception of architecture. This historian is basing his entire comparison from the static, observer's point of view, relying purely on the tenuous connection between the aggregation of forms. When I see the Indian pueblo, I can use my imagination to climb the ladders,
walk over rooftops, disappear into doorways, peer out of windows; I can even imagine my neighbors; I can project a sense of community.

There is no way I can actively engage myself in the image of the apartment building. I cannot participate in it at all. I can understand, with an observer's eye, associations between the aggregations of form. But it is as detached and as static an observation as were the epitomizations of buildings as objects which were previously discussed. The comparison is a pure abstraction, there is no sense of elation, of engagement in an environment. It is based purely on a gross similarities in form relationships. There are no similarities to be found in man's process of inhabitation or in man's use of the forms.

Conversely, there are contemporary places which generate the same resonance of being in the Indian pueblos. Both Safdie's Habitat in Montreal and di Carlo's Collegio in Urbino suggest the same qualities of active engagement in the environment as does the pueblo. They speak directly of human habitation; of being there; of participating in a community; of sharing experiences. One can talk about the forms at the same level of abstraction as the art historian, and
analyze relationships in the same way. But the human experience of imaginatively becoming part of the environment, walking through it, looking out windows, chatting with friends, is real and transferable. This is what gives them their life. None of this is possible when one looks at the image of the Israeli apartment building. The analysis of form and the understanding of abstract principles are merely tools with which to understand the place, with which to try to identify what makes it real.

In the frontispiece to Section A (p. 5) I selected a few images which have the most "resonance" for me. They each speak of a quality of place, a kind of experience, a particular event. They are all architectural. They speak to me about where it is that architecture begins. They speak of the joy of sharing, the fantasy of playing, the mystery of exploring, the solace of contemplation. They speak of many things. Yet when one talks about what they mean to him or her, it is so easy to lose the feelings and the associations one has, or obscure them among the words, as Minor White admonishes (also see p. 5).

In a profession where it is so important to be able to abstract, dissect, analyze, define, organize, plan, it is so
easy to lose touch with these humble qualities of people in places. It is much easier to allow reason to control—to play out the consistencies of an abstract, logical construct. But when one does this, it becomes increasingly difficult to stay in touch with those humble, human kinds of moments, kinds of events.

There is a kind of order to be found in the bringing together of the "possibilities for events to happen," as Halpin puts it (p. 89). As Christopher Alexander points out in the frontispiece to this chapter (p. 7), there is also a kind of chaos to be found in the rigors of order; the system one uses may be internally consistent, but if no one understands the ordering system which is used, or if it is impossible to humanly engage the environment so conceived, it will be perceived as chaotic, no matter how convincing one makes it sound.

The notion of how man begins to order his life and his world has always fascinated me. The distinction between the imposed order of the environment, whether physical, social, political, or religious, and the self-generated order of an environment, has powerful architectural ramifications. On one hand, there is the order found in "law and order";
fascism; totalitarianism; religious zealotry. This is an order based on the seductive allure of "truth"; the belief that everything can be seen as black and white, right and wrong. It is a dehumanizing order.

On the other hand, there is the order of caring, of personal involvement in the patterns of how one lives one's life, and how one perceives his world. There is a warm feeling generated by participating in an environment of caring; a friend who always seems to have his home or workplace "in order," without seeming pathological about it, provokes a sense of admiration and respect. The whitewashed villages in Greece, so warmly and attentively cared for, generate their own order--an order of caring. We have all had the experience, at one time or another, of a person whose home or work environment is in total chaos, yet that person can lay hands on any item he or she needs. The apparent chaos is organized by a vivid associative memory of where any particular item is within the whole. At least for me, this person provokes envy, for he or she possesses an order which is a true manifestation of what Van Eyck calls "LABYRINTHIAN CLARITY" (see p. 10). This person is in possession of an order of place which transcends the...
In English, when a man says, "It
rained last night," there is no
way of knowing how he arrived at
that conclusion, or even if he is
telling the truth, whereas a Hopi
cannot talk about the rain at all
without signifying his relatedness
to the event—first hand experi-
ence, inference, or hearsay.

—EDWARD HALL

"When I use a word," Humpty Dumpty
said, in rather a scornful tone,
"it means just what I choose it to
mean—neither more nor less."

"The question is," said Alice,
"whether you can make words mean
so many different things."

"The question is," said Humpty
Dumpty, "which is to be master—
that's all."

—LEWIS CARROLL

need for a more logical, transparent order imposed from
without.

This order of "place," where associative links organize
one thing in relation to others, begins to develop in terms
of a sequence of events, the constant overlay of experience
and memory. It is the order of personal and physical en-
gagement in life, of how one acts and feels in relation to
the world around him. They are events that man cannot
separate from himself in terms of his perception and under-
standing of them.

Japanese paintings and Japanese gardens have always
held a particular attraction for me. There was always a
presence about them, an "otherness," a "resonance," which
the traditions of Western thought had difficult penetrating.
Their painting never incorporated the Western discovery and
infatuation with proper perspective. Their gardens projected
"inscrutability," a word that has long been used as the
Westerner's caricature of their culture. Yet there has al-
ways been a particular respect given, often begrudgingly, to
a certain quality to be found in this work. What it has
come to mean to me has to do with the same "sense of place."
A typical Japanese garden can be found on page 33 of this thesis. Both in the way it is organized, and the way the parts are defined, there is an order based on the relationships between many places. The Guardian Stone stands erect, a sentinel watching over the field. It stands amidst the largest concentration of physical definition, casting a watchful eye over its more far-ranging subjects. Each of the remaining stones is also defined as a place; each has a role; each is located in terms of the potential connections to its neighbors.

The trees as well have their role. The smallest of the three is still the principal tree, for it defines the central place of the garden, boldly protected by the Guardian Stone. Another tree is defined by its position relative to nature: located by the event of its catching the evening sun. The third tree is located in terms of relationships: it is at the edge of the garden, near the wall; it is solitary, away; it defines a place of solitude, a place to sit at the edge of the garden, in contemplative peace.

The man-made objects in the garden also have a place. The aspects of each piece merge as they gain their unique identity: the water basin, stone lantern, distant lantern,
... an event is not merely an assemblage of numerous relations between many different things thrown together into a disorderly heap. On the contrary, the various feelings of one thing for others are organized into something with a specific and individual character.

— ALFRED NORTH WHITEHEAD

well frame, well drain. All of these many elements, the stones, the trees, the objects, merge into a whole, they create a place which is defined by their multiple relationships, an "assemblage of place."

The Chinese tapestry (fig. 22) shares these attributes. It too can be seen as an assemblage of events; of paths and places; as paths to places; as paths as places. There is no compelling need, as in Western thought, of an organization based on an imposed, scientific, "truth-oriented" order: the use of perspective; conscious adherence to geometrics, or an overlay grid; hard edges; sharp boundaries. Rather, it possesses an order which proceeds directly from man's associative perception.

These relationships gain strength when man and nature combine. In a willful act to give meaning, to define the implied force of relationships, man binds adult to child, mother to daughter, father to son, the parent to the prodigal (fig. 23). At the same time this act asserts a oneness between the two places, the two events--a oneness which exists in the continuous landscape, which, when hidden by a vast field of water, makes them appear as two. The same collage of form and relationships can be seen in the image
of the farmhouse in the rice paddy (fig.24), and in the two inhabited islands off the mother island of Corfu (fig.25). In the latter image, one island is near enough to the mainland to be connected by causeway. The other, more distant, is part of the same family by virtue of its connection by boat to the people and services of the mainland. In all these cases, the definition is in terms of places, and its organization in terms of reciprocal relationships to the other places in the field.

I began this chapter with a discussion of the Sydney Opera House, and the form association to sailboats in the harbor. It does provoke that association, it is a powerful one. Yet, in its grandeur, it never allows one to focus on the human feelings and memories of the direct human experience of sailing; sailing as an activity; as an event. The associations which are generated by the three accompanying photographs are lacking in the singularity of the visual form of the opera house. These images speak of participation in an event, and you can share with them those human feelings and memories of the experience of unfolding the sail; pulling on the ropes, knee deep in the cold lake or sea; holding the rudder; manipulating the boom; laying
across the bow, watching the ripples created by the fingers you drag through the water; the spray against your face.

It is not until one gets back to this level of human experience, that it is possible to speak of "enabling form" versus "visual form." Enabling form has to do with allowing the potential for these very direct, very personal, very human kinds of associations. They can take on many forms, appeal to many different aspects of one's experience in the same rich, complex way that people are rich and complex. I have already cited a few examples which I consider enabling forms--creating environments which have for me a resonance of place: the animals of the playground at Expo 74; the experience of living in an Indian pueblo, and its associations with Safdie's Habitat and diCarlo's Collegio; the Oriental gardens and paintings; the relationships between the natural environment and man's interaction with it.

The following few images are highly diverse; they focus on many different aspects of association. Yet, for me, they share a sense of place; they talk about events and experiences that are human and can be shared. The first place is nothing more than a pile of rocks (fig. 29). It is a photograph of my father (lower right), three of his
brothers, and two of his cousins, taken in 1898. The rock pile sat alone in the middle of their large front yard, a couple of hundred yards from a river. The rocks are gone now, but even today the rock pile is vividly remembered as a special place for those in the photograph, some eighty years later.

The Greek islands are threaded with a network of dirt roads marking the way for donkeys, cattle, the citizens on foot; even an infrequent automobile. At various points along these paths one can find these small chapels (fig.30). The stone was there by the side of the road, and was embraced as an appropriate foundation for this small religious place. This "telephone booth to God," if you will permit a typically Western association, serves as the travelers' place for prayer. It brought many associations to the surface for me, both cultural and religious. But the directness and unself-consciousness of bringing those small places off the path right down to the size of a weary traveler, left me with a strong sense of place. It stood quietly by, filled with the potential for an event to occur. Whenever I had the good fortune to see a farmer, with his load at his side, kneeling at such a place, I felt wonderfully blessed.
INTRODUCTION

Where an expert in the particular art in question perceives immediately a "rightness and necessity" of forms, the unversed but sensitive spectator perceives only a peculiar air of "otherness," which has been variously described as " strangeness," "semblance," " illusion," " transparency," "autonomy," or self-sufficiency." This detachment from actuality, the " otherness" that gives even a bonafide product such like a building or a vase some aura of illusion, is a crucial factor, indicative of the very nature of art.

— SUZANNE LANGER

I have always been impressed at the lengths people will go, especially older people, to create a special place for themselves, especially when the architecture blithely ignores even the potential for such an event to happen (fig.31). This is a very special place for this woman, of which she is very proud. It speaks powerfully of her long and productive life as a wife and mother. It makes all those connections to the past and future that make our lives so rich, so full, so much a process of the vast assemblage of places, events, experiences which give meaning to our lives.

What it is that gives an image, and object, a place, a resonance for the perceiver is at once complex and hard to define. To the participant or spectator, it is "experienced," or "not experienced." It falls within Langer's field of terms which attempt to center on what that quality is. For the creator (in this case read "architect") it becomes all too often a matter of moral and/or self-righteousness certitude, a "rightness" and "necessity," as Langer suggests. Whatever the definition of these qualities may be, and whatever mantle an architect chooses to give form to whatever environment he or she is developing or adding
to, it must involve images of place—of man and his interaction with his environment—in order to succeed. I most certainly have begun to develop rules and techniques for the assembling of form, which will come out in the three chapters to follow. It will reflect itself in both the images I have chosen and the forms I have produced. Yet, above all, the images serve most importantly to keep one constantly in touch with the real qualities of experiencing the environment, capturing a sense of place. As I apply the more abstract tools of designing through drawing—organizing; searching for patterns; exploring ways of epitomizing the forces at work in any environment—the images keep me in touch with my purpose. Without the images, to recall Christopher Alexander's statement at the outset of this chapter, that which I would propose to create, independent of its internal logic or formal consistency, would be chaos.

I would like to conclude this chapter with a few connections between the recording of the experience of a place and the use of that information in assembling a place in another context. There is a very direct attempt to capture a quality of place, of bunches of places, which allows for the possibility of events to happen (fig. 32/33, fig. 34/35, fig. 36/37).
The drawings themselves reflect an intense interest in an assemblage of places, and the places are defined as events:

- fig. 34: flat rock
- flat rock below surface
- squeezed faster
- cross over
- hits rock at other side
- foam
- side trickle between rocks
- fig. 36: leap
- bounce
- eddy
- surge
- bubble
- boil

I find the images, the perception of the images, and the resulting places all share the same qualities; and the qualities are very direct. Two of the drawings are taken from Lawrence Halprin's *Notebooks* (figs. 32 and 36), the other from RSVP cycles (fig. 34). They were done preparatory to the two built projects, one in Seattle, Washington, the other in Portland, Oregon. The connections among all these images come as close as anything I know to the ways in which images can be used to explore existing places and conditions for the qualities which embrace human participation, which generate enabling associations.

Ultimately, in any designing one does, where one takes all which is outside oneself, and combines it with all which is inside oneself, I believe there is a distinct
pattern to achieving competence in the creation of any environment, large or small. Simply stated by an eighteenth-century German poet and philosopher, it is:

Thinking is more interesting than knowing, but less interesting than looking.  
— GOETHE

******
Assemblage, as the word implies, is the creation of art objects by putting things together — usually by taking them from their accustomed context and combining them in a new context.

— EDMUND BURKE FELDMAN

I have spoken of place: of house and city as bunches of places — both: of the in-between realm as man's home-realm.

— ALDO VAN EYCK

**Assemblages of Place**

- stone 1 - GUARDIAN STONE
- stone 2 - CLIFF STONE
- stone 3 - HILL STONE
- stone 4 - PEAK STONE
- stone 5 - WORSHIPPING STONE
- stone 6 - PERFECT VIEW STONE
- stone 7 - ISLAND STONE
- stone 8 - MOONSHADOW STONE
- stone 9 - EVENING SUN STONE
- stone 10 - TWO GODS STONE
- stone 11 - PEDESTAL STONE
- stone 12 - LABEL STONE

- tree A - PRINCIPAL (Central) TREE
- tree B - TREE OF THE EVENING SUN
- tree C - TREE OF SOLITUDE

- A - WATER BASIN
- B - STONE LANTERN
- C - WELL FRAME
- D - DISTANT LANTERN
- E - WELL DRAIN
Imagine yourself building a simple porch outside your room: a column to lean against; a gusset to strengthen its connection to the beam; decorated with fretwork, so that the light falls softly, without glare from the sky; a rail to lean on easily, so that you can walk out and lean and smell the summer air; and the yellow sunlight, lit by the yellow grass, warming the unpainted wooden planks... so finally you learn that you already know how to create this ageless species which is the physical embodiment, in buildings, of the quality without a name, because it is part of you....

— C. ALEXANDER

All that makes the woods, the rivers or the air has its place between walls which believe they close a room.

— JULES SUPERVIELLE

Chapter 1: **300 Cobbles and a Tree**

— placemaking with found materials

**PRINCE RESIDENCE:**
**DECK/TREEHOUSE**
34 Sherman ST.
Cambridge, MA
1976
This first project was generated from a wish for a large deck off the rear of a house in North Cambridge, Massachusetts, and was built during the summer of 1976. The owner wanted to extend the living area into the back yard outside the house, with access from the existing French doors opening out from the living room.

In the middle of the yard stands a magnificent tree whose trunk forks at the base, and the two resulting trunks spread apart as they rise upward. Its foliage spreads out in the summertime to provide a canopy for the entire yard. Being the focal point, the tree establishes the character of the yard, and the owner's two children, approximately nine and seven when the project was built, shared the ebullient fantasy of a tree house/playhouse they could call their own.

As the client, her children, my two co-designer/builders and I began to explore the wishes, expectations, and feelings about what the yard could become, the clients' projections were predominantly in terms of activities and events which...
could be embraced by the design: a deck, to sit outside in the sun and cool breezes; large enough for parties, for the children to play; to dance; to drink; to converse; to cook; a place to entertain, to read, to relax; places comfortable for one or two; accommodating many. A tree house to play; get up in the air, see the rest of the neighborhood; get close to the sun and the leaves as they played tag with each other and the wind. A gradual and gracious transition from the house, to the deck, to the ground and the rest of the yard—an apparent conflict between a deck off the ground, and which, at the same time, meets the ground.

The multivalent associations that one has with the place as it exists and the place one wants it to become are not in terms of an overall image, a logically consistent design. Rather, they are often illogical, conflicting, disparate. What does bring them together are the potential connections between all the associations of activities and places that one can feel or imagine.

Imagine...imagination...image. Each of the associations one has with a place is more often than not an image of a place remembered, an event which has occurred, situations which harbor the memory of feelings felt. Sometimes they are

— WILLIAM WORDSWORTH

The eye it cannot choose but see:
We cannot bid the ear be still:
Our bodies feel, where'er they be.
Against or with our will.

Nor less I deem that there are Powers
Which of themselves our minds impress:
That we can feed this mind of ours
In a wise passiveness.

Think you, 'mid all this mighty sum
Of things for ever speaking,
That nothing of itself will come.
But we must still be seeking?

Then ask not wherefore, here, alone.
Conversing as I may.
I sit upon this old grey stone
And dream my time away.
vividly clear, at other times vague and ill-defined, as if shrouded in a haze. Yet, whether they are crystalline or ghostly, they are no less real.

*****

Start with the tree....

the focal point of the yard; the desire to get up into it; the childlike pleasure of transforming a four-foot-high view of the world into a fifteen-foot-high vista, where one's vision commands a much larger percentage of the world around you. But there is more: the tree itself is a multievocative place. There are places for just one or two (fig. 3); there are places for many (fig. 4); a tree can be a quiet place to get away, relax, contemplate; it can act as a bleacher for a better view of an event.

Still, so much is dependent on the form of the tree: the availability of branches as steps, or places to sit; whether the tree generates branches close to the ground to accommodate the climbing of it. When these features are not available, one can start to be in a tree by getting close to it, by entering the zone of the tree. When it is too large and inaccessible to climb, by getting up into the realm of the tree, you can begin to feel a part of it (fig. 5). You
can reach out and caress the living roughness of the bark, have the leaves and branches of the tree within arm's reach.

As one generates images of what a place could be like, and begins to explore them, it becomes possible to learn from them what relationships exist which begin to give richness and quality to an experience, a place. The previous example, using the tree, represents only one--and a partial one at that--of a wide range of associations one begins to develop about a place. They are usually either stimulated by the context of the environment in which one is to design, such as the powerful presence of the tree, in this case; or from projective uses--whether they are in terms of a formal "program," or in terms of less concrete images, such as a "a warm place in the sun," "an outdoor room," etc. One's wishes may be very clear, as in the first case, or just a vague feeling, as in the second, but they share one thing in common--they are both equally real.

*******

In order to discover patterns which are alive, we must always start with observation... Now try to discover some property which is common to all the ones which feel good, and missing from all the ones that don't feel good.

— C. ALEXANDER
The drawing of PLAN 1 represents a more fully developed proposal than was finally built. Time and money being in short supply at the time of building dictated that we focus on the deck and treehouse. PLAN 1 includes a cobbled path running from the gate to a covered storage shed along the fence to the northwest. It runs parallel to a flowerbed/garden to the left, and the direction in which the beams begin adding up on the right. The shed was to provide a place for bicycles, wagons, garden equipment; whatever was related to the back yard outdoor activities. A smaller path moves under the right hand portion of the shed roof, and down a few steps along a terraced garden area. In the lower right hand corner of the site, along the house, is the suggestion of a path, a few trees. They culminate in a small, contemplative place, as yet unbuilt. This proposal will be mentioned later in this chapter.

