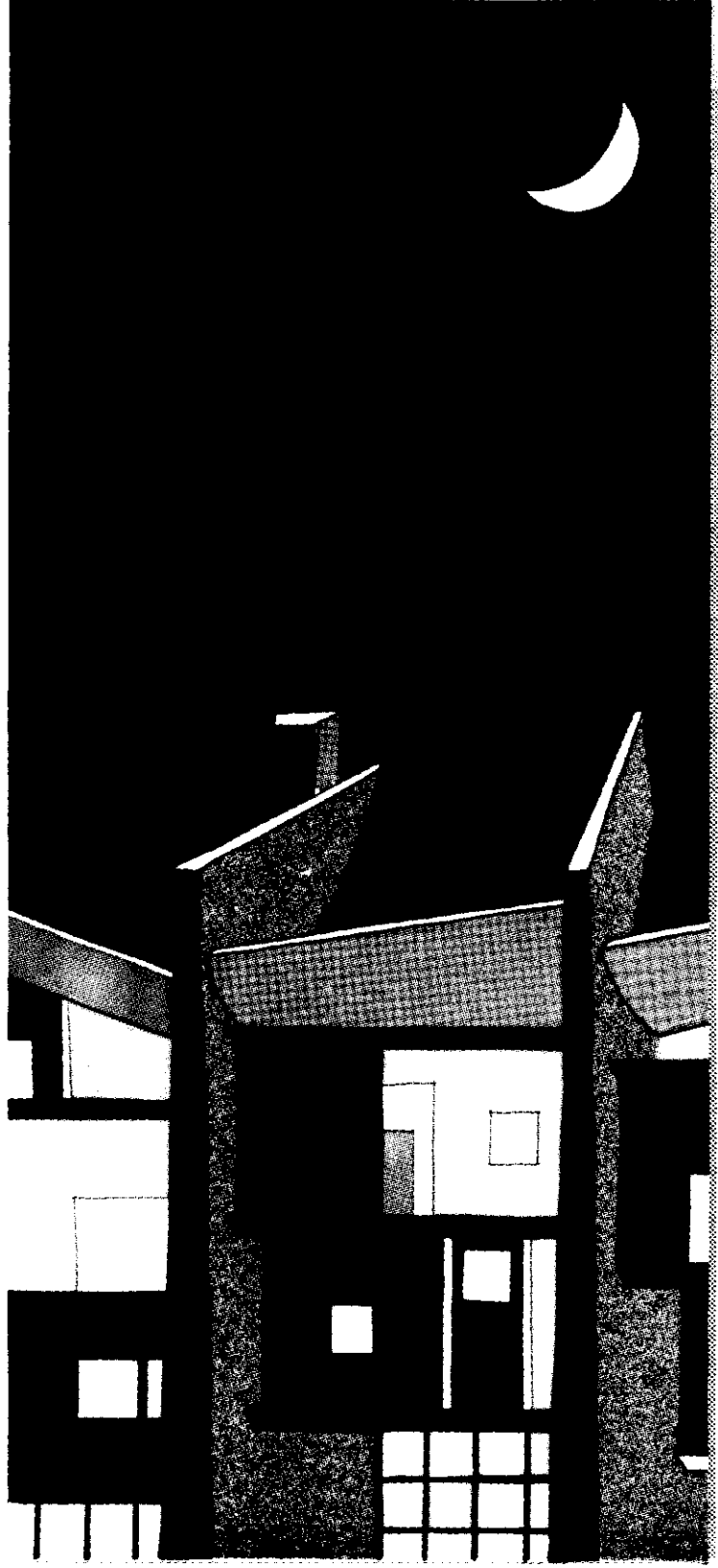


the
m e t h o d o l o g y
and
m y t h o l o g y
of
n a t u r e



brad alan sipes

The
M e t h o d o l o g y
and
M y t h o l o g y
of
N a t u r e :

how the anasazi viewed man and nature

faculty and student housing for an environmental design college

may
nineteen hundred ninety-two

a r c h i t e c t u r a l
t h e s i s

a r c h i t e c t u r e
college of architecture and planning
ball state univeristy
bachelor of architecture degree thesis design

The
M e t h o d o l o g y
and
M y t h o l o g y
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N a t u r e :

how the anasazi viewed man and nature
faculty and student housing for an environmental design college

thesis design committee



sonny palmer
professor of architecture / studio critic



james segedy
professor of planning / thesis critic

a r c h i t e c t u r a l
t h e s i s

I dedicated this project in memory of my father. He was a tremendous support to me during my beginning years at college. I wish he could be around to see me graduate. Dad I love you.

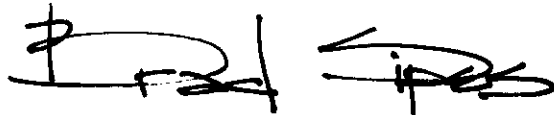
I would like to thank my mother and Bud for their support in this final year. I never could have made it without your support and understanding. Thanks.

I would also like to thank Kathy Moyer for her backing and unbelievable patience.

To everyone in my study: thanks for all your help. There were so many times that the laughter and good times kept me going.

And I would like to thank Sonny Palmer for his constant help. He opened my eyes to things that I did not know existed. Thanks, old grey fox.

To Jim Segedy, I would like to extend a special thanks for the great resources. The chats and books were an incredible aid.



brad sipes

c o n t e n t s

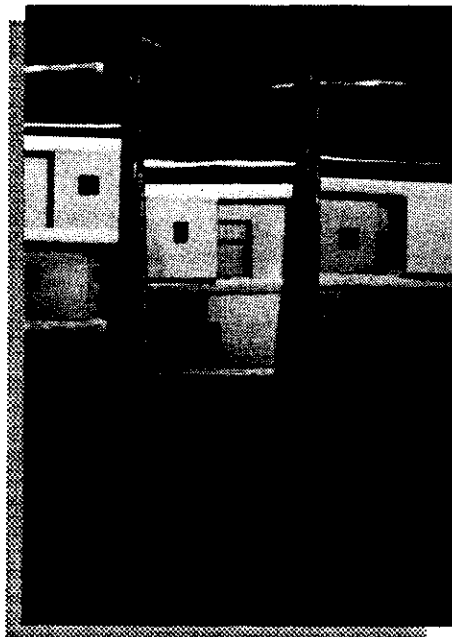
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Daniel Libeskind claims that there is no beginning of architecture and that there is no original means of departure. I

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p r e s e n t

would have to agree with him. To attempt to find an original point of departure to start a project would be a futile effort. And even if one did exist, would this give the project some magical accreditability? I think not. But by assuming that there is no original starting point and that there is no real past, to speak about any architecture, no matter what its point in time, is to speak about architectural principals of today. **This implies that the past and the present are really existing at the same time, and the past is a large part of the present.** This notion opens up an entire new set of ideas and possibilities that had before been locked behind a closed glass door. Before it was assumed that these ideas were a part of the past, and therefore, could only be looked at from a distance. To study architecture of the past for solving problems of today could only be done as an exercise, and not a real means of achieving a solution; but since there is no real separation of time between the past and the present, to study one is to study the other. Likewise, to try to search for a solution in one is to find a solution in the other.

With this in mind, I chose to look at the architecture of primitive cultures. I am not sure why such a direction came about, but I do know that in this architecture there was something screaming out as if it had something to say to architecture of today. But the message that the past held could not be reached because of the great distance that lay between the two. This notion of the past and the present existing at the same time gave me a bridge to bring the two together so that the past and the present could become one. Thus, there would be no real past or present but instead a common ground—a place of existence for both. This common ground is where my thesis starts its search.



a r c h i t e c t u r a l
t h e s i s

I was amazed that many resource materials began by saying that the vernacular architecture of these

primitive societies was a part of the natural environment.

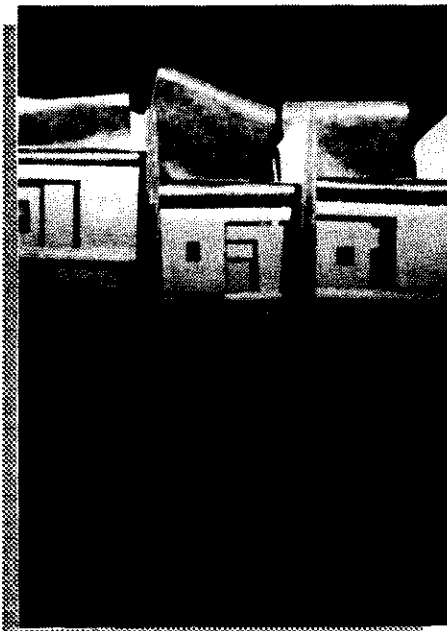
These sources claimed that early

man lived in caves, in trees, or in holes—all of which are a part of nature. Therefore, primitive man had only shelter and no true architecture. His architecture was what nature had created for him. This stance seemed to be one of seeing primitive man as an animal and not a creator of space and art. This is not a true assessment. While these dwellings are a natural occurring element in nature, they were not just occupied by man, but instead, were taken by man and changed and fashioned in a suitable way. **He created from these natural elements a place that he could use and live in. He created space—space that was first formed by nature and then changed by man.** In this sense, nature gave early man the natural resources to create architecture. This is exactly what is still being done today. We extract from the earth a natural resource and change it to form a space. The only great difference is the amount of refining of these natural materials. The basic principal is still the same. This brought up a question:

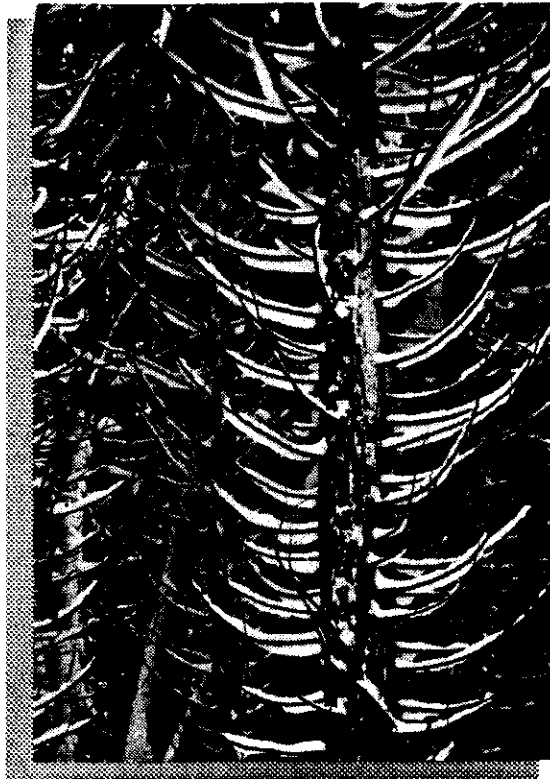
architecture
nature

how can architecture, which by its basic definition is a creation of mankind, be a part of nature?

Everything about architecture is a product of man—it is designed by man, created by man, and built by man. Even the architecture of primitive man has these qualities. Yet, there is something that seems to link the natural environment with these primitive dwellings. Since man created architecture, I believe that it is impossible for architecture to be a part of nature, but architecture can be an expression of how man views the natural environment. This perhaps explains why the huts and caves of primitive man have an implied connection with the land. These dwellings are a part of the environment in the sense that primitive man



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t h e s e



depended on nature to provide him with his means of living; and thus, his respect of nature was great. This, in turn, guided his architecture. His architecture was not a part of nature; it was a part of himself which was linked to nature. This can be seen on many levels. A basic level is the material primitive man used—usually earthen clay and stones. These were his basic building materials, and they do have an aesthetic quality that is connected to the earth. But more importantly is the place from which he got his ideas about design. Early man used himself and nature to give dimensions and layouts of these early dwellings. He took the human body and human needs and constructed a dwelling that was totally based on these principles. He also created his architecture to respond to a higher connection with nature—the spiritual realm. Early man created many myths about the creation of man and nature; he saw the two intertwined together in creation. Thus, he created edifices that would respond to the rituals and myths that honored the environment, not dominated it. Churchill said, “we shape our buildings, and afterwards, our buildings shape us.” Early man shaped his buildings to respect nature and then they shaped him to appreciate nature. Thus, in every sense, the architecture of primitive man was an expression of his view of nature and his place in it.

There seems to be a critical mindset that makes the distinction between being linked with nature and being