PLAN 2 (p.42) includes the portion of the design actually built. The cobbles, one step up from the initial path, are retained by railroad ties. The path leads one right, past the smaller deck platform, and up a set of stairs to either deck. It also directs one left, past the tree and under the treehouse platform, to the upper portion of the yard. The yard eventually engages the deck in a series of steps, fanning out of the earth until they get within a step of the deck.

SECTION A:A is indicated on each plan. It gives for the most part an elevation view of the built environment, looking toward the house. These drawings are to be referred to as one explores the images that follow.
This is the first of three projects which were all attempts to create environments with the same character as the way I have come to believe we perceive and associate with our environment: they are all "assemblages of place," generated from the desire to capture in a direct way some of the qualities of the associations one brings to the environment. The larger place on each page (2/3) will generally hold images or drawings of the place which was created. The smaller place on each page (1/3) will generally hold images of places which exist elsewhere; there are a few which exist only in paintings and drawings. But in either case, they are images which hold associations of feelings, forms, relationships which were trying to be captured in the newly assembled environment.

I have included scaled drawings at the beginning and at various points within each chapter. They are meant to be primarily orientive - acting as a reference to the organization; indicating the relationships among the parts; supplying dimensional information. The focus of the thesis is on the images which follow. The drawings are meant to be an aid in locating the images, as well as supplying the larger context of the place.
As drawings, they are by definition an abstract representation of the place. It is with the hope that it is possible to be direct in transferring the qualities of places one likes, places that made one feel close to and engaged within one's environment, that I feel the images can stand alone, telling their story. It is with the hope that the images, with a few accompanying words, can be seen as the core to a design process.

Lest I be misunderstood, I will repeat that no design process can be without rules; without an understanding of a basic vocabulary of form; without the skills to abstract, organize, epitomize; without the ability to develop and refine graphic conventions to represent as well as possible what it is that one is designing. Yet, at its core, this thesis is generated from the belief that enabling environments come less from a logically consistent design syntax, which forces decisions to be made for the sake of that syntax, and more from exploring and learning from the multivalent and often illogical associations one brings to any environment — the collage of associations which combine to generate a "resonance of place."

********

SECTION A:A (looking northeast)
laying the foundations

300 granite cobbles scattered on the site;
Like New England farmers clearing the fields...
...stones to be collected consolidated assembled:

Foundations growing out of the earth
craggy and rough.
Marking the points of passing between...

Breaking away top and bottom
to capture space...

Centering at the entrance to the house in one direction,
the gradual opening out to the yard in the other...
to take the pounding of many feet

The detail of a connection remembered... modified manufactured
out of steel discovered in the cellar.
Like the cobbles: materials found on the site.
PLAN (indicating parallel field of beams)

The Beams set a rhythm allowing movement with their direction in out down up.

Define a place to enter:
- from the path below
- from the yard above
Move past the house on the south allowing you gently down to the ground.

The Beams run past post to post, connecting the points where the foundations grow out.
At the end of the deck where the wall holds you in, the foundation runs along the beam, engaging it when it is in need of support.
Where did this come from this place... this bunch of places?

IMAGES... of how it might be... remembered recalled.

The drawings represent the design, help mold and define...

the IMAGES generate it:

the wish
the hope

that it could be like this.

People above
people below
sheltered by the branches and leaves a net catching the sun - up where you are

the guest of the tree.
No crooks to sit in
No branches to hold.
Can you be
in a tree
Without being on it?

A place to sit
in the sun
in reverie...
An old school chair
bolted to a plank
memories of spring days
in the classroom... wishing
you could be magically out...
Here you are, in the same chair
Quietly sunning in a tree:
Connections to the past
... a longing memory come true.

The tree separates
to embrace a place...
which passes through.
Becoming part of the tree,
it stays just a little bit away...
Respecting its life.
Once being up
there is also a place below
The floor a roof underneath.
An IMAGE: the memory of an
inhabited tree... a
wonderful place;
the natural openings
Man associates a window and a door
... adds a roof.
The natural forms suggest...
Man responds...
... in reciprocal harmony.

A tree exists,
soaring up as man builds...
Adding his forms, which grow upward.
Once a single tree...
... it starts becoming a forest;
Man and nature combine.
Again, the tree marks a place. Man adds definition... a table a chair sitting under sitting among
From the tree soaring up... back to the ground underfoot:
The stones direct the path pushing up to support the posts.
A large stone laboriously moved marks a place;
a transition... a change in direction:
a step up.

The earth grows to meet the framework built.
The frame grows out to meet the ground.
The stones become a surface directing the way...
A new material introduced to mark a step up
An assemblage of materials
A collage of surface... fanning out as they are laid... each different in the manner assembled they share a feeling an attitude of care in their placement.
From the surface of the ground the stones begin to grow...
Steps merge into walls giving direction as one moves along them.
Outdoors, the plants mingle with the stones.
The planters are there to be found... have not yet begun to grow.
A memory of cast iron harboring a fire...
massive
strong
safe.

Sometimes stamped studded
a rich surface,
the parts themselves advertising...
their maker
their function
their fantasy as
The Perfect Furnace.

You scavenge for a cover like those you remember:
Industrially strong
to go along
with the granite masonry.

You find discarded forlorn
a once noble door,
sold for a pittance as salvage.

Dust it off
Lay it in place
its scars
speak
of a long life
as it celebrates
its new home.
The joy of found materials gives a richness otherwise prohibitive or unattainable...

ASSEMBLAGES OF PLACE

A slab of slate: two inches thick by four feet by two scavenged at an earlier time, finds a home.

A plank of laminated oak: 2"x2" stock five feet long bolted together, adding up to a two foot width reclaimed from the neighborhood trash. We beat the hauler to give it a home.

A place to cook a surface on which to prepare. A low wall becomes active with use. One surface up one surface down low next to the fire to cook high, separated from the fire, on which to serve. UP for the big, down for the small.

pot plants work bench play sit putter

... the places are there to accommodate.
... an event is not merely an assemblage of numerous relations between many different things thrown together into a disorderly heap. On the contrary, the various feelings of one thing for others are organized into something with a specific and individual character.

— ALFRED NORTH WHITEHEAD

As one moves up along the brick to the deck
the tree draws one up into the treehouse

Above
a place to sit alone or with another
One can look down down on the fireplace, or back
and follow the parallel beams and rails along the post down to the ground... and out.
The celebration of a stair

Three simple steps move gently up onto the deck, or down around the corner.

Simple yet complex as elements interlock in reciprocal relation to generate a direction... a succession of events...
You approach...
one side is low
coming out to draw you in...
The other higher
solid
a sturdy handhold.
The masonry breaks apart
as a delicate wood framework
directs the way...
each step a transition.

Approaching
things move all about...
one side high
one side low
plants move alongside you
masonry, in many layers ahead
suggesting things to come.

Engaging
three gentle steps.

SECTION A:A (looking southwest)

SECTION B:B (looking northwest)
Moving gradually up from the earth to the paved earth, slightly raised. From these stones to a larger stone a step up. Finally, the deck which moves along past the stone...

As you step up, the platform sweeps you along.

I have mentioned elements... which should be visible in the work. This must not be taken to mean that a work should consist solely of elements. The elements should produce forms, but without losing their own identity.

— Paul Klee
As you are on the built deck, a bit of masonry breaks away and moves around the corner... a direction out. At the same time, it builds up... intensifies the corner, holds the deck back. As the masonry breaks away to allow you to pass through, the beam generates a direction out. The end of one event: The spacious deck retained.

The beginning of another: A stair, a secluded narrow path to a contemplative place at the end. This place... yet unbuilt... its potential still suggested by the stairway out.
If you like the family of gardens which your garden language generates, then the language is fine, but if the language does not conjure up an image of a marvelous place, then there is something wrong with it; and what is wrong can't possibly be corrected later when you get to the process of design. At that state, it is much too late.

— C. ALEXANDER

Chapter 2: A Secluded Outdoor Place in the City
— digging a hole and filling it up

Patio of Garden Apartment
507 Constitution Ave.
Washington, D.C.
1977
You are given a site. You are given a job to design/build, or as in this case, to renovate the basement apartment of a townhouse in Washington, D.C. In the front, the houses are bunched together, one to another in eighteen- to twenty-foot intervals, separated only by the different color of each facade. The rear borders an alley, and there are concrete pads behind each house for parking. Some have already fenced in their turf for small patios (fig. 1). The basement apartment wants to become a nice place, but as one looks out the rear window, one is greeted with the glistening chrome of front bumpers at eye level.

You have an image...a bunch of images. You close your eyes and see a garden apartment; the rear opens up to a wonderful patio. The warmth of the sun on the bricks and the sweetness of the plants greet you as you move outside the apartment; a bit of quiet outdoor privacy in the city. You start by digging a hole (fig. 2). Now to fill it up with an environment like the one that beams so brightly in your mind.

*******
It is with a mind full of such images that one begins to design. A few sketches are generated to explore these images; to try to represent in some physical way the fleeting, mirage-like images of the mind. As these sketches develop, they become their own reality. Soon, one is in a world of organizing; exploring patterns of access and circulation; responding to the climate, the sun; working with dimensional standards; buffeted about by zoning ordinances and building codes; trying to satisfy a thousand masters at once. There is so much to keep in mind, so many design constituents who are calling out for attention.

Somehow, it seems as if those marvelous images of a place, which first held your thrall, get pushed aside. The drawings one is working on, in which one can explore all the constraints and choreograph a viable solution, become the thing itself. As one is working on them, it is too easily forgotten that these drawings are merely a symbol system, a language used to represent the thing itself.

The drawings on these two pages are just that. They appear somewhere between the image and the thing itself. They have the power to allow the thing to be built, by yourself, or by someone else. But the only real test as to whether the drawings say what you want them to say, or represent what you think they represent, is to build it, or have it built. The former is always the most instructional in understanding what it is you are representing; the latter is most instructional to understanding how it is that you are communicating.
For my purposes, the drawings on these pages represent a way for the reader to orient him or herself to the images which follow. They supply many of the clues and specific dimensional information about how the place was built. Yet, the focus of this thesis is not how I have chosen to graphically represent the qualities I was after. That is another long and potentially fruitful thesis in itself.

The focus here is on the way in which the images I held of a place were made manifest in the place itself, in spite of, and in addition to the existence of the drawings from which the place was built.

The plan, on the opposite page, is cut about three feet off the patio floor, except for the southwest corner, which has been cut two feet above the original ground level to show the entrance from the alley, and the garbage storage container. The sections are as marked on the plan. The entire lot area is little more than six hundred square feet, yet there was the constant hope that it could accommodate many of the places and qualities that were images in my mind as I began to think about what the place could become.

So the building process begins. The hole has been dug; the footings are trenched out; the concrete is poured. Suddenly one's world is filled with dirt, water, formwork, rubber boots. The wet concrete churns out of the truck, sloshing and bubbling as it gets pushed around. It starts to fill up the hole; it is hard to imagine some-
thing so fluid and wet becoming so hard and permanent. What does all of this have to do with the images? Decisions are made which now become much more difficult to change. The workmen follow the plans, often wondering why, or not caring. The images do not exist for them; only the drawings from which they work. Slowly, the images which suggested the reality, and the drawings which represented the reality, seem lost to the emerging reality of the dirt, the mud which is beginning to harden, the bricks which are waiting to be assembled. One hopes that they are all part of the same thing. Slowly, painstakingly, the reality begins to take form. A few cinder blocks, a brick facing start to grow out of the earth.

Places begin to take shape. One can finally begin to evaluate them in their own terms: too big? too small? too high? too low? One begins to reflect, reconsider, cycle back through the entire process to check whether the reality corresponds to the representative images in the drawings. One checks whether, in fact, it has anything to do with the collage of mental imagery that made it such a nice place in the back rooms of the mind.

The process goes on. One tries to keep track of this detail, of that detail, constantly checking to determine whether there were details in the images that never found their way into the drawings. One begins to learn about what has to be accounted for; begins to strengthen the connections among the images, the design, the reality, constantly learning what it means to design.
The place begins to take on a form. It becomes possible to observe the result, and to test those observations against the image. As it becomes real, as the feelings one has for a place begin to take form, there is an uncanny excitement, tempered with fear: "Will it be like I imagined it to be?" one asks.

Without the stimulus of images, it is merely what it is: sitting there, solid and dead. Only by associating with it through the images, feelings, and expectations of what it can become, does it begin to come alive. Only then does it allow people to participate in it, to associate with it, to work with it to generate the events which are its potential.

The pages which follow represent an attempt to describe a design process as a collage of "images of place." They hopefully hold within them the qualities and relationships that were imagined and hoped for in the resulting place. The images define how the process began. There are connections suggested between them and the newly-assembled environment. The hope is that they establish the potential which this environment can hold for the associations of others, and allow for events to happen within it.
Finally, it becomes a reality.
But through the long process; the design, the construction, the arduous process of making it real, Has one forgotten where it began?

An image of a place... images of bunches of places... of events that might happen activities to embrace...
Comfort in the sun to talk
drink
cook
eat
relax
Some plants to nurture places to be... to accommodate the experiences and feelings of life.

You have an IMAGE:
an outdoor place
a secluded place
a bit of privacy in the city without having to be locked inside.

To lie in the sun...
The lush of the plants
A bit of fragrance in the air... A gentle breeze...
... to relieve for a moment the noise congestion heat asphalt of the city you are in.
To move along a railing looking down to a place through the leaves the plants a place to sit
Lost in the activities the place might allow.

The image has the potential to suggest the real:
- a place
- the feelings
- the experiences that are desired can be projected.

Does the real, newly assembled place feeling experience hold the key to suggest the image? Can it harbor the same associations or have those associations been lost in the planning designing building those things that come between the image and the place.
You open a window
install a door
Imagine...
looking out
getting out
to a place
where the sun filters down...

A bench
the bricks
the breeze
welcome you out.
A small place
to relieve
the entrapment of
an apartment in the city.

The first place I think of, when I try to
tell someone about this quality, is a
corner of an English country garden,
where a peach tree grows against a
wall. The wall runs east to west; the
peach tree grows flat against its
southern side. The sun shines on the
tree and as it warms the bricks behind
the tree, the warm bricks themselves
warm the peaches on this tree. It has a
slightly dozy quality. This tree, care-
fully tied to grow flat against the wall,
warning its bricks; the peaches grow-
ing in the sun; the wild grass growing
around the roots of the tree, is the angle
where the earth and roots and wall all
meet. The quality this peach tree has is
the most fundamental quality there is in
anything.

— C. ALEXANDER
You imagine a low wall of brick with bushes bursting out climbing over their tendrils grasping for a hold on the brick's rough surface. You remember places... where you felt the warmth of the brick from the sun the moist dew cool on the foliage damp refreshing against the languorousness of the sun-baked brick
A cool place under cover to look out through a forest of masonry... A built landscape offering glimpses of places beyond. The sun plays tag with the shade among the forms and the places they define.

What I want is to design events which occur... which have no necessary or recognizable form but which guarantee qualities of experience. That's why I am fascinated by [as who isn't] old streets — colorful people crowding them — non-aligned architecture and a sense of growth. Against that, I am bored stiff with architecture which has form no matter how beautiful because form is evanescent and intellectual and transient whereas experience in depth of perception is constant.

— L. HALPRIN
The memory of masonry adding up to create a landscape stairs to climb, the man-made walls, openings arches ...spanning to support the weight of the mass above. ...creating openings caves and grottos in the rock.
Stairs ascend through a gap in the rock. A low wall marks a place just off the path to stand and sit. Momentary rest to look back from where you came. A post marks a place around which to turn to continue and move along your way. The stair moves up... around... on its way to a place. The space underneath is carved out to be used: another entrance, for storage... A richness of movement and use. The potential for life.
A few simple steps allow one to climb emerge from the earth whether carved or built up. The same family of form and material grows out from the walls to accommodate the ascent.
A series of transitions:

- the stairs move up toward a break in the wall
- a small landing
- a place to get off the path
- a low wall to lean against to sit
  or to move past through a door.
As one moves up past a post and around one moves with a wall, more steps to a landing from which to pause and look back from where one has come.

connections between moving up and being down
A set of stairs
   a path along a rail
   a place of movement
A sense of where one is going and from where one has come.

A place to be:
   a balcony
   to watch
   a view.

The earth provides a surface from which the steps grow out of the ground. Moving up to a more precipitous place in need of a protective rail of filigree of iron or wood to protect but remain open to the light air dancing among its more delicate elements.
A collage of places interlocked lead your eyes upward. Stopping, for a moment to acknowledge each place as special, yet part of an assemblage of elements leading you continuously up.

And higher, a fire stair soars upward... a framework delicate, yet strong defines and controls a world more air than ground.

You look up ahead a field of elements speak of place. The earth projects out to form a place. The rail speaks of movement along... But also, a place to stand to look to lean down.

The brick earth builds up from the ground becoming less massive lighter as it moves upward. The brick, growing up from the patio floor, defines the lower environment as it climbs, it shares with the ironwork filigree a place both up and down.
You build out of earth in increments... an assemblage of units added one on another. Each brick is a decision... placed uniquely in position... can respond to more than itself as it combines with others, making decisions greater than one, yet less than the whole.
A band of brick projects from the wall generating direction... a force... the line of the floor it moves you along... steps up wraps around... to respond to a change in the ground. 
As a planter grows up... Makes a place for a light... Responds to the force of a column... ...pressing down from above.

Ornament? Relief... ... animates the wall... defining the parts... The surface is more than a plane A brick's dimensions are three... to be used to advantage.
the form of an experience

But what are the forms of such transient affairs as light, wind, air, joy, sharing, relaxation. You generate the forms. 

You hope for people and places to share reciprocal life; each enhancing the other in many different ways at many different times. A framework, a set, a staging for life. As Shakespeare suggests... we are all merely players. Does the environment supply the appropriate, enabling props?
There is little justification in the logic in geometry of forms unless in addition to... in spite of... the forms.

People can embrace and find harmony with the spontaneity and illogic of their needs, wishes, desires... the joys of their lives.

An image of events participation of life forms a collage of experiences:

A fire in consonance with the sounds of a horn, tambourine, violin, cello.

A dying day closes comfortably over a collage of peoplesightssounds of a place.
Architecture has rarely produced complex events, because its commitment to order never allowed it to perceive the logic of disorder. Even when it seriously tried to deal with people, it was only to convert them to order. Unlike order, disorder cannot be designed. Those who have tried to do so, have designed a disordered order; that is, another kind of order. In fact, the real point is not that of mimicking the surface aspects of disorder but creating the conditions allowing for a free expression of disorder.

— GIANCARLO DI CARLO
Below pockets of people fill up the space.
The wall forms a c place corner off the path to sit eat and drink.
A post
A wall to lean against as one relaxes eats and talks.
The planter (behind) a seat when no chairs remain.
A fence interlocks with the brick affording privacy to a place. Yet, the breeze can slip through... The fence directs and channels the wind to cool the hot days. Gives a glimpse in or out while being predominantly enclosed.
You design...
...perhaps you build
abstract
organize
arrange
structure
support
materials
forms
dimensions
relationships
for themselves?
Or for what?
...All tools of the trade,
but
the images
as tools
are as important as all...
They generate a feeling
Test a form
Give a way to explore relationships
among people and places.
For places generate feelings assembled in many ways.
Relationships of physical form with physical bodies of movement and rest.
Any moment from the complex interaction in space over time signals a place.
Chapter 3: Disassembling the Object
— events along the way

The essential purpose of design is to create the possibilities for events to happen.
— LAWRENCE HALPRIN

This building feels — and it is a good feeling — that I had nothing to do with it, that some other hand did it.
— LOUIS KAHN

THE EISENBERG HOUSE
Pepperell, Ma.
1978
This house does feel like I had nothing to do with it. And it is a good feeling. When I came upon these words by Louis Kahn, quoted on the preceding page, they resonated in me with an overwhelming sensation. Although I worked on it very intensely before and during its construction and was involved in many of the decisions which determined its structure and its form, my first visit to it after the owners had moved in was very exciting. As I shall describe later, most of my contributions to the house were generated by Halprin’s motto (see p. 89); I tried very hard to "create possibilities for events to happen."

When I first walked in, after it had been fully inhabited, the owners had embraced these places; the places had become their own. They had personalized them with a warmth and a richness beyond my own imaginations. They had transformed the house into another place; it had become magically theirs. I could recall the associations I had had with it as it took form; but now I could marvel at the associations they have brought to it.

*******
This house was built by and for Jason and Cary Eisenberg in Pepperell, Massachusetts, in the summer of 1978. My introduction to the project came just prior to the start of construction, and my role was initially conceived in terms of guiding and contributing to the actual construction of the house.

With little building experience, but with indefatigable energy, the Eisenbergs were prepared to act out their fantasy of building their own house. When I first met them, I found their enthusiasm to be infectious, and knew I would thoroughly enjoy working with them.

When I was first presented with their preliminary plans for the house, my enthusiasm suffered a momentary setback. The initial plans were generated by the wish for a southern orientation to accommodate the maximum solar insolation; to take advantage of the most dramatic outlook; and a desire for any airy and spacious living area at the higher elevation, to take advantage of this view. Yet, these intentions seemed remarkably singular. There was an unavoidable tyranny to the object-like character of the house; it could be epitomized without abstraction as a square concrete box with one shed roof. I found it impossible to associate with it in

The original north facade, as shown in the drawing, was a blank concrete wall, with a single door through which to enter. The roof came severely thundering down at you as you approached the entrance. It had a surreal sense of mystery about what might be inside, but it was neither welcoming nor engaging. The photograph again indicates the changes that were made.
terms of a living environment. It was impossible to project places in it which could begin to accommodate the wide range of moods, feelings, activities and interests, which make up people's lives. It was particularly difficult to do so after meeting the Eisenbergs, who projected an infinite range of interests, enthusiasms, and activities.

As we began to discuss the house, I expressed some of my trepidations, and found it necessary to let them know a little bit about myself, and my attitudes about architecture. This led to a number of wide open, freely associative discussions, which confirmed my initial sense of the richness and disarming complexity of their lives in terms of their perceptions, activities, thoughts, and interests. As I tried to relate these things back to the environment they were generating to harbor them, I felt that many of their anxieties about journeying into the uncharted waters ahead of them, regarding both money and experience, had much to do with the house they had developed. As we began to talk about the house and the methods for its construction, many of their anxieties seemed to lessen. They began to open up to the possibilities of all the places the house might hold, and it became much easier to share some of those fantasies. We
began to explore a whole range of issues, and as we came to share our attitudes and feelings about both the necessary and desirable places the house might embrace, the house began to change to accommodate them.

There were a number of external conditions which bear mentioning, for they had the greatest influence on the final result: First, was the issue of money. The original house had been costed out to a figure which the Eisenbergs were able to afford. In terms of square footage, they had given themselves the maximum their budget would allow, which included absorbing much of the labor cost themselves. Given the financial constraints, they were unwilling to make changes or additions involving unanticipated sums of money. Second, was the issue of time. I became involved in the project approximately three weeks before breaking ground. Many important decisions had already been made and there was an urgency for completion within four and five months, with the vast majority of the work to be done in three. Third, was the issue of authority. Although the Eisenbergs welcomed any knowledge and experience I could provide, and embraced many of my thoughts and attitudes about design, I felt a strong responsibility, both to the Eisenbergs and to the
house, that it become the house that they built. There was neither time, money, nor desire for me to become their "architect." I felt compelled to accept their basic organization and form, and to consult with and assist them in making it as rich and as accommodating as possible. Although I had some reservations, I did not find this to be a problem. It merely established the context. Had I been involved earlier, the context would have been the site, the clients' attitude about it, and their same wishes and desires for what the house was to become at an earlier, less well-formed state of development. The resulting form may have been very different, but many of the qualities would have been the same.

*******
With the preceding preparatory notes out of the way, I would like to get on with the discussion of visual associations, and the search for a "resonance of place." The images of the house so far have merely reflected the influence of the place making process on the facades of the house. I have included the plans and sections here, both to familiarize you with the environment, and to indicate the influence of placemaking superimposed on the original plans.

On the left are plans and a section of the house as it was first presented to me. On the opposite page are the plans and a section of the house as it was built. As I familiarized myself with the house, and the Eisenbergs, I began to generate images of places in it which started to have an identity as places: where I could imagine being alone, or with others; quiet or boisterous; warm and enclosed, or windblown and horizon-gazing. I would share these images with the Eisenbergs, trying to discover a resonance of feeling in them; I would try to listen attentively as they explored their memories of places which they felt strongly about. Too often these images were shared verbally; it is difficult to have all the images your mind associates with at your fingertips. But I tried to find images, share the images themselves, rather than verbal descriptions of them. Often a nod or a grunt in response to an image will tell more than any number of words could accomplish.
It is always a struggle to be as direct as possible with the images of places one likes; that contain at least a partial set of conditions which are shared by the environment one is trying to develop. Things always have to endure multiple changes in order to become appropriate to a new context; they are abstracted, disassembled, rearranged; parts are discarded, other conditions are added.

As some of these images were transferred to the drawings you see on the right, dimensions, adjacencies, structure, materials, mechanics, all had to be worked out, and each of these processes has its own logic, its own order.

But ultimately, one must determine the objective. Is it to abstract and analyze and manipulate the images into a logical principle, where the connections to the initial image is only arrived at upon exploring the thought processes of the designer? Or is it to transfer the "quality of place," to evoke in this new place the same feelings, the same sensibilities which were originally stimulated by the image you recall from your memory, or discover elsewhere?

I have tried as much as possible to be true to the latter conviction. There is much information to be found in these drawings, and they too have to be evaluated on their own terms. Yet, I consider them a tool — with which one must become thoroughly familiar and proficient, but nonetheless a tool — with which to transfer a rich and often ambiguous set of thoughts and feelings from the imagination, from other places which exist, from wherever one finds them, to the place you are helping to create.
The drawing to the right is a composite plan representing how I tried to organize my contribution to the house. My first response to the object-like character of the house was an attempt to soften and interlock in some reciprocal way the continuity of transitions from approaching the house, entering it, gaining one's bearings once inside, ascending the stairs, moving through the house, and finally having the opportunity to be once again outside the house, both higher up and on the other side. It was conceived as a meandering path which had many places just off it, or included as part of it, along the way. It was intended to be a humanizing, more intimately engaging counterpoint to the severity I found in the hard-edged form of the house.

It was literally trying to be an "assemblage of places," which had some reference back to this path. Each "place" was intended to have an identity of its own, while not being exclusive of the other places along the way. I hope that the character of this assemblage can be drawn from the image associations which follow.

******
As one approaches the house from the northwest, it became important for the house to move out as a welcoming gesture to whomever might arrive. The building steps out and turns to accept the visitors. The beam spans to form a gateway of arrival, while remaining parallel to the supporting structure for the roof joists.

The images speak of a break in the hard, continuous wall, a shift along the fault line to allow passage. The roof spans to shelter the gap; the infill takes up the difference.
A bit of masonry breaks away; perhaps not enough... comes up to meet the post, defines the gateway. The post is an event, two become one as the table they once supported is to be found within its memory. The glazing allows a glimpse within. The planes of the sheltering roof separate in concert with the rock.
The gate marks a transition, but

the path moves on up
in

A glimpse of a post — another — the same.
engaging the house: 
a place between out and in

From more out than in to more in than out...
Overhead
a glimpse of the light just left,
to be found again.
Another gate...the formal gate?
Ionic/Palladian...an order at rest
...a direction in motion.
The door is more than a door:
A PLACE which extends to include a zone.
When the frequent guest is the sun, it can penetrate the door and more; a transom extends the zone of the door to include another, a small door: allows more sun or other small guests: milk mail words without exploding the privacies.

When the most frequent guest is the cold, still, a bit of glass will do to glimpse: determine whether greater access should be allowed.
the memory of a transom expands the zone of the door.
A post is framed...on display...provoking the memory of places outside the door.

The switchplate: a gift...hand-tooled leather from one who shares in the celebration of place; no matter how small, no matter how common.

...Give sense to the vulgar
Give mysteriousness to the common
Give the dignity of the unknown to the obvious
And a trace of infinity to the temporal.

NOVALIS
To the Left is a place: a step up to the warmth of the oak under the feet. Off the Cold Earthen Ground.

The flagstone continues inside a place to shed one's wraps boots shoes if one still hasn't done so.

The stair ascends with the earth by your side; the sun draws you up to the spacious Above while dancing on the glass which holds secrets Below.
A modest, small place; not as rich as the Greek. But the will to suggest the same richness of Place . . .

- a balcony
- a door
- climbing over . . .
- going under
- being down
- being up
The rocks move up with you as you begin your ascent, separating motion...
...and rest, yet keeping one accessible to the other.

There are places up... ahead
places to the side.
The landscape moves as you move not to be left in your wake...
One may want to find the stone floor in the stairs, for that surface to move up; but the stairs have their own story... the memory of an old post office whose floors they once connected. Still, the floor comes along by your side atop the masonry, providing surfaces to use... today's mail the groceries... plants pots artifacts on display.

Working with the suggestions of the landscape, it is possible to organize a range of interlocking experiences, each with a distinct sense of place, yet not isolated from the others.
This area was, from the beginning, conceived as a study, a family room, a place to relax, to talk, to read. It was to include the wood stove, a few comfortable chairs, the desk, the filing cabinet... both open to the rest of the house, but separate from it.
A place... a step up from the entry to distinguish it

A low ceiling, under the projecting balcony to capture and hold the space of the room...

books
dogs
wood
warmth
warmth
winter evenings
popcorn over the fire
hot tea on the stove
letters to friends...
...pay the bills
play some music...
chat...
...type

stocking feet
slippers
crossword puzzles
dictionary
thesaurus
almanac
newspapers

drifting to sleep...
...lullabied by the soft crackling of dying embers...

... look at certain walls stained with damp or at stones of uneven color. If you have to invent some setting you will be able to see in these the likeness of divine landscapes, adorned with mountains, ruins, rocks, woods, great plains, hills and valleys in great variety; and then again you will see there battles and strange figures in violent action, expressions of faces and clothes and infinite variety of things which you will be able to reduce to their complete and proper forms. In such walls the same thing happens as in the sound of bells, in whose strokes you may find every named word which you can imagine.

— LEONARDO DA VINCI
a warm, cozy place

An enclosing nook to read...
- a bench
- some pillows
- a pail for clinkers.

Feet in wool socks up against the fire...
The economy of a wood stove:
Defiant...of the expensive fireplace.
Yet still a fireplace...
...the bricks
a hearth.
450 brick — scavenge unused sites, empty lots,
the slate hearth is free...old shingles, yet.

Inexpensive? yes...
but REAL
Luxury comes from the sense of place —
the richness
the warmth
not the money...
...the place.
...stairs, even when of a minimum size, can be made to dramatize the very practicality of their use and conception. A narrow low hall without windows and lined with closets, can carry with it the conviction that efficiency, lack of pretension, and lack of fuss are admirable qualities... A great wide and beautiful curved staircase is not only valuable for itself but evokes a sense of luxury, scale, importance, and ease. Stairs lend themselves to dramatic effects better than any other element of houses. They can create interpenetrations of space, balconies, long sinuous lines, and great heights, against which people look and feel more significant.

— Philip Thiel
The large house - little city statement [the one that says: a house is a tiny city, a city is a huge house] is ambiguous, and consciously so. In fact its ambiguity is of a kind I should like to see transposed to architecture. It points, moreover, towards a particular kind of clarity neither house nor city can do without; a kind which never quite relinquishes its full meaning.

— ALDO VAN EYCK

Moving up against something solid protective fixed to the ground.

At the same time, something open ... latticework delicate light ... glimpses into a place.

A forest of many kinds of trees: the larger, standing alone where the rhythms of the unfolding housescape deposited the seeds for their growth. The smaller, growing together, generating a screen fingers combing the air of the space passing through.

To be in a place — catching a glimpse of STAIRS tying together your place with others.

The use of the house will depend on the space in the walls that is void.

— LAO TSE
Towards the top of the stairs... a window... no, a screen: a filigree of lead from another place another time.

Passing under a beam past... A gateway to arriving... a condition recalled: a transition in kind.

The bannister rails, too, from another place another time... a building forgotten... its qualities reused.

If you really want to make an ENTRANCE TRANSITION there, at the top of the stair, you must close your eyes, and ask yourself: what would it be like, if this was the most wonderful entrance transition in the world? Imagine, I close my eyes. I see a place from which there is a sudden view, which you can’t see from the bottom of the stair. I see a place which is filled with the scent of jasmine in the summer. I hear my step as I reach this place up on top: it changes, because, perhaps there is a creaking board. So now I begin to imagine a stair which is almost closed in, by wooden fretwork, the top places with an opening which looks out on the sea: a trellis overhead with jasmine climbing on it. A seat across from the door, where I can sit, to smell the breeze. The stair made loosely, so that the boards creak as I begin to climb the stair.

— C. ALEXANDER

A stair, very narrow, enclosed... a different experience. But the glimpse of places travelled, of one’s yet to come.

It’s not so enclosed as spaces c r e e p in front back and over the beams.
Again, many places,
openings to all sides...
sensing where one came from...
...the events along the way.

Among one's possessions
a photograph...
packed away
forgotten
in the shuffle.
A bit of a stair rail
a newel post
wainscoating
descending
A perfect place for it.

No special place was made for it...
...the place was just there.
To know where one has been, to sense where one can go... a connection implied yet open to other discoveries along the way.

...andacht zum kleinen...

[devotion to small things]

— PAUL KLEE
I hold space to be something purely relative, as time is.
— LEIBNITZ

Interpenetrations of space can be identified by place: "here" and "there." You cannot point to the boundary between them. But, the difference between "here" and "there" is as real as it is powerful.

At the same time as light illuminates the forms, it defines the character of the space.
and

THERE

can be

separated

by a line

as a fraction:

\[
\frac{1}{2} \quad \frac{2}{3} \quad \frac{3}{4}
\]

Depending on whether one
stands back
to see it as \( \frac{1}{2} \),
or engages the 1 alone,
or the 2,
each is as different from the other as
each is different from the \( \frac{1}{2} \).
Through the gateway, which marks an arrival, the path expands to a space of some grandeur. The sheltering roof, which has been moving ever upward since one approached the house, is no longer subsidiary to the smaller events along the way. It finally takes over, and soars heavenward.
SPACE —

the meadow
the field
open
sunny
large

relative to
the forest travelled
to arrive here.

Small
relative to
the vistas beyond
the house.

The sun
streams through
the plants
as one sits among
them.

Too large,
too simple,
I once thought:
"Ah, for a tile floor,
smaller panes
of glass,
even wicker chairs..."

I hoped.
Yet, without them,
some of the quality
of place comes through.
Just as the forests, harboring the house to the north west east open up to a vast clearing to the south, so does the path through the house wander through forests of small places and many trees to the north west east opening in a vast clearing to the south:
One can almost see the road...
The piano, once grand... on the balcony above, now tucked into a niche, more modest, sedate.
Yet, the sound opens up, it fills the grand space, a pleasure to hear.
And there, past the doilies and lace (yes, grandmother’s house is still bigger than life in my five-year old memories: it is enriching to have her still here), in the corner of the large space, another gate, another transition.
The morning sun streams in overhead, I pass under the beam and out... The house, here large, protecting, holds me; my eyes, my mind take me out... into the vast world to the road, the town, & the cities beyond.
When you have all the answers about a building before you start building it, your answers are not true. The building gives you answers as it grows and becomes itself.

— LOUIS KAHN

a) establishing an identity: the signature of the house

b) a glimpse through the entrance to the second post of the sequence
c) the formal set of posts defining the gateway to the inside

d) the newel post marks the ascent; a glimpse of a support post in the upper right

e) the familiar post supporting the balcony beam; the carved post atop the brick supporting the dormer

f) from newel post to newel post, the stair rails run up; the two beam support posts and the flue set up a counterpoint on the opposite side

g) the newel post marks the head of the stairs; the recycled newel post supports the gateway beam overhead

h) the post and beam which capture space at the other end of the sequence; they support the house as it breaks away from the square; the beginnings of a framework to support the deck
One of the most exciting discoveries for me in returning to the house after it had been inhabited, were these "bits of Baroque": details of virtual inhabitation of places that were made. As in the Baroque, statues claim parts of the structure which are their size. Cary uses this shelf partially to display her soft sculpture; you never feel alone in the large room she watches over. Pepe, the Mexican marionette, makes a home for himself, where he monitors the activity in both the kitchen, through the window, and the living/dining area.
The column capitals
the pediment
the scrolls...
Architectural orders?
ornament?
...historical trivia?
Yes...
No...foremost, they are
places to inhabit
with...
putti
princes
angels
and more...

...the joint
...the connection
are places
the beginning...
...the end
...passing...
of elements...touching
or not
the corner of a cabinet
offers a place to sit;
towels
on a rod
embraced in mid-air....
the connection
made human
in jest....
...with zest.
Such eager delight.

The beginning of ornament. And that must be distinguished from decoration which is simply applied. Ornament is the adoration of the joint.

— LOUIS KAHN
These next few pages are really an appendix to this chapter. They provide a glimpse into the other rooms in the house. They have changed only slightly from the original; there was a wish to have them both much more private from the openness of the rest of the house.

Cary, who had ultimate control over the kitchen, ERA notwithstanding, had fond and vivid memories of her mother's kitchen. The desire to approximate that kitchen was the driving image behind its organization. As I got to know the Eisenbergs better, and was able to experience their intense working involvement with their former kitchen, I began to develop the image of the old general store. The sense of chaos, generated from the sheer volume of stuff it contains, gave it a richness and a vigor which seemed appropriate to the way it was used. It also shares the wish to keep things highly visible and readily available.
A real working kitchen in glorious disarray...
...an order of place.
Ligh pools over place...
(table or sink)
...streams through the windows above
Cary's kitchen...whose love helped lay every tile...
a simple place a special place.
A glimpse of the stairs climbing up out the door
A protected corner... curl up in a blanket
    sit
    smoke and
    read.
A place to sleep a womb, closed and warm. A memory of the roof, until a beam spans the space allowing over the bed a canopy of low.
The low ceiling extends overhead... store bedding above or whatever you might have. small, simple and safe; something more... of a place.

...there is no way to separate the situations in the world into sharply human and non-human categories. People, feelings, crowds, water, electricity, magnetic forces, motion, they all form a single web... Compare the power and importance of these events with the other purely geometrical aspects of the environment, which architects concern themselves with.

— C. ALEXANDER
The reader already knows how the expert works; he knows now how the other kind do it.

—MARK TWAIN
His own nature's will to develop forbids him to believe in anything perfect; but everything that comes his way behaves as if it were perfect. He has a vague intuitive feeling that this order of things is not as solid as it pretends to be; nothing, no ego, no form, no principle, is safe. Everything is a process of invisible but never ceasing transformation, there is more of the future in the unsolid than in the solid, and the present is nothing but a hypothesis that one has not yet finished with.

— ROBERT MUSIL
What man chooses to take in, either consciously or unconsciously, is what gives structure and meaning to his world. Furthermore, what he perceives is “what he intends to do about it.”

— EDWARD HALL

Usually it is easier to perceive a thing when we know something about it beforehand. We see what is familiar and disregard the rest. That is to say we recreate the observed into something intimate and comprehensible.

— STEEN EILER RASMUSSEN

Part I: Introduction

- where I define this journey in terms of the landmarks of its structure
Section B of this thesis should be seen as an appendix to Section A. "The Images" represent the real, the physical "stuff." But as the designing and building, the studying and exploring were taking place, my head was filled with many of the thoughts and concepts I shall touch upon here. "The Words" represent a working paper, in which I have tried to put down some of the ideas and associations generated from thinking about the ways in which man perceives his environment.