apart from nature. **This mindset is determined by the means that a**

culture uses to

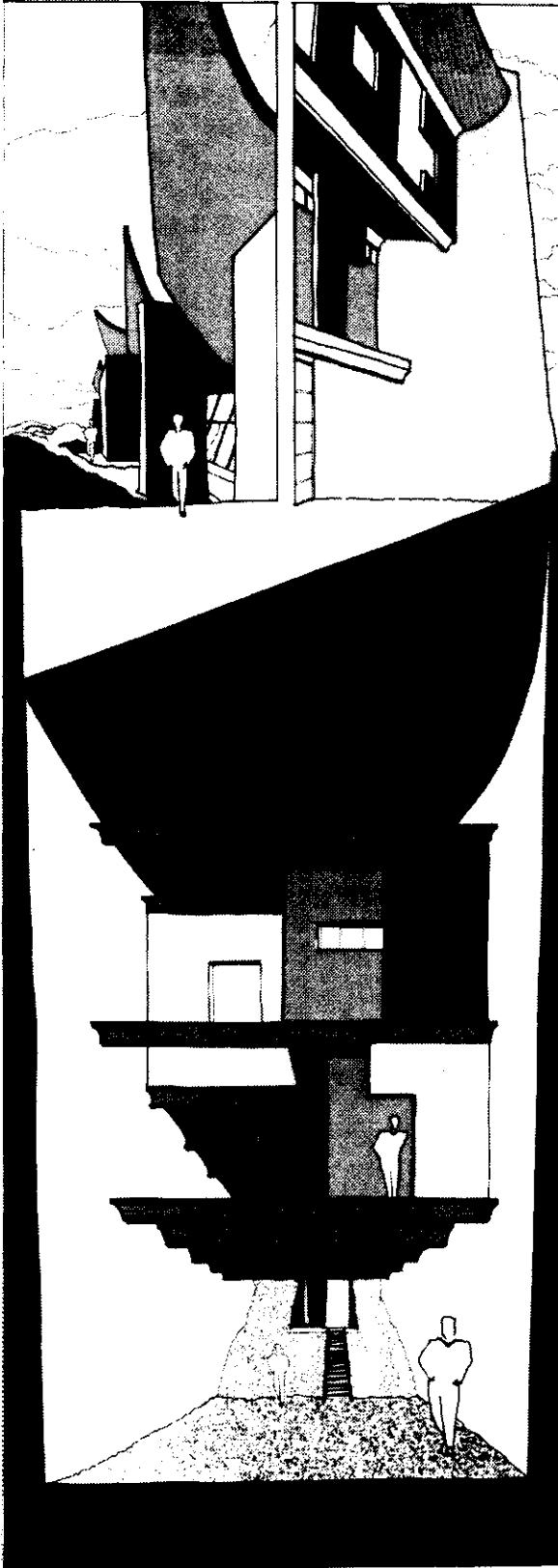
meet the basic needs of survival. In early man, this mindset was one of dependence upon nature (today the mindset is technology). Nature gave man everything that he needed—shelter, food, and thus, comfort. This critical mindset is easily seen in the Anasazi Indians. Their beliefs were of total respect of nature; they worship nature and prayed to it to give them their daily needs. This mindset, in turn, was expressed in the way that these people marked space and place. Amos Rapoport states, "people need to mark place, to orient themselves and give shape to their world." This marking of place often took the form of symbolism that denoted meaning and value that were associated with architectural form. This direct translation of meaning and mindset into architectural form is seen by the use of the circle by the Anasazi. The following statement is by a descendant of the Anasazi:

The circle is sacred because the great spirit caused everything in nature to be round except stone. Stone is the implement of destruction.

The sun and the sky, the earth and the moon, are round like a shield, though the sky is deep like a bowl. Everything that breathes is round like the body of man. Everything that grows from the ground is round like the stem of a plant. Since the great spirit has caused everything to be round, mankind should look upon the circle as sacred, for it is the symbol of all things in nature except stone. It is also the symbol of the circle that marks the edge of the world, and therefore, of the four winds that travel there. Consequently it is also the symbol of the year. The day, the night, and the moon go in a circle above the sky. Therefore the circle is the



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t h e s i s



symbol of these divisions of time and hence the symbol of all time. For these reasons we make tipis circular, their camp-circle circular, and sit in a circle in all ceremonies. The circle is also the symbol of the tipi and of shelter. If one makes a circle for an ornament and it is not divided in any way, it should be understood as the symbol of the world and of time.

Thus, they believe in an arrangement of opposites—good and evil, and the circle and the stone. They took the forms of nature (the roundness of the stem) and the forms of man (the roundness of the human torso) and abstracted them into a perfect circle. The circle now carries with it a high level of significance and meaning. The very appearance of the circle now reminds them of the relationship between man and nature. The meaning in the shape is an ordering system for the built environment and the social environment. The entire society is full of such examples of the mindset that looks to nature for guidance, and then draws a similarity between man and nature. Thus, everything that exists shows or illustrates these symbolisms and meanings (a round stone is the shaping power of good over evil). The physical form and the meaning go hand-in-hand, just as sound and meaning go together in language.