Although this section is separated from the images which precede it, there are many threads which tie them together. Things I learn from doing are continually bumping into things I associate with while thinking, and the two sets of things roll around together, each feeding on the other. If some of the ideas in this section are of interest, I direct you to the bibliography, where they can be explored in much greater detail. I have included only those works which directly influenced my explorations in this section; they will, in turn, generate their own extensive bibliography.

What follows, then, is a very loose framework on which a few ideas are hung—ideas which have seemed important to
consider in the search to understand the relationships between man and his environment.

Man's perception of his environment seems to be centered, in many ways, on his perception of his world and his culture. In most cases, his belief systems determine what it is he chooses to perceive, and what he chooses to exclude from his perception. Man decides what it is he perceives; he sees what he wants to see, often ignoring what he cannot explain. One of the most important ways in which we come to know our world, and develop our belief systems about the world—in short, the way in which we establish our equilibrium with our world—is prerational. It takes form through the senses, and most of our rational life is spent trying to organize these feelings into an understandable whole. But we are human, so by our very nature our experience is a vast assemblage of bits and pieces of ideas, emotions, associations, and relationships about, from, with, and to the world.

The best we can hope for is that some of these parts have an internal consistency, and that their multivalent interaction one with another proves to be fertile, enriching, uplifting, satisfying—in all, a sense of gain—rather than

Nearly all learning is at the subconscious level. Thus we acquire a taste for a certain dish, learn to like a person, appreciate a painting, and grow fond of a neighborhood or resort. Things that were once out of focus for us come into focus, and we perceive them to be individuals and unique. This power to see people and places in their complex particularity is most highly developed in human beings. It is a sign of our superior intelligence, yet we rarely feel the need to apply the power in any systematic way. We claim to know a friend or our hometown well, although we have not done research on either.... We learn to ride a bicycle without a manual of physics; formal knowledge of the balance of forces may even be a handicap.

—YI-FUTUAN
real is tempered by the frustration and confusion of not being able to act, or not knowing how to.

The same sensation, the same element of feeling, takes on many different forms, depending on how it is categorized; how it is perceived relative to an entire set of sense perceptions. It is impossible to understand one without the others. One category can exist only in relation to others. 

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Each time our senses are bombarded with new information, the very act of perceiving that information includes the assumption that this new piece of information has stimulated an association with something already known. We have, therefore, a category, or a series of categories, already established, with which this new information shares common attributes. We do not fully define this new bit of information on its own terms; rather, we associate a range of its attributes with similar attributes in the objects and events we have previously experienced.

When a bit of information does not find its way into known categories of association, it slips into the category of the disjunctive. How often have we heard the expressions: "I can't believe my eyes!" "Did I hear you right?"
a predominantly frustrating, confusing, unremittingly contradicting one--in all, a sense of loss. These two sets of images are by no means mutually exclusive: it is quite easy to imagine something which is both enriching and confusing, both uplifting and contradicting.

That it is possible to associate with both groups of words illustrates how each of the elements in each of the categories are contained in the spectrum of human experience. In many ways, each category is essential to the other. The very act of categorizing them is only to show a subset of possible associations among them--each adding up to an overall sense: one of gain, the other of loss. Arranging these elements in a different way, take a celebration like the Mardi Gras: it is at the same time confusing and contradictory, yet it is also uplifting, enriching, satisfying. The loss of one's bearings in the confusion is more than compensated by the sense-stimulation and the human joy of the shared celebration. Or take the case of adolescent sexual stimulation: at the same time that it is uplifting, enriching and fertile, it is also highly frustrating and confusing. The emotional and physical stimulation which is wonderfully
organize our world. The ways in which we do organize it is to a large extent determined by what our culture believes and has come to know.

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Today, our world is changing more rapidly than ever before, and it is very difficult for one to continually be modifying his beliefs about the world he lives in, for belief systems run deep. Yet, it is these same belief systems which control his perceptions of his world. In the twentieth century, a series of revolutionary scientific discoveries have thrown the long-established ordering system based on Euclidian geometry and Newtonian physics into an upheaval. They both perceived a world of immutable truth, based on rigorous laws, which allowed the world to be seen as a well-oiled machine. Although many still hold firmly to the notion that there are still such absolutes, the scientific, artistic, and philosophical concepts which supported this notion are falling into disuse, or are being overthrown faster than we are able to mold them to fit into our belief systems. Too often, new discoveries and new theories challenge us with a crucial misfit in that which we had come to believe, and we are left hovering between the poles of the

— EDWARD HALL
noises of certain pitch and intensity, sensations of hard, rough, or soft surface and so on. But Whitehead claims that a more primitive element in perception is awareness, not of sheer sensations, but rather of entities, which are perceived as having some potential effectiveness in the world.

— C. H. WADDINGTON

"Something smells funny about this!" or "Pinch me! I must be dreaming!" All these metaphors are related to the senses, and importantly so. I refer to them as metaphors, because the questions are not directly related to the veracity of the sensory input as much as they are expressing the lack of one's finding an appropriate associative category for the information to be understood. The fact that these expletives of disbelief are uttered in terms of the senses supports the understanding that it is only through the senses that we are able to know anything about the world.

The initial prerational associations, the resulting awareness of which defines perception, can range in force from the slightest breath of a spring breeze to the raging assault of a hurricane, depending on the intensity of the rush of associations. These associations seem to just "happen," something of the qualities we see in the object or event we perceive triggers the association with certain qualities of objects or events which have imbedded themselves in our memory, and inspire thoughts or feelings which are recalled in the presence of this new perception.

It is our attempt to understand these associative thoughts and feelings that lays the groundwork for how we
invest it with meaning. It is neither indisputable that man, or the world, is created in God's image: that is a matter for religious belief. What seems to be true, however, is that the world, and any knowledge of it, is only real in terms of how it is understood by man, and therefore, it is in man's image. Even religion is constructed by man to give meaning to what it appears he cannot know.

Man's search to order his world defines his need for some structure to organize the apparent chaos which assaults his senses. Yet in the twentieth century, with work done in biology, as well as the advent and evolution of psychology as a discipline, it has become quite evident that the very act of perception is based on the function of "ordering." One cannot perceive something without seeking a series of known categories of relationships with which to associate the new information. It is these innate ordering processes which allow us to begin assembling the massive amounts of information to which we are exposed through our sense receptors.

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Morse Peckham, in his book *Man's Rage for Chaos*, uses some of the current trends in thinking in both biology and
...the phenomenon of uncompromising belief carries much more weight than some special philosophical notions of the nineteenth century. We cannot close our eyes to the fact that the great majority of the people can scarcely have any well-founded judgement concerning the correctness of certain important general ideas or doctrines. Therefore, the word "belief" can for this majority not mean "perceiving the truth of something" but can only be understood as "taking this as the basis for life." One can easily understand that this second kind of belief is much firmer, is much more fixed than the first one, that it can persist even against immediate contradicting experience and can therefore not be shaken by added scientific knowledge.

— WERNER HEISENBERG

For Newton, time and space formed an absolute framework, within which the material events ran their course in imperturbable order. His is a God's eye view of the world: it looks the same to every observer wherever he is and however he travels. By contrast, Einstein's is a man's eye view, in which what you see and what I see is relative to each of us, that is, to our place and speed. And this relativity cannot be removed. We cannot know what the world is like in itself; we can only compare what it looks like to each of us, by the practical procedure of exchanging message.

— JACOB BRONOWSKI

zealot, on one hand, and the agnostic on the other. We all have a number of interrelated belief systems, and whether a particular belief system is essentially religious, political, social, or cultural, in more global terms, or professional and personal, in more particular terms, they always hover between these poles: only the terminology changes.

We are now living in a world which is post-Einstein, post-Heisenberg, post-Bohr—to name a few of the critical scientific innovators who have left us with the catchwords: Relativity, Uncertainty, Complementarity. These notions, supported by an innumerable collection of others in the wide range of disciplines involved in man's search for knowledge, have given cause for much reflection. The order which we had previously assumed to be part of God's infinite wisdom, was no longer indisputable.

There is little doubt that the world is ordered in subtle and sophisticated ways. But it makes a difference who is looking at it, where it is looked at from, and what it is that is trying to be understood. What we see no longer has clearly defined edges, nor is it always the same when we look at it at different times, or from different places. What man sees has meaning only to the extent that man can
in behavioral psychology to develop a theory about human perceptual activity and behavior, and their relationship to the arts. He begins by making the following observations: Since art has survived for as long as it has as part of man's behavior, it must logically fulfill an essential need for him. At the same time, believing that the very act of perception is based on the need to order, Peckham is uncomfortable with the traditional view that holds art to be the most sublime manifestation of man's striving for order:

Only when he has established visual categories does he begin to perceive rather than merely see. Thus, the observer of a work of art already has an order which he uses to perceive it with; not art but perception is ordered. He goes on to develop a well-argued theory that art, closely tied to the creative act, and the perception of art, has always been a much more revolutionary and vital activity than merely a more refined will to order:

Thus arises the paradox of human behavior: the very drive to order which qualifies man to deal successfully with his environment disqualifies him when it is to his interest to correct his orientation. To use an old expression, the drive to order is also a drive to get stuck in the mud. There must...be some human activity which serves
to break up orientations, to weaken and frustrate the tyrannical drive to order, to prepare the individual to observe what the orientation tells him is irrelevant, but what very well may be highly relevant. This activity, I believe, is the activity of artistic perception. 10

In other words, at the same time that man is struggling to impose a sense of order on his world through the rational processes of organizing the categories of association, there is this wish to appreciate and enjoy these associations for their own sake. Each time one attempts to order his perception, he is abstracting the qualities of the thing he perceives so that it can be understood in terms of other things he knows. This very process ignores the uniqueness and particularly of the thing itself. Our "tyrannical drive to order" is by its nature a dehumanizing one. At the same time as we are struggling to understand something in terms of its associations to an existing ordering system, we must have the courage to accept the full range of free-associations which revel in the chaotic. Only in this way can we accept, appreciate, and exalt in the thing itself.

All prejudice, fascism, authoritarianism, bureaucracy—in short, those things that dehumanize us, are based on this
of changing scale: As one goes up in scale, say from 1/16"=1' to 1/4"=1', the level of information one needs to deal with is much greater in detail; the physical elements one is working with are much more tangible. As one goes down in scale, say from 1/16"=1' to 1/100"=1', the implications of the whole become much more apparent; the larger organization becomes much more tangible. The most profound analogy regarding the implications apparent in changing scale can be found in Charles and Ray Eames' film "The Powers of Ten."

It is an awareness of the implications of changing scale that have brought me most closely in touch with this constant pull between the general and the particular, and have forced the issue of the essential need for both. As I attempted to organize this thesis, it became increasingly obvious that the need to establish my context was very important. I found myself unable to rush into a discussion about visual perception without offering some background on some of the cultural and epistemological mores which seemed of great importance to how it is that we perceive.

The chapters that follow form a rough outline of some of the issues which seem to me important in understanding

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At each scale there are global invariants, and detailed variation... No wonder we can watch the waves for hours; no wonder that a blade of grass is still fascinating, even after we have seen a million of them. In all this sameness, we never feel oppressed by sameness. In all this variety, we never feel lost, as we do in the presence of variety we cannot understand.

— C. ALEXANDER
unrelenting will to order. They all push, shove, and squeeze reality into classifications without respect for the thing itself. Rather, they merely respond to it in terms of its grossest resemblances. For example, take the pervasive phenomenon of racial prejudice as it is summed up in the cliche, "All blacks look alike; I can't tell one from another." On the strength of the most obvious and most banal classification of dark-skinned homo sapiens, a vast assemblage of peoples who represent the full range of combinations of all other human characteristics, are abstracted and caricatured by the will to order, with a total disregard for the need to differentiate.

The very act of perception, then, is a twofold process of Generalization and Particularization. Without the ability to regard both simultaneously, our perceptions will forever be dehumanized by order on the one hand, or be made schizophrenic by the seduction of chaos on the other.

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One thing I have learned about building is the importance of the environment--the context--in which one works, and the need for understanding and responding to that context as best one can. I have also learned about the implications
man's perception of his environment. Part of how man perceives his environment, if we recall the words of Edward Hall on p.135, is "what he intends to do about it," and therefore provides the key to man's relationship to his environment. For me, this is what architecture is all about.

Steinberg's drawing "View of the World from 9th Avenue," (p.135), is not pure fantasy. Although it is an inaccurate recording according to factual information such as scale, dimension, geography, or any other physical relationships, it accurately describes a New Yorker's view of the world, according to his experience of it.

The search for truth and order in rational/scientific terms, will not account for the human experience of perceiving the world, in all its contradictory and illogical ways. An architecture based on the same concepts of rational truth and order will likewise not accommodate human experience in all its spontaneity, its contradictions, its irrationality; in short, those things which give it life.

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Part II:
In Man's Image
- the humanization of science and nature

Flawless as a swan
once was I,
clear as crystal
I was too

Then came impurity
which I could not change.
For I'm only a mirror,
the image is you.

— JAMES OSWELL HINSON
Chapter 1: The Fallacy of Truth

In the whole science of physics there is no such thing as a thing. Hundreds of years ago we carefully forgot this fact, and now it seems astonishing even to begin to remember it again. WE draw the boundaries, WE shuffle the cards, WE make the distinctions. In physics, yes physics, super-objective physics, solid reliable four-square dam-buster physics, clean wholesome outdoor fresh-air family-entertainment science-fiction superman physics, they don't even exist. It's all in the mind. IF you separate off this bit here you can't really, of course] and call it a particle [that's only a name, of course it's not really like that. more like waves really, only not really like that either, not really like anything really] surrounded by space [space is not what you think, more a sort of mathematical invention, and just as real, or just as unreal, as the particle. In fact the particle and the space are the same thing really [except that we shouldn't really say "thing"], the sort of hypothetical space got knotted up a bit somewhere, we don't know exactly where because we can't see it, we can only see it where it was before we saw it. if you see what I mean, I mean even that's not what it was really like, it was waves [or rather Photon] of light carrying a message that may well be very unlike the thing, sorry, particle [remember this is only an abstraction, so that we can talk about it [it? sorry, we don't have an it in physics)] it [sorry!] came from. After all, we don't know that a thing [pardon!] is telling the truth about itself [would you mind looking the other way while I change into something formal?] when it emits [excuse me!] a blast [do forgive me!] of radiation, do we?. THEN [if you have followed the argument so far] this [I mean all these mathematical formulae, of course. What do you think I meant?] is how it happens to come out. Of course, if you start in a different place [no, I'm afraid I can't tell you what a place is, although I could of course draw you a graph] and do it in a different way [do please stop interrupting, darling, or we shall never get done], it [it? What we are talking about, my dear. It is convenient to at least pretend we are talking about something otherwise there would not be much point in doing physics, would there?] would naturally come out different.

— JAMES KEYS
So much of what "Modern Architecture" has become in this century seems to be very dependent on a view of the world as determined by Newtonian physics and Euclidian geometry: a world based on an order which was unimpeachable; an order dominated by rationalism, seduced by the powerful allure of truth. Certainly, the Industrial Revolution of the nineteenth century laid the foundations for the proliferating belief that the subsequent technological revolution would lead us toward an utopian world. Everything seemed possible; the solution of the world's problems were at hand. The wonderous materials of glass, steel, concrete, and even plastics, signaled a burgeoning built environment, efficient and economical to produce, with the inherent strength to build far greater structures than could be previously imagined. The future was ours; the possibilities were endless.

Le Corbusier could conceive the ideal "machine for living," using these new materials according to their magnificent capabilities, and assembling them according to a mathematical construct, which he elegantly argued was the essential measuring stick for man and nature. What he failed to
invent was the perfect human being to operate his machine. How depressing it must have been to have come up with the "perfect" environment, and be faced with such a bumbling, careless, imperfect creature as man to operate it.

With this magnificent future ahead, those who were most charmed by its potential saw in the self-indulgent bourgeois Victorian Era of the immediate past a stale culture, steeped in conservatism, wearing the ills of society and culture like a badge. Suddenly there was great hue and cry for shaking off the tyranny of the past, and focusing on the gleaming brightness of the future.

Modernism, Futurism, Cubism, Di Stijl, all expressed a forward-looking rationalism that was tailor-made for architecture; its affair with technology and mass production was just beginning. All that was flatulent and self-indulgent in the Art Deco and Expressionism was seen as destructive to the future of architecture.

Piet Mondrian was one of the most articulate spokesmen of the austere and rational preoccupation with "truth" and "essence of form." The pursuit of these values was seen as the only exploration that was "real." Much of architectural thought at the time followed suit. In the

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In general, all particularities of the past are as oppressive as darkness. The past has a tyrannic influence which is difficult to escape. The worst is that there is always something of the past within us. We have memories, dreams—we hear the old carillons; enter the old museums and churches; we see old buildings everywhere...Modern life and art are annihilating the oppression of the past. Progress in communication, production, concurrence in trade, the struggle for livelihood have created a lighter environment, even when inevitable remains of the past dominate.

— PIET MONDRIAN
Gradually I became aware that Cubism did not accept the logical consequences of its own discoveries; it was not developing abstraction towards its ultimate goal, the expression of pure reality. I felt that this reality can only be established through pure plastics. In its essential expression, pure plastic is unconditioned by subjective feeling and conception. It took me a long time to discover that particularities of form and natural color evoke subjective states of feeling, which obscure pure reality. The appearance of natural forms changes, but reality remains constant. To create pure reality plastically it is necessary to reduce natural forms to the constant elements of form, and natural color to primary color. The aim is not to create other particular forms and colors with all their limitations, but to work towards abolishing them in the interests of a larger unity.

— Piet Mondrian

accompanying quotations, Mondrian speaks rabidly about all of those human qualities and experiences which obscure "pure reality." He speaks disparagingly about the unreality of memories, dreams, and feelings: all those phenomena which are essential to man's engagement with his environment.

Waddington, in his book Behind Appearance, is much more sedate than I could ever be in pointing out the limits of this kind of orientation:

...there is a type of artistic temperament—Archimedian man—for whom geometrical clarity has a profound appeal. The style will probably always remain one of the manners in which artistic creation will continue. To most people, however, the latter day works of this kind have a rather limited appeal.... But although deep, and for that reason rewarding, it can scarcely be denied that it is very narrow in the range of human attributes to which it appeals. We have lost all sense of man as an animal, muscular, sexual, and demanding food and drink; or man as a personality and a social being; or as an inhabitant of a world of nature filled with a burgeoning plant and animal life, or surrounded by architecture fashioned by human hands; standing on soil, rock, or tarmac and roofed over by the sky. He is reduced to an incorporeal intelligence imbued with an emotional reaction to the products of his own conceptualizing thought.
Rationalism is a tenacious belief, and it has ruled the mainstreams of modern architecture for a long time. Purity, essence, and elegance still have a magnetic attraction. And perhaps rightly so, for they appeal to a certain part of every man's nature. Yet, when they become so powerful, or so singular as to reduce man to an "incorporeal intelligence," appealing only to the Cartesian while ignoring the Darwinian, appealing to Ariel while ignoring Caliban, there is created a schism in human experience that is by definition disassociative.

During the last century, the scientific "truths" which served as role models in the search for universal order in man and nature, have undergone upheaval. There are three discoveries which seem to have particular importance in defining the relationship between man and his environment, and illustrate the importance of the ways in which that environment is perceived. These concepts have been filtering down into a more general cultural awareness for many years now, and their implications make it difficult to maintain a firm grip on the architectural beliefs that were discussed earlier in this chapter.

The first, of course, is Einstein's theory of Relativity.
[Einstein] had a genius for finding philosophical ideas that gave a new view of practical experience. He did not look at nature like a God but like a pathfinder, that is, a man inside the chaos of her phenomena who believed that there is a common pattern in them all if we look with fresh eyes.

— JACOB BRONOWSKI

One of the functions of culture is to provide a highly selective screen between man and the outside world. In its many forms, culture therefore designates what we pay attention to and what we ignore. This screening function provides structure for the world and protects the nervous system from 'information overload'.

— EDWARD HALL

While most of the physical relationships that can be found in the world seem to be accounted for by Newtonian mechanics, Einstein was not willing to accept certain discrepancies he perceived in the apparent order of things. Whereas the scientific community, and the culture as a whole, was convinced by the beauty and simplicity of Newton's laws, Einstein was captivated by these discrepancies. As Hall points out in the accompanying quotation, there was a general will to believe, and the charm of its apparent order dictated that the disparities should be overlooked.

Einstein ultimately constructed a model that not only took more accurate account of relationships, but greatly reduced the margin of error that had been overlooked by the Newtonian model, which attributed them to the inaccuracy of the measuring devices. Suddenly the great arbiter, Science, gave us "proof" that the world was not as much in order as it appeared to be. Suddenly it made a great deal of difference to the way the world was ordered whether we were "here," or "there," whether we looked at it straight ahead or sideways. Suddenly the world was not in immutable order, but would in fact be seen differently by two men, measuring the same things with the same equipment, if they were measur-
ing from different places of relative motion. Time and motion no longer appeared to be the constants Newton's mechanics declared them to be; suddenly they could only be defined relative to one another. A dependancy was established that simply left one devoid of meaning without the other.

The second of these discoveries is what Niels Bohr termed the "Laws of Complimentarity." In the process of developing more precise instuments to observe and record the ways in which matter seems to behave, it became possible to explore further and further into the world of nuclear physics. The accompanying quotation from Jacob Bronowski defines in general terms the relationship between these tools of observation and the remarkable revelations they permitted. It was in this world that Bohr discovered that, by looking at electron particles in one way, they responded to the laws governing wave mechanics. If looked at another way, they seemed to behave as particles. Suddenly one guess as to what they were was as good as another; the best guess seemed to be both.

Once again, what one saw seemed dependent on the observer, or the mode of observation. In this world of the atom, once considered to be the irreducible essence of matter,
...when it comes to atoms, language is not describing facts but creating images. ...What lies below the visible world is always imaginary, in the literal sense: a play of images. There is no other way to talk about the invisible, in nature, in art, or in science. When we step through the gateway of the atom, we are in a world our senses cannot experience. There is a new architecture there, a way that things are put together which we cannot know: we only try to picture it through analogy, a new act of imagination. The architectural images come from the concrete world of our senses, because that is the only world that words describe. But all our ways of picturing the invisible are metaphors, likenesses we snatch from the larger world of eye and ear and touch. — JACOB BRONOWSKI

not only had it been divided, with Nagasaki living proof of that fact, but as we got even closer to the "essence," it appeared completely ambiguous.

The third discovery which seems to have the same kind of ramifications is Heisenberg's "Principle of Uncertainty." In nuclear physics, when one attempts to measure an electron particle, which one cannot actually see as Bronowski describes above, one must fire other particles into its field and record the scatter. However, the particles one fires affect the recording of the particles one hopes to measure. It is impossible to observe and record the activity of electron particles without the very act of observing and recording them also influencing the results.

Bronowski points out the wide ranging influence of this discovery:

Heisenberg called this the Principle of Uncertainty. In one sense, it is a robust principle of the everyday. We know that we cannot ask the world to be exact. If an object (e.g. a familiar face, for example) had to be exactly the same before we recognised it, we would never recognise the object to be the same because because it is much the same; it is never exactly like it was, it is tolerably alike. In the act of recognition, a judgement is built in—an area of tolerance or uncertainty. So Heisenberg's principle says that no events, not even
atomic events, can be described by certainty, that is, with zero tolerance.13

Not only is what we perceive in some way affected by our being there to perceive it, but each time we see something, it is never exactly the same. Our knowledge of the world is based on similarities, and it is through those very similarities that we begin to associate one thing with another.

The search for the "essence" of some object, some situation, is an illusory one. The act of perception is a process by which one embraces, in the same way that Topolski (fig. 1), Giacometti (fig. 2), or Rembrandt (fig. 3) suggest the process of exploring and embracing an image. One begins to understand something by continually associating it with a wide range of experiences, feelings, bits of knowledge, that make it possible to make connections with the new thing.

What science has discovered, as it has been able to search more and more deeply for the way things are, is finding out that things are more and more what they seem to be. The quotation by James Keys at the beginning of

We are aware that these pictures do not so much fix the face as explore it; that the artist is tracing the detail almost as if by touch; and that each line that is added strengthens the picture but never makes it final. We accept this as the method of the artist. But what physics has now done is to show that this is the only method of knowledge. There is no absolute knowledge. And those who claim it, whether they are scientists or dogmatists, open the door to tragedy. All information is imperfect. We have to treat it with humility. That is the human condition; and that is what quantum physics says. I mean that literally.

— JACOB BRONOWSKI
Giocometti's sculptured figures, for instance, always look as though they were far away, across the other side of some large open space. It is as if reality is continually behind curtains which one tears away — and then there is another — always another. And so one goes on, knowing that the nearer one comes to the "thing" the more it recedes. The distance between me and the model tends to always increase... it is a quest without end. Giocometti is certainly one of those who has presented us with a new paradigm in which to see the world. It has, I think, two main characteristics: an insistence on the otherness of things, and the suggestion that what we know about them is not their own private essence — the Ding an Sich — but the influence they radiate on their surroundings. Both are essentially sympathetic to the modern scientific philosophy... [He] sees the world as consisting of entities which are unknowable in their totality, but which we can be aware of as centers of active energy that stretch out to affect other things, including ourselves. This is a view very far removed from the old idea of the world as being solid, inert matter, but is coming very close to the world-picture of modern physics, and indeed for modern science as a whole.

— C. H. WADDINGTON
The century has said, "I am now convinced that theoretical physics is actual philosophy."\(^14\) It is the philosophy of the real world; the place where the world or our experience comes together with our perception of it; not in terms of "truth" which is independent of our influence, but in terms of hypotheses, which are totally dependent on the limits of our perception.

Finally, all of this is not to suggest that there is nothing we can know; or that there is nothing we can believe. It simply hopes to indicate that we make the decisions, we make the rules. Our world is impossible to perceive without understanding the interrelationships between it and us. It demands tolerance and equanimity. It demands an acceptance of the irrational as it strives for the rational. To return to the words of one of the scientists who was responsible for one of the profound discoveries I have mentioned, I will allow Werner Heisenberg to sum up the "fallacy of truth":

\begin{quote}
But remembering our experience in modern physics it is easy to see that there must always be a fundamental complementarity between deliberation and decision, and one will therefore always have to act on insufficient evidence. The decision finally takes place by cutting off all further pondering. The decision
\end{quote}
may be the result of deliberation, but it is at the same time complementary to deliberation; it excludes deliberation. Even the most important decisions in life must always contain this inevitable element of irrationality. The decision itself is necessary, since there must something to rely upon, some principle to guide our actions. Without such a firm stand our own actions would lose all force. Therefore, it cannot be avoided that some real or apparent truth form the basis of life; and this fact should be acknowledged with regard to those groups of people whose basis is different from our own. 15

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Chapter 2: Order and Chaos

Oh! Blessed rage for order, pale Ramon,
The maker's rage to order words of the sea.
Words of the fragrant portals, dimly-starred.
And of ourselves and of our origins,
In ghostlier demarcations, keener sounds.

— WALLACE STEVENS

It had the power to drive me out of my conception of existence, out of that shelter each of us makes for himself to creep under in moments of danger, as a tortoise withdraws within its shell. For a moment I had a view of a world that seemed to wear a vast and dismal aspect of disorder, while, in truth, thanks to our unwearied efforts, it is as sunny an arrangement of small conveniences as the mind of man can conceive. But still — it was only a moment: I went back into my shell directly. One must — don't you know? though I seem to have lost all my words in the chaos of dark thoughts I had contemplated for a second or two beyond the pale. These came back, too, very soon, for words also belong to the sheltering conception of light and order which is our refuge.

— MARLOW
[in JOSEPH CONRAD'S LORD JIM]
The previous chapter attempted to organize a collage of thoughts and feelings about "truth" and its relationship to man's perception and his environment. This chapter explores man's relationship to ordering his world, and his response to the aspects of his world he cannot order. We have all shared moments similar to the one felt by Joseph Conrad's "Marlow" (p.167). Moments that are as profound as they are fearful; as real in emotional terms as they are illusory in objective terms. The fact that we can share them is evidence that there is something fundamentally human about them.

In thinking about the "small conveniences" which are our "refuge" - the order we impose on our culture as a whole and our individual lives in particular - there is always the constant stimulation of disorder. The state of one's home after a large and raucous party can be a chaotic sight. It can generate depressing thoughts of the future, and having to laboriously clean up; it can also generate the joyous memory of the event that occurred the night before - of friends laughing and talking; sharing their enthusiasms; participating in lively communion.
At the same time that order can be orienting and calming, as for Marlow, it can be oppressive and limiting. At the same time that disorder can be disorienting and frightening, it can be stimulating and joyous.

In the accompanying quotations, both diCarlo and Einstein uphold the undeniably positive aspects of disorder with fervent devotion. When I see the repetitive, boring order that so much contemporary architecture reveals, I am even more compelled by the vigors of disorder. There must be some way to establish an organization that retains an order that can give people the comfort and security of orientation, while allowing for the free expression of the excitement and engagement of the "disorder" of participation.

In the same way that science is one of the most rigorous ways man has to order what he perceives, it is an activity taken on by him for greater understanding. Likewise, in man's daily life the order he gives it comes from him. Some parts of it may be imposed, but the more in control he is over the ways in which it is ordered, the more comfortable he can be with it. In architecture, too, this seems a desirable objective. If the elements are there, to be shaped and used in ways man can dictate, the more
closely in harmony with his environment man can become.

Morse Peckham, in his book *Man's Rage for Chaos*, devotes some three hundred pages to the issue of order and disorder in man's perceptual field. He argues clearly and convincingly that the will to order is man's basic need, and defines the process of perception:

> Order...is not something that is immanent in a perceptual field; it is something contributed by the perceiver. It is fully oriented perception, a condition in which disparities are ignored, in which one has the conviction that one's predictions will be confirmed. Such a conviction is independent of the situation; it is a non-situational, or primary attribute of perception.¹⁶

He also believes that there is a basic need for man to challenge this ordering process; to sensitize himself to the compelling attraction of those things which he may not understand. He believes this need is biological; that it is inherent to the species. And the way man has accommodated this need in his culture is through art:

> Art is not reality, it is not truth, it is not value. It is nothing but a construct, because it is nothing but signs and signs can only be constructs...It is biological adaptation which serves to keep man alive, aware, capable of perceiving that he is neither adequate or inadequate
but a perilous mixture of the two, capable of innovation. 17

Everyday man must find some way to order his perceptions, simply to survive. Each signal he receives must be interpreted in some way so that he can adjust his actions to accommodate it. If he sees a man lurking in the shadows of a building he approaches, he cycles through a series of possibilities, attempting to give meaning to what he has perceived: Is it a mugger? Is it merely a wino? Is he looking at me? Are there other people around? Each one of these searches will begin to combine with the others in various ways until enough of the perceptual clues combine to give the situation an understandable order. It is difficult to merely "experience" this sinister figure. It may signal a direct threat, from which you need some protection.

Peckham argues that in order to merely "experience" a perceptual phenomenon rather than be driven by the will to order it, man must be provided with some amount of psychic insulation (see accompanying quotation). Therefore, our culture has provided us with such insulation in terms of its specific arenas of artistic display: museums, concert halls, theatres, etc. These are places where we relax with the expectation that we do not have
Normally, of course, disparities are ignored; if the individual feels a disorientation he gets rid of it by suppressing his awareness of the disparity. In art, disparity awareness is not suppressed: neither does it result in the perception of a problem; it is merely experienced.

— Morse Peckham

Peckham's accompanying quotation on "disparities" is reminiscent of Hall's comments (footnote 5, pp.231/2), or Heisenberg's comments (p.143). When man needs to order, his will to order forces him to ignore the particular, the disparate, in obeisance to the overall pattern, to the inherent logic of the largest number of variables. When one feels protected enough to allow his artistic perception to control, what Peckham would call a situational attribute of perception, he can merely "experience" his perceptual field.

This seems to conform to the distinction I pointed out in Part I of this section between the perceptual processes of generalization and particularization, which I shall discuss further in Part III. Man's need to orient himself in any environmental context demands the potential to generalize: to reduce the environment to few enough elements that he can find his way. At the same time, he needs to have the potential to particularize: to personally associate with any part of the whole in peculiar and intimate ways. In other words, a desirable environment is
one that allows a kind of ordering to take place - to permit man to feel comfortable knowing where he is - while at the same time allowing him to relax his defenses so that he can merely experience any part of the environment - to associate himself directly with any element of the whole.

An environment that responds to this parallel organization allows for the full range of human needs and experiences. It allows for inconsistencies, juxtapositions, contradictions, irrationalities, which can be experienced and appreciated for their own sake, while not infringing or disrupting the orientative organization of the whole.

Peckham continues to develop his argument, after establishing his position that perceptual fields do not change, but that the mode of perceiving does. The signals which determine how one is expected to perceive a given field are largely culturally conditioned, whereas non-situational attributes of perception are conjunctive; that is, they seek and demand some order:

"...art is a disjunctive category, established by convention...art is not a category of perceptual fields, but of role playing." 18
With the proper psychic insulation, which derives from an assurance of a certain order—whether physical, cultural, or social—man can change his perceptual role to experiencing the potential discontinuities generated by art.

Peckham also makes the distinction between role playing and game playing to account for the dynamic tension in perceptual situations, which are not simply a process of switching from one role to another:

The role of a game player is to present his opponent...with an unpredicted situation which will force him to behave in a certain way; while the player faced with such a situation has as his role the task of rearranging the situation so that the tables are turned...The rules place limits on what may be done, but more importantly, they provide guides to improvisation and innovation...The essence of a game, then, lies in the reinforcement of the ability to face risks, to behave according to rules in unpredicted but familiar situations and to handle unpredicted, unfamiliar, and novel situations by deducing new rules from existing rules. Role playing takes care of most of our behavior. Game playing fills the gap. The gap between the role and actual situations accounts for the dynamic character of human behavior; rule deduction accounts for the fact that the gap is neither
filled with random action nor is a mere empty area of inaction. 19

This is a gross oversimplification of Peckham's argument, and I would encourage anyone who is interested to go to the source itself. This brief outline merely begins to address the issues of perception relative to the issues of understanding and experience which Peckham develops. He coherently discusses man's will to order; as well as the potential for tyranny inherent in that order. He begins to suggest an interface between man's rational behavior and his more spontaneous emotional behavior, which can be freely associative, irrational, or purely experiential.

Order and chaos are both part of our experience; they are both part of our behavior. Architecture must respond to the potential for both before it can embrace and accommodate man in his complex pecularity.

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Chapter 3: The Process of Growth

The final shape of any one particular oak tree is unpredictable. When the oak tree grows, there is no blueprint, no master plan, which tells the twigs and branches where to go. We know in general that it will have the overall form of an oak, because its growth is guided by the pattern language of the oak tree (its genetic code). But it is unpredictable, in detail, because each small step is shaped by the interaction of this language, with external forces and conditions—rain, wind, sunlight, the composition of the earth, position of other trees and bushes, the thickness of the leaves on its own branches.

—C. ALEXANDER
Of all the associations that are a part of man's experience, growth is one of the most continuous and most powerful. Everyone is aware of his own physical growth and development each day of his life. Whether it is the repetitious act of shaving each morning, or clipping one's nails; whether it is the fond memories of once being small enough to crawl under a special chair, or the satisfaction of finally being tall enough to reach a high shelf.

One's life, recapitulated by one's children, moves from the cradle, to the floor, to the momentous occasion of the first step. From elementary school, to high school graduation, perhaps to college, a job, a career; life is in ceaseless transformation. Yet, so much architecture is designed to perfection: each element is laboriously planned to be one certain way. Once built, incredible sums of money are spent maintaining the brilliant sheen of eternal newness. It is an icon to the eternal; aloof; disassociated from the complex transformation and change that marks our daily
life, and that of our environment. And yet we expect to be embraced and accommodated by our environment.

In this discussion of man's relationship to his environment, we have taken a brief journey past the landscape of truth and order in an attempt to establish a perspective on the forces at work. In this chapter I would like to take a brief glance at the process of growth, in an exploration of the ways in which man's life experience and his relationship to his environment can work in closer harmony.

At the beginning of the last chapter, Giancarlo di Carlo talked of the "Avenues of Order", versus "The Side Streets of Disorder" (p.170). The former recalls Housemann's plan for Paris; Mussolini's Fascist swathing of Rome; the American expansionist grid, which can be found in the majority of cities, towns, and hamlets across the country. It speaks of an imposed order; of man's conquering of the land. The latter is part of the world of experience, of activities. It is charged with human associations; in short, with continual, overlapping ambiguous processes.

In the accompanying quotation, Halprin talks about
On a small scale the Arab village, the medieval town, the Italian hill town are as beautiful to be in and generate much the same quality of visual experience as a walk through a deep forest. The processes which generated the two are similar, and so the qualities of visual experience which they give remain similar. Both forms evolved from similar processes and the responses of participation are related.

— L. HALPRIN

the associations of experience which are deeply imbued with processes. Patterns of growth can be traced, as can patterns of use; the forces at work are complex, but they are direct, and one can trace their development. The order of such an environment is not based on the simple imposition of a geometric construct; it is complex and intertwined and interdependent. But it is still an order; it can readily be perceived as such, and can orient one not only in space and time, but orient one to the rich and complex world of the interactive forces as well.

I remember when I was a child, first hearing about Greenwich Village. I had visions of tree-lined streets, a village square, a self-sufficient community, a happy and contented subculture in the middle of the huge impersonal city. When I was first taken there, I was shocked. Before I could ask when we were going to get there, I was told we were in the very heart of it. No tree-lined streets, no gate to mark the entrance to this remarkable place. It seemed just like the rest of New York. The same streets, the same buildings.

Everything I had imagined was in fact there. But
the tyrannous grid hid it very well. Its physical form belied its true character. The village square was there in Washington Park, the gate was there too. In a very short time the forces which defined its character emerged; the people, the activities, the events all added up to the place I had imagined. Yet it happened in spite of its physical form. It took little time before one became oriented to the places and the events of the Village, and soon it was ordered by them as well. It is only to the outsider that the grid provides any useful organization. Once the place was known in all of its marvelous peculiarity, it became reorganized according to an assemblage of the particular. It came to be what my original image of the place was.

Through familiarity, an awareness of place grew and blossomed in my mind. Just like Alexander's flower in the accompanying quotation, familiarity with the human processes which are at work in a place like Greenwich Village allows it to grow to fruition in all of its complexity, its contradictions, its peculiarities. In this case, these forces overcame the physical form in order to create a sense of place. It seems that, if given

If you want to make a living flower, there is only one way to do it—you will have to build a seed for the flower and then let it, the seed, generate the flower. This hinges on a rather simple scientific proposition: the great complexity of an organic system, which is essential to its life, cannot be created from above directly, it can only be generated indirectly. The sheer amount of differentiation makes this certain... Only the indirect growth processes, in which order multiplies itself, these kinds of processes can generate this biological complexity. This cannot happen unless each part is at best partly autonomous, so that it can adapt to the local conditions in the whole.
—C. Alexander
the choice, a form which would allow for the natural expression of such forces could have spared an innocent child from the perplexing discontinuities that were experienced.

The tree at the beginning of this chapter (p.177) exists in its marvelously particularity because there was no blueprint, or master plan. It shares all of the genetic similarities to "tree", and is easily defined as such - these are the generalities which orient us. Yet, in a chance occurrence during its growth, it interacted with its environment to produce a unique tree - a landmark - a special place among the pattern of trees which can be found in its environment.

Lawrence Halprin, who did the drawings and designed the fountains on pages 30-32, has spent much time and energy exploring design methods which respond to the issue of participation and growth. In his book RSVP Cycles, he discusses the notion of "scoring", as a metaphor for a design process as musical notation, which is subsequently "performed". In his Notebooks 1959-1971, he makes a crucial distinction relative to this methodology which mediates issues of generalization and particularization.
which I suggest are an essential combination:

... it is a way of making things visible and of describing and working with processes towards objectives rather than toward predetermined goals.20

If the objectives are clear, and the organization which can accommodate those objectives is established, the process of reaching them can be filled with particular events; or to extend the musical metaphor, "improvisations," without deviating from the objectives. In the accompanying quotation, Moshe Safdie describes the evolution of Habitat (photo on p.19). It too responds to the process of assemblage, which is crucial in defining its ultimate form.

I began this chapter by speaking of some of the ways in which man’s daily life is filled with personal awareness of and continual associations with the processes of growth. The very act of perception depends on this awareness of growth, development, evolution. As Bronowski describes on p.161, we are always aware of a familiar face from one day to the next, each change is adjusted to, and the generalities still orient you. Even if an old friend grows a beard, it is possible to recognize him. Perhaps not at once, or across a room; but upon inspection, the
There is no particular system I follow when I begin a painting. Each painting has its own way of evolving. One may start with a few color areas of the canvas; another with a myriad of lines; and perhaps another with a profusion of colors. Each beginning suggests something. Once I sense the suggestion, I begin to paint intuitively. A suggestion then becomes a phantom that must be caught and made real. As I work, or when the painting is finished, the subject reveals itself. As for the subject matter in my painting, when I am observing something that may be the theme for a painting, it is very often an incidental thing in the background, elusive and unclear, that really stirred me, rather than the thing before me.

— WILLIAM BAZIOTES

The accompanying quotation by the painter Baziotes can serve well as a metaphor for perception. What it is that stimulates one's attention can be large or small; central to the situation at hand, or quite far out on the periphery; from the thing before one to a fleeting image in one's mind. There can be a plethora of associations which come at once, or quite independently. The will to order one's experience, as was discussed in the previous chapter, begins a process by which some of the associations fall into place, others are discarded or ignored. An understanding begins to emerge—sometimes immediately, at other times slowly.

Perception is constantly adjusting itself to the changes in the perceptual field, and the general and the particular act as counterpoint, both to give meaning to and to establish our relationship with the activities, events—any phenomenon which forms part of our perceptual field.

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Man in the world is like a caterpillar weaving its cocoon. The cocoon is made of threads extruded by the caterpillar itself, and is woven into a shape in which the caterpillar fits comfortably. But it also has to be fitted to the thorny twigs—the external world—which supports it. A puppy going to sleep on a stony beach—a "joggle-fit"—the puppy wiggles some stones out of the way, and curves himself in between those too heavy to shift.

— C. H. WADDINGTON

I am making a basic separation between architecture as moulding and architecture as the assembly of parts. That seems a very simple distinction: the mud house, the stone masonry. But in fact it represents a fundamental intellectual difference, not just a technical one. And I believe it to be one of the most important steps that man has taken, wherever and whenever he did so: the distinction between the moulding action of the hand, and splitting or analytic action of the hand.

— JACOB BRONOWSKI
In this chapter, I would like to briefly summarize the significance of some of the issues that have been discussed in this part of the thesis. I have tried to concentrate on the ways in which man's perception of his world defines how that world is perceived, and ordered. What the world is to any individual is defined by how he perceives it. How he responds to his environment, and is able to become engaged with it, or not engaged, is totally dependent on how he thinks and feels about it!

For architecture to succeed in creating enabling environments - environments which suggest and welcome engagement, inspire positive associations, "assist man's homecoming"21 - it must respond to the volatile mixture of aspects which make up man.

In order not to be disassociative, both the part of man's environment that he creates, and the parts that he does not, must interact in some harmony. Rather than always needing to assert his dominance over it, pushing it away, as the rational drive to perfect truth and order want to dictate, he is much better off working with it, as Waddington
suggests so beautifully (p.187).

The photograph on the same page reveals a profound sensitivity to just this issue. In the challenging and spartan terrain of the Andes Mountains of South America, the Incas took on the challenge of carving out habitation. To impose a logical geometric order would have been an even more prohibitive task. But, by working with the severe landscape, they could add their definition to it, and create a habitable environment which still transcends belief.

Working with the suggestions of the landscape, they embraced a place where there was a rift in the rock leading to an underground cavern. They used these features to establish the location for their Royal Tombs, and began working with it to allow a form to emerge which was suitable to their intentions. By carving into the existing rock, they began to shape it to allow places which could embrace many uses. What may have been an altar, a place to worship, honor, and/or commune with the dead, now forms a perfect seat. At the same time, they laboriously cut stone blocks to be used as unit masonry interlocking with the existing forms, giving the environment the overall form and
We have emerged from nature and we are her children... thus we maintain a kind of typical LOVE-HATE relationship with her—like a teenage child we need the security of her warmth, the stability of her as a source and at another moment we want to be free and on our own and left loose of her disciplines. At times we have courted her and at times defied her—mostly taken her for granted as the stable source which could forever nurture us and keep us going.

—LAWRENCE HALPRIN

qualities which were desired.

No image could more appropriately describe the distinction Bronowski makes between the two fundamental aspects of man (p.187). There is the sensual molding, or carving activity, which speaks of engagement—the experiencing of what is physically there. And there is the rational, the analytic action of creating and assembling bit by bit, stone by stone, the materials at hand, each in their proper place.

Man's intercourse with nature has always been a complex and contradictory one. Lawrence Halprin uses the parent/child metaphor to expand upon this curious relationship in the accompanying quotation. Our ego will never allow us to be totally submissive to the will of nature; nor will our need for her protection and comfort allow us to reject her entirely. It is a strange and complex relationship, but it is one that leaves us disassociated and incomplete when only one aspect is present. Whereas "Marlow" (p.167) can be comforted by the "small conveniences" with which man builds himself a refuge of apparent order and serenity, so can Peckham (pp.145/6) sense the potential for oppression in order, and suggest the contrasting need for a communion...
with chaos to keep us alive.

No contrast can be so clearly drawn in twentieth
century architecture than that between the attitudes
of Le Corbusier on one hand, and Frank Lloyd Wright on
the other. Bruno Zevi, in the accompanying quotation,
reveals this contrast. Yet what singles them out as
icons in the history of architecture is that when we look
at their work closely, each of them embraced both aspects
of man in their oeuvres. One can hardly call Wright's
fascination with geometries anti-rational; nor could one
claim, after experiencing Ronchamps Cathedral, to have
been unaffected by an emotional wave of experience.

It is only by learning from nature, and learning
from man, that it becomes possible to understand the
intrinsic relationships between the two. But it is
important to remember that what we learn from nature is
generated by what WE perceive, and think, and feel, and
come to believe about it. And the same is true of the
study of man. In the accompanying quotation, di Carlo
expresses a belief, which I share, about what this
relationship between man and his environment is all about.
The reticulate process by which we come to "know" the

Both [Frank Lloyd Wright and Le
Corbusier] are great artists, but Wright
seems to have much the greater range
and richness of thought. Everything he
builds comes from an effort to grasp and
to express life, whereas buildings by the
European masters often have the air of
ready-made solutions and seem to
express only the ideals of their authors.

How many of the modern buildings in
Europe are cold and impersonal!
Wright's buildings may have all sorts
defects of taste, but they are real and
intensely personal: they are inseparable
from the life which goes on within them
and the life of nature which goes on
outside them.

— BRUNO ZEVI

...I believe that forms can modify
human behavior. Moreover, I believe
that there are particular circumstances
in which forms have the potential to
shape images which can contribute to
social change. But I believe that this
process is reticulate, not linear; that
forms react on human behavior only
through feedbacks; that these feedbacks
happen and have positive influence only
when forms maintain a continuous
coherence with the context which
generates them; that the context is the
whole pattern of the social forces, which
all its conflicts and contradictions, and
not simply the pattern of institutional
forces; that today, the main threads of
the context are the great majorities
which are excluded from control of
institutions.

— GIANCARLO DI CARLO
Like all big cities, it consisted of irregularity, change, sliding forward, not keeping in step, collisions of things and affairs, and fathomless points of silence in between, of paved ways and wilderness, of one great rhythmic throb and the perpetual discord and dislocation of all opposing rhythms, and as a whole resembled a seething, bubbling fluid in a vessel consisting of the solid material of buildings, laws, regulations and historical traditions.

— ROBERT MUSIL

world - to define for ourselves how we see it - is constantly at work. If a significant part of this perceptual process is associative, as I will suggest in the last part of this thesis, to make those associations positive; supportive; enabling human interaction - rather than repellant; threatening; negatively associative - is certainly a desirable goal for architecture.

It is from an attentive curiosity about what it is the world reflects that has generated this entire discussion on truth; order; and the processes of growth and development. Robert Musil was mightily impressed by the rich assemblage of forces at work in the urban environment even sixty years ago (see accompanying quotation). So much so, and from a wide enough range of experience, that he attributes this character to all urban environments. An environment nearly all man-made, it reflects a complex interaction of forces which is at once apparently random, illogical, and unfathomable. Although it is assembled from parts that are solid in mass and volume, the patterns and relationships he perceives, the "seething, bubbling fluid," is reminiscent of Bronowski's image of the essence of matter as observed in nuclear physics (see p.160).
Even as Musil perceives the city, in all its complex interaction, as a fluid of forces held together by a formwork of matter, social order, and cultural bonds, the philosopher Ludwig Wittgenstein uses a similar urban analogy to describe language. His early work was very much involved in erecting a vast structure of such "straight regular streets and uniform houses" to reduce language to its basic elements, defined by a logical structure. Yet in the process of doing so, he never denied the existence of "the little streets and squares."2 2

In his later work, culminating in *Philosophical Investigations*, he attempts to deal with the "bubbling fluid" within language which enables the language to be both rich and ambiguous, to be vitally alive. His professional explorations of necessity focused on the underlying order of things, in search of structure. Yet, he was willing to acknowledge, and revel in the fact that language, as the built environment, was a never ending process of growth, transformation, evolution. It was by definition incomplete. And, although created by man, with each addition or modification having its own rational structure, the complexity of this tangle of processes

— LUDWIG WITTGENSTEIN

"Clearness," in itself, is not a virtue and, more than that, it has no power to exorcise the inherent quality of what it expresses. On the other hand, "clearness" is not only a legitimate but an essential goal for language, which is a system of signs to make communication possible. But why should it be the goal of an urban organization which is a highly intricate and complex system of relationships among individuals and among social classes? Why should it be the goal when the whole system of relationships between man and his physical environment is marked by deep contradictions and sharp conflicts? "Clearness" is not inherent in the nature of such a situation and can only be secured by being imposed. But to do this, one must believe that contradictions and conflict are pathological signs of displacement in individuals and social classes who must either be re-educated or compelled to respect the institutions — wise, just and healthy by definition.

— GIANCARLO DI CARLO
revealed itself as contradictory and often illogical.

On this basis, I would dispute di Carlo's claim (see quotation on facing page), that clarity in language is essential — in communication yes, but not, therefore, in language — for language reflects its existence as man's construct, and will inevitably reveal the inconsistencies they both share. What di Carlo does point out, is that these contradictions and conflicts indispensably exist in man, and need not be talked or legislated out of existence.

The issue of what is real and what is illusory about man's perception is a compelling one. Physical "facts" can be perceived in many different ways, both in terms of reason and in terms of experience. The painter Joseph Stella painted a memorable image of the Brooklyn Bridge in 1922 (fig.2). It was placed in a tradition which owed much to Cubism and Futurism; an emotive celebration of the splendor of the new technology. Stella speaks of his experience of this painting in the accompanying quotation. His words express the emotional power he was trying to harness and direct into his work. The dynamic expressionism of his work gives form to those surging emotions. One might say his painting is unreal; abstract; poetic in its expressive

To realize this towering imperative vision I live days of anxiety, torture, and delight alike, trembling all over with emotion. . . . Upon the swarming darkness of the night, I rung all the bells of alarm with a blaze of electricity scattered in lightnings down the oblique cables, the dynamic pillars of my composition, and to render more pungent the mystery of my metallic apparition, through the green and red glare of the signals I excavated here and there as subterranean passages to the eternal recesses.

— JOSEPH STELLA
communication; that it is a very personal vision given a form. I can merely present a visual association to a photograph of that same bridge (fig.3). An image that is "real"; that is "true"; for the camera merely presents what is before it.

Man's perception of his world takes on many forms. Some of these perceptions can be generally agreed upon, some are intensely personal. Yet their very existence has a reality that cannot easily be denied. In this part of the thesis I have tried to explore the ways in which the world is defined "In Man's Image". Recalling the striking image that a ghetto youth could project in a poem (p. 151), where he shares a view of the world than once appeared to operate according to the immutable laws of Newtonian mechanics and Euclidian geometries. That world is now flawed. But rejoice, for that flaw is us, and it reflects those qualities which are gloriously human.

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The point is that knowledge in general and science in particular does not consist of abstract but of man-made ideas, all the way from its beginnings to its modern and idiosyncratic models. Therefore the underlying concepts that unlock nature must be shown to arise early and in the simplest cultures of man from his basic and specific faculties.

— JACOB BRONOWSKI
PART III:

PERCEPTION: the Resonance of Association
- the identification of a FORM
and a FEELING

Meaning what it seems to mean, but feeling the way it does.
— KENNETH FEARING

Isn't it strange how this castle changes as soon as one imagines that Hamlet lived here? As scientists we believe that a castle consists only of stones, and admire the way the architect put them together. The stones, the green roof with its patina, the wood carvings in the church, constitute the whole castle. None of this should be changed by the fact that Hamlet lived here, and yet it is changed completely. Suddenly the walls and the ramparts speak a quite different language. The courtyard becomes an entire world, a dark corner reminds us of the darkness of the human soul, we hear Hamlet's "To be or not to be." Yet all we really know about Hamlet is that his name appears in a thirteenth century chronicle. No one can prove that he really lived, let alone that he lived here. But everyone knows the questions Shakespeare had him ask, the human depth he was made to reveal, and so he, too, had to be found a place on earth, here in Kronenberg. And once we know that, Kronberg becomes quite a different castle for us.

— NIELS BOHR
Chapter 1: Introduction

In the preceding part of this thesis, I have explored a few thoughts and feelings about the relationship between man and his environment. That man associates with his environment in terms of how he perceives that environment, and that his perception of it is a complex mixture of thoughts, feelings, beliefs, and experiences, seems self-evident. How this mixture manifests itself, however, is very difficult to understand. Observation tells us that it can, at best, be described as a vast collage, assembled in each case from a lifetime of experience, whether that life extends to eighty years, or one.

It has been suggested that any knowledge of the world is contributed, and put in some order, by man himself, in search of meaning. This is contrary to the firmly held belief that man merely struggles to reveal an order which already exists; that by working tirelessly, he shall discover the "truth" of things. This may be true, but that is a matter of belief. What this belief suggests is that man is
a spectator in a process he is not involved with and over which he has no control. Architecture based on this principle likewise disengages man from the course of events; in fact, it insists that man cannot "become", but merely "be".

Taking the other point of view, that man is actively engaged in the events which surround him, and that his actions not only influence, but mold those events, architecture has a responsibility to support and embrace man in participating in it. A cold, static architecture is not one that best enables man to carry on in harmony with the processes of which he is a part.

Exploring the ways in which to better accommodate man and his environment demands looking more deeply into the way man perceives his environment. The statement by Kenneth Fearing on page 197 suggests one of the greatest conflicts that haunts man in trying to establish harmony with his world. Things mean what they seem to mean, but they always feel like they do. The former is constantly putting rational demands on us, forcing us into communion with "light and order which is our refuge." The latter constantly reminds us of the power to "drive
That power also allows one to imagine the most marvelous things; it has the power to transform the assemblage of stones that make up a castle into a stage, where one's entire life can be played out in Shakesperian metaphors (see quotation on p.197). One's perceptions can change dramatically according to the things with which one happens to associate.

This part of the thesis journeys into the world of perception in the hope of unearthing a few notions about the world which can in turn feed back into man's perceptions of his environment. It seems that a broader understanding of how man perceives his environment can be of crucial importance to developing an architecture that can be in sympathy with that process.

In Part I of this section, I began to outline some of the notions I would be exploring later. In a footnote to this outline (p.232;Footnote6), I run through a series of definitions about the two complimentary processes which seem to be present at the moment of perception. The quotations on the next page reflect the initial states of receptiveness which are variously called 'arousal,' the physiological facility...
of "sight", "cogito". This receptiveness, about which Wordsworth waxes eloquent on p.7, allows the initial stimulus patterns of light, color, and movement to be transmitted. Read suggests the potential for meaning that perception may contribute.

Faulkner, in his first person account of what the idiot, Benji (The Sound and the Fury) perceives, records a limited perceptual capacity. Benji sees everything in his perceptual field, but to him, the ability to see objects in depth of space is not fully developed. The objects in front of the focus of his attention are lumped together as a screen he sees through; the objects behind his focus are perceived as a screen, and movement is defined as happening on this backdrop. There is no sense of seeing past and object, or that one thing is in front of another. Even his perception of time is transposed to relationships of size: The men do not swing their golf clubs seldom or infrequently, they swing them little. They attract his attention by their calls of "caddy," and he thinks they are calling for his sister, who has the same name. His perception is still associative, although physiologically limited.

This realm of the physiology of sight is a fascinating
On the other hand, this logical analysis of language again involves the danger of oversimplification. In logic the attention is drawn to very special structures, unambiguous connections between premises and deductions, simple patterns of reasoning, and all the other structures of language are neglected. These other structures may arise from associations between meanings of words; for instance, a secondary meaning of a word which passes only vaguely through the mind when the word is heard may contribute essentially to the content of a sentence. The fact that every word may cause many only half-conscious movements in our mind can be used to represent some part of reality in the language much more clearly than by the use of logical patterns.

— WERNER HEISENBERG

All acts of recognition are of this kind. The girl met on the beach, the man known long ago, puzzle us for a moment and then fall into place; the new face fits on to and enlarges the old. We are used to making these connections in time; and...we make them also in space. If we did not, our minds would contain only a clutter of isolated experiences. By making such connections we find in our experiences the maps of things.

— JACOB BRONOWSKI

one, and much work has been done in trying to understand the mechanics of vision. What I am more interested in, however, are the mechanics of how we proceed to give meaning to these sight signals. The logical analysis of the phenomena of sight involves paying attention to "special structures," and "unambiguous connections" as does the logical analysis of language (see accompanying quotation from Heisenberg). In the process of perceiving visual signals, my interest is drawn to the same kind of patterns of association that Heisenberg mentions.

Bronowski, too, in the accompanying quotation, points out the importance of these associative processes, and suggests that in the mechanics of their underlying linkages lay the cognitive maps which connect all of our thoughts, feelings, and experiences. It is these associations that the key to man's relationship with his environment is mostly likely to be found. It is the study of this relationship that seems to have profound implications for architecture. Although my travels through literature in this field have been neither disciplined nor exhaustive, I have unearthed some connections which have begun to take on a form, and seem well worth sharing. The initial clues to
possible existence of an associative perceptual linkage comes from earnest attempts by persons of proven perceptual acuity to describe their processes of perception and associative thought patterns.

Both Francis Galton and Albert Einstein use vivid visual imagery to describe the process by which the cloudy mixture of thoughts and feelings begin to sort themselves out. Galton describes the associative process in terms of an aristocracy of ideas which acknowledge others as they pass in and out of consciousness. Einstein notes the visual and physical components of the associative process, where words must be laboriously ferreted out to represent what initially can be described only as an image or a feeling. His description is reminiscent of Herman Melville's *Billy Budd*, who, by way of explanation after striking another man, said "If I could have found my tongue, I would not have struck him...I could say it only with a blow."26

Robert Musil in the quotation on the opposite page, speaks of what I call "resonance of association". He also comments on the physical nature of this associative phenomenon, and uses the terms "sympathy" and "antipathy" to define the

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26 There seems to be a presence-chamber in my mind where full consciousness holds court, and where two or three ideas are at the same time in audience, and an antechamber full of more or less allied ideas, which is situated just beyond the full ken of consciousness. Out of this antechamber the ideas most nearly allied to those in the presence-turn of audience.

— FRANCIS GALTON

The words of the language as they are written or spoken, do not seem to play any role in my mechanism of thought. The physical entities which seem to serve as elements in thought are certain signs and more or less clear images which can be "voluntarily" reproduced and combined. The above-mentioned elements are, in my case, of visual and some of muscular type. Conventional words or other signs have to be sought for laboriously only in a secondary stage, when the mentioned associative play is sufficiently established and can be reproduced at will.

— ALBERT EINSTEIN
"All that one thinks is either sympathy or antipathy," Ulrich thought. And at this moment this so vividly struck him as being right that he felt in it as a physical pressure, like the bodily contact of people swaying in unison when they are jammed up against each other.

— ROBERT MUSIL

We come to terms as well as we can with our lifelong exposure to the world, and we use whatever devices we may need to survive. But eventually, of course, our knowledge depends upon the living relationship between what we see going on and ourselves. If exposure is essential, still more so is reflection. Insight doesn't happen often on the click of the moment, like a lucky snapshot, but comes in its own time and more slowly from nowhere but within. The sharpest recognition is surely that which is charged with sympathy as well as with shock....

— EUDORA WELTY

positive and negative aspects of the power of resonance. Eudora Welty speaks directly to the key issue, for me, in the exploration of the associative processes: the relationship between ourselves and the perception of our environment. She suggests that this "resonance" need not come with the force Musil describes, but she directly correlates the intensity of the association with the degree of resonance. She uses the term "insight" to describe the moment of recognition, when an associative link is formed, and one sees new relationships in the thing perceived.

Murray Milne, in his explanation of the design process, describes the moment of insight in the following way:

"Insight", insofar as it relates to an associative memory, seems to be just the opposite of "fixation". That is "insight" seems to be the formation of a new association, or possible strengthening of an associational link which was previously too weak.27

The associative process through which we begin to engage our environment seems to have much to do with the notion of resonance: that moment when one or more perceptual clues slip into harmony with analogically similar patterns, relationships, elements, or experiences which are already stored in one's memory. Musil describes this interactive process in the
quotation on p.199. Ralph Waldo Emerson, in the accompanying quotation, stresses the importance of this interactive relationship, and suggests that this associative process is essentially analogical.

S. A. Mednick, in an article entitled "The Associative Basis of the Creative Process," correlates the degree to which one is able to make associative links where there were none before, to creativity. He expands on this phenomenon in the same article to suggest three ways in which potential associations can be brought into contiguity. The first he refers to as serendipity: the accidental continuous environmental occurrence of stimuli which are sufficient to generate associations. The second he calls similarity, where the relationship between the thing perceived and the stimuli it provokes are clear enough to understand directly. The third he calls mediation, where the stimuli received shares elements common to two previously unrelated elements, which are suddenly seen as partially analogous. Yet, these distinctions do not begin to describe the motor functions which allow these associations to take place.

Dean Woolridge, in the quotation on the opposite page, uses explorations into the creative process to relate the

PERCEPTION:
the resonance of association

Every appearance in nature corresponds to some state of the mind, and that state of the mind can only be described by presenting that natural appearance as its picture...man is an analogist, and studies relations in all objects. He is placed in the center of beings, and a ray of relation passes from every other being to him. And neither can man be understood without these objects, nor those objects without man.

— RALPH WALDO EMERSON

...the creative thinking process (is) the forming of associative elements into new combinations which either meet specified requirements or are in some way useful.

— S. A. MEDNICK
associative mechanisms to creativity. Yet each one of us has
moments when we are more creative, and moments when we are
less so. The implications for architecture lie in the at-
ttempt to design environments that support this associative
process; which, in fact, have a wide enough range of poten-
tial associations, an ambiguity in the multiplicity of rela-
tionships, that allows for a lowering of man's associative
threshold.

To expand on Tom Waits' accompanying song lyric, archi-
tecture should be rich enough in human associations that it
provides infinite melodies which are recalled and played
through, whenever one is in need of any given song.

The most interesting exploration into the process of
associative mechanisms that I have encountered is the work
of Dr. Bernard Rimland. His work in the field of infantile
autism has led him towards a theory of behavior which is
based on the importance of association. I have touched
briefly on his work in the footnotes to Part I of this sec-
tion, and would like to expand on them a bit. I hope that
the few glimpses of his work that I give you will inspire
further explorations of your own.
Rimland has observed that one of the defining characteristics of autistic children has to do with their inability to operate successfully on a wide range of associative levels of thought and perception. Autistics are known to have, in some cases, photographic memories, perfect musical pitch, revealing insights; all characteristics which reflect extraordinary capabilities. They have little sense of their relationships with other people or other things. They seldom have any concept of themselves as affecting the environment: the terms "I" and "me" are absent from their vocabulary. They are generally unaware of metaphorical language; they neither use it nor respond to it. They seem to be unable to perceive things in terms of other things. Yet they have no observable physical disfunctions.

In the accompanying quotation, Rimland compares these observations against what is considered to be man's "normal" perceptual proclivities. The hypothesis he projects, that "instances of rational behavior...could be called aberrant," is a jarring thought. Yet when one explores the perceptual processes, and accepts the oft-cited distinction between arousal and cognition (see pp.232–4), it seems apparent that the ordering of one's perception is a willful act. Since
it is a capacity we all share, although in different degrees, it is not an abnormal process; but seen as a willful act, it may not be as natural a process as the associative patterning that Rimland describes.

He believes there is a process by which the neurons themselves discharge when they are fed signals which have information similar to that which is already coded into the neuron. (See accompanying quotation.) He also suggests that each neuron has the potential to discharge; they want to "resonate." The satisfaction that the neurons experience when they are discharged would account for the kind of experience Musil describes on page 205.

Peckham uses this phenomenon to suggest that it may even substantiate Nietzsche's assertion that "the proudest pleasure of the human mind is the creation of the world."29

The resonance that one can imagine resulting from such a cosmological congruence of forces is sublime. Certainly, the satisfaction of such congruence results from any human creative act, no matter how small. Carl Sagan, in a recent article, also acknowledges such a phenomenon. In the quotation on the next page, he discusses the intransigent power of our most firmly held beliefs, and uses this concept of
"resonance" to suggest some of the potential connections that give one's least articulate but most profound beliefs their enormous power.

Rimland's conclusions focus on the potential significance that "neuron entelechy" could have in better understanding the processes by which we perceive. In so doing, it raises powerful issues concerning the nature of man:

The present hypothesis of brain function lead to the suggestion that the brain operates on the basis of analogies, rather than in terms of a more rigorously analytical process (analogically rather than logically). Objects, situations, and problems would be responded to as being similar to previously experienced objects, situations, and problems as a function of the overlap in the neurons they discharge when their sensory representations are coded and transmitted through the brain's memory bank. If there be the force we referred to as "affinity" causing neurons to seek to discharge when stimulus patterns approximating theirs are experienced, there are likely to be important differences between people in the intensity of such affinity. We suggest that the driving force which causes intelligence to fill the gaps in knowledge, to bring order to the content of the mind, to create new coherences, may be that same force. 30

The general acceptance of religious ideas, it seems to me, can only be because something in them resonates with our own certain knowledge—something deep and wistful; something every person recognises as central to our being. And that common thread, I propose, is birth. Religion is fundamentally mystical, the gods inscrutable, the tenets appealing but unsound because, I suggest, blurred perceptions and vague premonitions are the best that a newborn infant can manage. I think that the mystical core of the religious experience is neither literally true nor permissibly wrong-minded. It is rather a courageous if flawed attempt to make contact with the earliest and most profound experience of our lives. Religious doctrine is fundamentally clouded because not a single person has ever at birth had the skills of recollection and retelling necessary to deliver a coherent account of the event. All successful religions seem at their nucleus to make an unstated and perhaps even unconscious resonance with the perinatal (the period just before and just after birth) experience. Perhaps, when secular influences are subtracted, it will emerge that the most successful religions are those which perform this resonance best.

— CARL SAGAN
This has powerful implications for architecture as well. If this theory has any validity, the explorations in the first section of this thesis may prove even more fruitful. Building in a way that enables the user to associate with his environment in multiple ways seems to accommodate a much richer palette of human experience. It may prove to be even more harmonious for man than any exploration into the purely rational structures of man's perception of his environment could ever be.

The next two chapters will take a very brief look at the two perceptual processes which have been a continuous theme throughout this work: the perceptual ordering process which demands generalization; and the associative attachment process which seeks out the discrete, the process of particularization. All of the explorations in this thesis kept coming together at a point defined by these two parallel and complementary modes of perception. This distinction, which on the one hand may seem quite obvious, is one that is too often lost or ignored in a large part of the built environment that I have observed. I hope this discussion will help to resensitize us to these important components of our experience.

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Chapter 2: Ordering the Field

The mind's spontaneous acts, till now
As eating and as drinking free.
Require a process: — one, two, three!
In truth the subtle web of thought
Is like the weaver's fabric wrought,
One treadle moves a thousand lines
Swift dart the shuttles to and fro,
Unseen the threads unnumber'd flow,
A thousand knots one stroke combines.
Then forward steps your sage to show,
And prove to you it must be so;
The first being so, and so the second.
The third and fourth deduc'd we see;
And if there were no first or second,
Nor third nor fourth would ever be.

—GOETHE[FAUST]

In the past, discussions of culture have usually been based on an implicit assumption that a healthy civilization is a close-knit unity focused on some single central doctrine or philosophy. The principle of organization which, it was implied, a culture should possess was a hierarchical one. ... It is rather that we have failed to realize that cultural life in the present day needs to be organized as an Egalitarian Democracy of ideas and activities, instead of a Hierarchical System. ... Our societies, as assemblages of people, are organized as democracies in which each man is expected to be himself and to interact with his fellows; he is no longer thought of as having a definite place in a unified hierarchical social structure. Our culture, as an assemblage of ideas and activities, does in fact present us with a parallel type of organization. But we have hardly yet realized this.

— C. H. WADDINGTON
Ben's voice roared and roared. Queenie moved again, her feet began to clop-clop steadily again, and at once Ben hushed. Luster looked quickly back over his shoulder, then he drove on. The broken flower drooped over Ben's fist and his eyes were empty and blue and serene again as cornice and facade flowed smoothly once more from left to right: post and tree, window and doorway, and signboard, each in its ordered place.

— WILLIAM FAULKNER

These final two chapters are merely quick sketches to indicate the direction of my continuing exploration. I have discussed at some length the essential ordering processes which are required to derive meaning from our multiple experiences. As Goethe comments on the preceding page, what organizes the processes by which we experience the world is a very subtle web, and the "thousand knots one stroke combines" will not unravel easily; at the same time, they create a rich fabric which never ceases to be compelling.

Man most certainly strives for some order in his world, but it is doubtful whether that order can be achieved through the imposition of a rational construct, devoid of experience. William Faulkner, in his exploration into the mind of the idiot, Benji, indicates the terror inherent in having one's perceptual expectations disrupted (see accompanying quotation). Once things had returned to an order with which Benji was familiar, he became placid, cool, and serene. Yet his order speaks nothing of logic, of rationality, of a gestalt of form. Rather, it is an order of place, a sequential assemblage of events, of a recognizable experience: post
and tree, window and doorway, the signboards, all in complex relation. The connections are generated from the perceptual memory of experience.

Waddington, too, speaks of an order of relationships which form a vast assemblage of events, activities, interactions, experiences (see p.213). It is a kind of order that is present in our culture and society as well; an order that does not conform to logic, but events. Many others have given insights into this phenomenon throughout this thesis, and have made many suggestions about ways of accommodating it:

Mark Twain (p. viii)
Aldo Van Eyck (p. 10)
Christopher Alexander (pp. 22, 129, 177)
Paul Klee (p. 56)
Lawrence Halprin (pp. 72, 181)
Giancarlo di Carlo (pp. 84, 170)
Louis Kahn (p. 122)
Moshe Safdie (p. 184)
C. H. Waddington (p. 187)

My suggestions are to be found in the processes I demonstrate in the first section of this thesis.

It is a challenging exploration; it never ceases. I firmly believe, however, that these explorations are in the right direction: No sufficient solution will be found in
We can interpret any sign in two ways. ... We can interpret the interpreter's mode of perception as predictive, referring "forward from the sign," or as orientive, referring "backward from the sign" to the interpretation, the set, the directive state. Thus when we call a sign a "symbol" we merely mean that we are directing our attention to the orientative aspect of the transaction rather than the environmental aspect.

— MORSE PECKHAM

an appeal to pure reason. Therein lies a part of man's experience, but it is far from all. In many ways, how this order takes on form seems dependent on the particular, and the ways in which the particular is assembled.

In the accompanying quotation, Peckham again refers to man's dual process of ordering perception. Yet they each derive from the particular. One serves to establish our relationship with our immediate environment; the other serves to project "what we are going to do about it."31 This is the essence of order in our environment.

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...we do not find ways to hew to experience as it is, in our definition and expression of it, in other words, find ways to stay in the human universe, and not be led to partition reality at any point, in any way. For this is just what we do do, this is the real issue of what has been, and the process, as it now asserts itself, can be exposed. It is the function, comparison, or it bigger name, symbolism. These are the false faces, too much seen, which hide and keep from use the active intellectual states, metaphor and performance. All that comparison ever does is set up a series of reference points: to compare is to take one thing and try to understand it by marking its similarities to or differences from another thing. Right here is the trouble, that each thing is not so much like or different from another thing [these likenesses and differences are apparent] but that such an analysis accomplishes a description, does not come to grips with what really matters: that a thing, anything impinges on us by a more important fact, its self-existence, without reference to any other thing, in short, the very character of it which calls our attention to it, which wants us to know more about it, its peculiarity. This is what we are confronted by, not the thing “class,” any hierarchy, of quality or quantity, but the thing itself, and its relevance to ourselves who are the experience of it [whatever it may mean to someone else, or whatever relations it may have].

— CHARLES OLSON

Recently, I was seated in a restaurant next to a family of three, a father and a mother and a bright little boy between eight and ten years of age. They studied the menu, and the boy said, “Oh, I want liver and bacon.” The waitress was there; the father studied the menu, the mother studied the menu, and then the father ordered three steaks. The waitress said, “Two steaks, one liver and bacon,” and went off. The boy looked at the mother and said, “Mummy, she thinks I’m real.”

— E. F. SCHUMACHER
At the beginning of this part of the thesis, I used the words of Kenneth Fearing (p. 197) to illustrate the two fundamental aspects of perception. Thoughts, as words or images, have the appearance of reality—they act as symbol systems to communicate to ourselves or others; but things "feel the way they do"! The awareness of our emotional relationship with the world allows us to try putting words or images to what we sense as real.

The boy that Schumacher describes on the preceding page has just made a profound discovery—he is real. What is more profound is how deeply obscured that fact can become. Charles Olson focuses on exactly what that reality is, and illustrates our preoccupation with appearances (p. 219). Even the associations we make with things become abstract when we try to determine just how much alike or different a thing may be to or from another thing.

One cannot lose sight of the thing itself. As well as the quality of an experience, there is always the quality of the thing itself. If this quality of the thing itself is absent, the quality of the experience it generates as one
interacts with it is sadly diminished. We all purchase products which are "imitations" of a more expensive brand. Sometimes the name is enough to inflate the image of a given product, and the less expensive one is of the same quality. More often, the less expensive item is less expensive simply because it is of lesser quality. Their similarities may be close; it may be possible to fool yourself and others into believing that it is of equal quality. Yet, the satisfaction of having something like the better item is tinged with a sense of loss; you can feel the lack of quality.

In the accompanying quotation, Giulio Argan uses words to convey what this "sense of quality" is. Using a definition which he feels is appropriate to Paul Klee's sense of quality, he stresses the essential uniqueness of experience in man's intercourse with that which has quality. From the awareness of this uniqueness, one is able to associate his experience to others hidden in his thought and memory, but the essential quality is still to be found in the particular thing itself.

Eduardo Paolozzi also stresses the importance of the particular, choosing to accentuate its character by taking ordinary objects through a series of transformations. The

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Quality for (Paul Klee) was the ultimate product of the individual's unrepeatable and unique experience; one achieves it by descending into the depths and by progressively clarifying the secret springs of one's actions, the myths and recollections lurking in the unconscious which strongly influence consciousness and action.

— GIULIO CARLO ARGAN

I seek to stress all that is wonderful and ambiguous in the most ordinary objects, in fact often in objects that nobody stops to look at or to admire. Besides, I try to subject these objects, which are the basic materials of my sculptures, to more than one metamorphosis. Generally, I am conscious, as I work, of seeking to achieve two or at most three such changes in my materials, but sometimes I then discover that I have unconsciously achieved a fourth or even fifth metamorphosis. This is what imposes, in addition to a formal metamorphosis, a material metamorphosis on all my materials. In the finished casting, the original objet trouves are no longer present at all.... They survive in my sculptures only as ghosts of forms that still haunt the bronze, details of its surface or its actual structure.

— EDUARDO PAOLOZZI
If the input information is a completely unique perceptual experience free of clues, that is, having no categorical identity, then as Bruner says "it is doomed to be a gem serene, locked in the silence of private experience." Designers, I think, often ponder these unique perceptual experiences, trying to give them "meaning" (i.e., find the clues that establish the correct categories), usually so that they can reproduce this experience for others. Often, because of the complexity and subtlety of this perceptual information, it cannot be reproduced verbally, therefore designers must turn to other modes, usually visual.

— MURRAY MILNE

resultant object has its own life, and is to be taken in its own terms, but it contains in its physical form, reference to another particular object, a ghost of its original self.

The fact that this sense of quality, to be found in the particular, is difficult to share or communicate, has to do with the difficulty of making a successful abstraction of the feelings an experience has inspired. In the accompanying quotation, Milne describes the difficulty of finding the proper vehicle for sharing these perceptual experiences. He suggests that it is often easier to communicate these things visually, especially if the perceptions or thought processes are visual. At least in this way, the information can be projected in a form more closely aligned with the form of the initial stimulus.

Unquestionably, the process of sharing perceptions is often a difficult one. What it is we come to know has threads to a vast assemblage of personal experience and personal associations. Although there is also surely a body of shared perceptions based on common experiences, the total sum of meaning a particular situation may hold for one will never be the same sum of meaning for someone else. One can only hope to maximize the commonly shared bits of experience.
The fact that people can see the same things differently, or can associate with them differently, is pointed out by both Rasmussen and Pirsig. This difference results from the fact that perception is not a physiological process that works the same way for everyone. If we are to believe any of the foregoing discussions of associative neuron "resonance," each individual supplies his own unique data on assemblage of his life's experience. It also results from the fact that, as Rasmussen points out, perception is a creative art. Man contributes his own organizational faculties to the process of extracting meaning from his experience.

The awareness of the particular in the environment is an extension of man's awareness of himself as particular. As Bronowskii illustrates in the accompanying quotation, the act of discovery permeates every act of perception. Perception itself is a double relation of analysis and synthesis; of experience and action; of feeling and thought. Man's most remarkable features are the capabilities of both generalization and particularization: to find relation in all things, and at the same time differentiate among all things.

Perception is discovery, as Bronowskii points out; it is also invention, as Reynolds points out. The act of perception
It is indisputably evident that a great part of every man's life must be employed in collecting materials for the exercise of genius. Invention, strictly speaking, is little more than a new combination of those images which have been previously gathered and deposited in the memory; nothing can come of nothing: he who has laid up no materials can produce no combinations.... What is learnt from others becomes really our own, sinks deep, and is never forgotten, nay is by seizing on this clue that we proceed forward, and get further and further in enlarging the principles and improving the practice of our art.

— SIR JOSHUA REYNOLDS

is a constant process of collecting materials. At the same time that everything is already there to be discovered, each of us is always discovering and associating with things in new ways. I can imagine no more fitting words than Reynolds' to describe my explorations and intentions in the first part of this thesis.

In closing this section of the thesis, I would like to share two pieces of advice which can only serve to make one more aware of his environment, and more capable to use it in the discovery and invention of our future environment. Taken together, they will help in organizing the field, as well as embracing the particular; they will help in the discovery of enabling forms, and in the generation of richly associative environments. By exploring these complementary aspects of man's perceptual capabilities, and learning from them, it is possible to approach a resonance of place:

Build as well as you can, not better. Watch for the forms the peasant uses in building. But look for reasons....

— ADOLPH LOOS

When you first see a pattern, you will be able to tell almost at once, by intuition, whether it makes you feel good or not; whether you want to live in a world that has that pattern in it, because it helps you to feel more alive. In the end, we must decide whether a pattern is whole or not, by asking ourselves how the pattern makes us feel. By contrast, patterns made from thought, and without feelings lack empirical reality entirely. Once a person is willing to take his feelings seriously... and pay attention to them — and exclude opinions and ideas — then his perception of a pattern can approach the quality without a name.

— C. ALEXANDER
Well, so that is that . . . for the time being, here we all are.
Back in the modern Aristotelian city of darning and the Eight-Fifteen,
where Euclid's geometry
And Newton's mechanics would account
for our experience
And the kitchen table exists
because I scrub it.

— W. H. AUDEN
REFERENCES

The following references are the sources for the quotations which are interspersed throughout the thesis. They are listed sequentially according to the page on which they are located.

For those sources included in the bibliography, the quotations are noted according to author and date of publication. For those sources not included in the bibliography, complete data is given. If these sources repeat, they will be referenced by using op. cit.

p.xvii 1. Quoted from a Built Form Observations lecture by Professor Maurice Smith, the Department of Architecture, Massachusetts Institute of Technology, 16 March 1979.


THE IMAGES


p.42 4. This statement raises one of the most crucial issues of this thesis, and therefore deserves some amplification. The thesis was obviously written after the projects were built. Likewise, many of the specific images I have chosen to use in the thesis were assembled after the projects were built. In most cases, the images were familiar to me, and were unquestionably in my mind as I was designing and building the places in this thesis; the connections are direct,
and the place followed from the memory of the image.

A few of the images were not specifically known to me before the places were built. Yet, in these cases, my awareness of the relationships these images share with the places that were built was present in my mind. One's memory is often partial and vague, yet the memory of relationships, materials, historical context, and families of form directed my search for the images. Thus, I was able to find images which corresponded most directly to the memory of places seen, relationships perceived, and feelings felt. These things had the most significance in guiding my design work.

I do recommend for anyone the constant recording of the things one responds to in exploring the vast world of visual information. Use photographs, do drawings, record times and places; explore the relationships which drew your attention. At the same time, I know all too well how difficult it is to be so well organized as to maintain such an information file.

From my experience in this thesis, where I disciplined myself to do just that, I learned a great deal. The sooner one can accomplish this discipline, the easier it becomes, the more one learns, and the farther ahead one is in understanding the vast range of elements and relationships which make up the environment and our world.
Edward Hall devotes his most recent book *Beyond Culture* (1976) to the exploration of man's intrinsic relationship to his culture, and the powerful and too-often-hidden forces which act upon him. These are the same themes Hall has been concerned with, and has continuously explored through *The Silent Language* (1959) and *The Hidden Dimension* (1966). He discusses culture in terms of its influence on man's perception of the world. In one particularly cogent extended metaphor, he clearly pinpoints the experience of "cognitive tension." (This phrase is the one chosen by Morse Peckham to describe what he sees as the root of innovative thought; it will be discussed briefly later.)

At the same time, Hall points out the intransigent power of man's belief systems: Most cultural exploration begins with the annoyance of being lost. The control systems of the mind signal that something unexpected has arisen, that we are in uncharted waters and are going to have to switch off our automatic pilot and man the helm ourselves. There's a reef where we least expect it. Sadly enough, people in real-life situations don't actually see it this
way because the almost inevitable re-
sponse is to deny the reef is there
until one has run aground.
(Hall [1976], p. 40)

p.140 6. This notion, that the act of perception is a
process which actively engaged the perceiver,
rather than his being a merely passive ob-
server, is pointed out in many different
sources. Very often, the distinction is made
between the passive mode of taking the infor-
mation in, and the more willful activity of
sorting it out. In the quotation on pages
140/1, Alfred North Whitehead uses the terms
"presentational immediacy" and "causal effi-
cacy," the former referring to the immediate
data presented to us, "like patches of color
seen with the eyes," etc. The latter is what
approximates my use of the word "resonance." In
Whitehead's terms of causal efficacy, he
defines the objects and events before they
are categorized, and understood by us, as
"entities which are perceived as having some
potential effectiveness in the world."

An assemblage of similar notions which in-
clude this distinction are:
--"perception" as distinguished from
"arousal"
(Thiel [1971], Ch. 2, p. 34)

--"the conscious faculty of vision" as
distinguished from "the physiological
facility of sight":

(Thiel [1971], Ch. 2, p. 34)
Sight is only a vehicle by means of which we receive the visual signals. Vision, however, is what our consciousness makes of these sight signals.

(Waddington [1970], p. 115)

"intelligo" as distinguished from "cogito." Lawrence Kubie uses these classical Latin terms to represent the distinction which he defines as follows: cogito--shaking things up, to roll the bones of one's ideas, memories and feelings, to make a great melting pot of experience; intelligo--consciously, self-critically, but retrospectively to go through an after-the-act process of choosing from unanticipated combinations those patterns which have new significance.

(Waddington [1970], p. 241/2)

There is a receptive, more or less unconceptualized, aesthetic and spiritual mode of perceiving, and there is also a highly conceptualized, stereotyped, utilitarian, and even scientific mode.

(Huxley [1961], p. 12)

This very assemblage of references points out that, although each person had something a little different to say, and for a full understanding of what each is trying to say, both the semantics chosen and a more extended context become very important.
they can still be grouped together in a slightly more abstract manner, to highlight their similarities.

p.140 7. This associative process is noted by many writers, from Emerson:

Every appearance in nature corresponds to some state of the mind, and that state of the mind can only be described by presenting that natural appearance as its picture. Man is an analogist, and studies relations in all objects. He is placed in the center of beings, and a ray of relation passes from every other being to him. And neither can man be understood without these objects, nor those objects without man.

(Ralph Waldo Emerson, from Nature, publ. 1836)

to Waddington, who points out that the philosophers who were proponents of "logical positivism" were destined to run into the problems of relativity, and the vague boundaries of meaning and perception. As they tried to establish the idealized logical language, described in terms of "elementary propositions," Waddington responds:

Take an everyday "elementary proposition" describing a combination of objects The Cat sat on the Mat. Does not one immediately feel, lurking in the background of that mere "concatenation of names," and seeping in around

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Footnotes

197. Kenneth Fearing; the original source of this quotation has been lost.

Footnotes

207. Eudora Welty, "One Time, One Place".
208. Ralph Waldo Emerson, Nature (1836); as quoted in Thiel (1971), Ch.2, p. 34.
REFERENCES/FOOTNOTES

PAGE

B-III-2. Ordering the Field
213. Johann Wolfgang von Goethe (b. 1749- d. 1832); from Faust. The exact location of this quotation within the work has been lost.

B-III-3. Embracing the Particular
219. Charles Olson; from Human Universe.
225. Sir Joshua Reynolds, Discourses to the Students of the Royal Academy (1769-1774).
225. Adolph Loos; from his publication Trotzdem, c. 1918.

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the edges of the isolated "atomic fact," some shadowy picture of a fairly complex situation--nursery tea, with buttered toast, in front of the fire, a wet night outside the windows?

(Waddington [1970], p. 113)

The most interesting theory concerning this process from a physiological point of view comes from studies done on infantile autism, done by Dr. Bernard Rimland, whose work was first pointed out to me by Morse Peckham, in his book Man's Rage for Chaos: (Rimland) thinks that the brain's Arousal Mechanism, also called the Ascending Reticular Formation, is the place where sensation is linked to memory...that linkage, he believes, is done in terms of patterns; that is, we think not logically but analogically, not by deductive steps but by observing similarities and dissimilarities between remembered patterns and new ones.... He also agrees that "emotion is the resultant of a discrepancy between expectation and actuality"...and creativity...the drive "to fill the gaps in knowledge, to bring order to the content of the mind, to create new coherences. At the root of intelligence, emotion, and creativity, lies what he believes to be "neuron entelechy." "Entelechy" probably comes from the Greek "to be
complete." He proposes, then, that "the brain contains neurons which are particularly responsive to certain specific patterns of stimulation, and that an experience of 'pleasure,' 'reward,' 'satisfaction,' or 'realization' for the organism occurs when a neuron is stimulated by an appropriately patterned pulse of coded sensory output. The degree of satisfaction would be in part a function of the number of neurons responding...we may say that the neurons 'want' to discharge, and that they 'resonate' when stimulated by their appropriate pattern, or by patterns similar to it. The neurons would have been previously conditioned or tuned to respond to its critical stimulant pattern by genetic and/or experiential factors, usually acting jointly.... The brain, then, filters experience on the basis of past experience and it does so by applying analogies from past experience."

(Peckham [1965], p. 320/1)

In the process of trying to define for myself what were some of the connections between man's perception and his environment, I settled on the term "resonance," which can be found in the title of this thesis. In doing background research into the phenomena of perception, I encountered both Peckham and
Rimland, who used the term "resonance" as a description of what their thoughts and research had led them to believe is part of the neurological processes of perception.

Rimland traces this notion back to the work of Paul Weiss, as early as the late 1920s:

Paul Weiss had employed the term neuron resonance nearly four decades ago in describing certain phenomena relating to neuron growth and development, as well as certain motor aspects of neuron function.

(Rimland [1964], p. 205, footnote 8)

8. Alastair Hannay, in a book entitled Mental Images - A Defence, makes the distinction between associations which we are surprised by and those which do not seem at all surprising:

For the link of or the train of association that joins two thoughts together cannot be something that we are conscious of in the same way that we are conscious of the thoughts that it links. And yet we are not surprised by our own associations, as we can be by what just "happens" to us, so there is perhaps still some point in insisting that they are conscious, active processes.

(Hannay [1971], p. 255)

This distinction seems to be to be an arbitrary one. It is true that some associations
seem completely natural, while others strike us as being quite unexpected. Yet, this does not seem to be due to the process of association as much as resulting from our attempts to understand how the associations came about after we have had them.


p.158 12. These two characters, from Shakespeare's The Tempest, establish a most elegant dialogue between the ethereal and the material; the appeals of the body and the appeals to the mind. Finally, what results can be seen as an exploration into the natures of Art and Life. W. H. Auden, in "The Sea and the Mirror," gives a lucid commentary on and critique of The Tempest, which further stimulates one's awareness of these human characteristics.


p. 189 21. The words in italics are those of Giancarlo di Carlo, as quoted on p. 10 of this thesis.

p. 194 22. In his early masterpiece, *Tractatus Logico-Philosophicus* (London, Routledge and Kegan Paul, 1922), written when he was a young man, he tried to construct a definitive philosophical statement about how language was structured. In *Philosophical Investigations* (1958), where this particular quotation can be found on p. 8, he profoundly explores the more ambiguous aspects of language as communication, those modes of communication which could not be said to conform to a logical structure.


p. 203 25. This notion of "cognitive mapping" has received a fair amount of attention, and I have not yet had the opportunity to familiarize myself with all the literature on the subject. Jerome Bruner, who has done significant work in this area, gives us some clue as to its origins:

> As Edward Tolman so felicitously put it some years ago, in place of a telephone switchboard connecting stimuli and responses it might be more profitable to think of a map room where
stimuli were sorted out and arranged before ever response occurred, and one might do well to have a closer look at these intervening "cognitive maps."

(Jerome Bruner, et al., *A Study of Thinking* [1956], p. 211)

Peter Gould and Rodney White have written a book entitled *Mental Maps* (Baltimore, Md., Penguin Books, 1974). A brief beginning bibliography would have to include the works not only of Tolman and Bruner, but J. J. Gibson, Stephen Tyler, N. L. Prak, Kevin Lynch, and William Ittleson, among others.

p.204 26. Herman Melville, *Billy Budd*.


p.206 28. Jack Myer, in his exploration of analogues, graphically describes the associative process with the aid of set theory, using Venn diagrams as a device to illustrate the possible relationships.


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All of the unnumbered photographs, which generally appear in the larger place on each place, are of the three projects which are recorded in this thesis. All of these photographs were taken by the Author, with the exception of one: the large photograph on page 122 was taken by Cary Eisenberg.

The remaining photographs, of people, places, events, which in some way stimulated or reflected on the process of assembling the three environments, are listed below. These came from innumerable sources: reference books; borrowed slides; my own randomly assembled collection of photographs. They are numbered consecutively as they appear in the thesis, according to each section or chapter. They are also cross-referenced by page to simplify locating them.

Keeping track of all the images and impressions one responds to, in even a short time of looking and observing, is an impossible task. But often, the memory is in need of assistance, so it is important to keep track of those images that have particular resonance. This makes it possible to visit them again and again: One is always discovering new information in places that one thought were totally familiar. As always with references, knowing where you discovered one thing can often put you in a context where you can discover other related and valuable materials.

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cover sheet

1. The original image for the montage is "Film Cassette #3," by James Schietinger (photo-silk-screen).

preface


title page


A. THE IMAGES

3. From Simpson, p. 200 (photograph by Eve Arnold, Magnum Photos).

A-1-i. Introduction


5. From Baum, Plate VIII.


8. Philip Johnson and his model for the AT&T Building, New York; from the cover of *Time Magazine*, January 8, 1979.


13. Dreyfus Building (photo by Author).

18 17. Playground structure, Expo 74 (photo by Author).
20. Habitat, Expo 67, Montreal, Canada, Moshe Safdie, architect; from Feldman, p. 124.
20. 21. Collegio, Urbino, Italy, Giancarlo di carlo, architect (N/A).
25. Two inhabited islands in the harbor of Kerkira, Corfu, Greece (photo by Author).
27. From Denes, p. 85.
28. From Denes, p. 52.
30. Roadside reliquary and prayer chapel, Crete, Greece (photo by Author).
29 31. Interior of an apartment in an elderly housing project, East Boston, Mass. (photo by Author).


32 36. Drawing by Lawrence Halprin; from Halprin, 1972, p. 93.


A-II. Assemblages of Place

33 1. Rendering of Japanese garden; from Lancaster, p. 193.

A-II-1. 300 Cobbles and a Tree

37 1. Rear yard of 34 Sherman Street, Cambridge, Mass., before deck/treehouse was built (photo by Author).

2. Detail of rear of house (photo by Author).

39 3. From Simpson, p. 159 (photo from State Historical Society of Wisconsin).


7. (See fig. 4 above.)
8. (See fig. 3 above.)
9. (See fig. 5 above.)


12. The Author's grandfather (to the left), with his brother and their wives in Heiberg Park, Twin Valley, Minn., 1894 (original photo by O. H. Klemetsrud).


15. Detail of the main building of Katsura Palace, Kyoto, from Carver, p. 179.


19. Stair detail, Machu Picchu, ancient Inca city, Peru (photo by Author).
56 23. Detail of Tea Room of restaurant in front of Gokoku Jinja, Higashiyama, Kyoto; from Carver, p. 150.
57 24. From Miyaji and Ito, p. 135.
58 26. Detail of main building, Katsura Palace, Kyoto; from Carver, p. 179.

A-11-2. A Secluded Outdoor Place in the City
3. The site as it appeared before construction (photo by Author).
4. Looking at the rear of the building after the site had been excavated (photo by Author).
5. (See fig. 2 above.)
6. Residential courtyard, Athens, Greece (N/A).
7. (See fig. 1 above.)
8. Street detail with house and front garden, Assisi, Italy (N/A).
10. Byzantine church, exterior view, detail, Daphne, Greece (N/A).
11. Via Fontebella, detail, Assisi, Italy (Scala, 1978).
14. Street view, detail, Pienza, Italy (photo by Peter Bernbaum).
15. Street view, detail, with staircase, Pienza, Italy (photo by Peter Bernbaum).
17. Balcony and stair detail; from Seike and Terry, p. 27.
18. Courtyard with house entrances, Parikia, Paros, Greece (photo by Kosta Thomas).
79 19. House with balcony, detail, Parikia, Paros, Greece (photo by Kosta Thomas).
22. String course corbelling, Great Budworth, Cheshire; from Brunskill and Taylor, p. 78.
23. City wall, exterior view, Kairouan, Tunisia (photo by Bill Rawn).
82 24. "Adoration of the Magi" (study in pen and ink) by Leonardo da Vinci, Uffizi Gallery, Florence, Italy.

**A-11-3. Disassembling the Object**

99 1. From Miyaji and Ito, p. 51.
100 2. From Miyaji and Ito, p. 135.
101 4. Entrance detail, Blackman House (photo by Author).
5. Column and stair detail, Palace of Knossos, c. 1450 B.C., Crete, Greece (photo by Author).
7. Detail of a house facade, San Francisco, Calif., 1902, Ernest Coxhead, architect; from Freudenheim and Sussman, p. 103.
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<td>Interior detail, farmhouse in Eiganoso near Osaka, Japan; from Carver, p. 116.</td>
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<td>Courtyard with house entrances, Parikia, Paros, Greece (photo by Kosta Thomas).</td>
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<td>Stair detail, Machu Picchu, ancient Inca ruins, Peru (photo by Author).</td>
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<td>Interior stair detail, Alhambra II Hotel, Cuzco, Peru (photo by Author).</td>
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<td>Stair detail, Alhambra Hotel, Cuzco, Peru (photo by Author).</td>
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<td>117</td>
<td>&quot;L'Atelier de l'Impasse&quot; (oil painting), 1935, by Raoul Dufy, Jeu de Pomme, Louvre, Paris, France (photo by Author).</td>
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<td>Interior of conservatory, Bell (Wintermute) house, Berkeley, Calif., 1913, John Hudson Thomas, architect; from Woodbridge, p. 96.</td>
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B. The Words

B-I-i. Introduction
135 1. "View of the World from 9th Avenue" (1975) by Saul Steinberg; from Rosenberg, p. 79.

B-Ii. In Man's Image

B-Ii-1. The Fallacy of Youth


3. "Annette" (1954), chalk drawing by Alberto Giacomotti (from the collection of Mr. and Mrs. A. H. Maremont).

B-Ii-3. The Process of Growth
177 1. Detail of tree on Beacon Hill, Boston, Massachusetts (photo by Author).
B-11-4. Man and His Environment

187 1. Entrance detail to the Tumba Real (Royal Tomb), Machu Picchu, ancient Inca ruins, Peru (photo by Author).

195 2. "The Bridge" (1922), oil painting by Joseph Stella (The Newark Museum Collection).


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