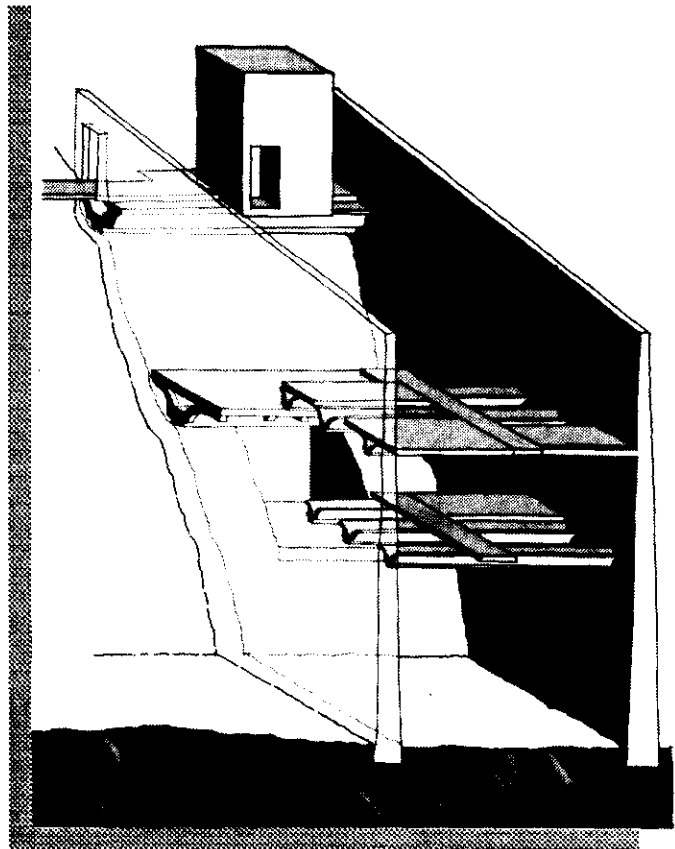
experiential
space

Too often in today's society a building is spoken about from a rational viewpoint. It is said that a

building is a complex arrangement of technologies that must all fit together and function in a logical manner; therefore, a building must be evaluated on a rational and logical basis. This logical basis is only capable of defining the building from a functional and object-oriented rationale. This approach to architecture creates a logical and nominal methodology; although it senses the quality of environment created, it is quantitative and analytical. This methodology seeks the same value neutrality as the sciences, but leaves out the emotional qualities that are essential to all forms of art. Thus, this approach continues the Cartesian split—the analytic intellect (Reason) dominates and isolates the experiential qualities (Emotion) leaving only the object-oriented qualities and the functional aspects. This split between reason and emotion exemplifies much of the modern condition.

It is by looking at the very ancient past or the immediate present that one can see emotion and experience of the individual playing a part in the realm of architecture. In these two time periods, the Cartesian rationalism no longer dominates; instead, phenomenology is

used to recover the experiential and emotional qualities of life. **This phenomenology subscribes to the recovery of imminent experience, which is not subservient to a controlling rationality.** It acknowledges the importance of active participation, and although it allows room for object-oriented qualities, it demands that the experiential aspects of phenomena be included. In thinking about this phenomenological approach to architecture, it is important to consider the first arena—



the ancient past where the ability to integrate experience through participation in rituals into architecture is demonstrated. Since rituals can be considered to be one of the highest expressions of emotion, the relationship between architecture and ritual becomes significant in its didactic role.

Many primitive cultures were constructed on the rituals in the society which became the foundation for all means of order. These rituals give significance to the functioning and structure of the society as a whole. Louis Mumford, in his book Technics and Human Development states:

Before man could discover and project order outside himself he had first, by constant repetition, to establish it within. In this, the part played by ritual exactitude can hardly be overestimated. The original purpose of ritual was to create order and meaning where none existed; to affirm them when they had been achieved; to restore them when they were lost. What an old-fashioned rationalist would regard as "meaningless ritual" was rather, on this interpretation, the ancient foundation layer of all modes of order and significance.

Thus, it follows that these rituals are the controlling factors of the architecture of these societies. This connection between form and meaning in primitive societies can easily be seen in the Hopi rituals and dwellings.

The extreme centrality and significance of ritual in Hopi culture is pointed out by the importance that the dance plays as a unifying event. These dance ceremonies were the main events that brought all the "tribes" of the Hopi village together. It is important to understand that there are no words to mark the passage of time in Hopi language; thus, there is no measurement of time except the rhythm of life that is marked by the dance ceremonies. These sacred dances bring definition to Hopi life. D. H. Lawrence defines these dance ceremonies as "a rhythm of eternity in a rugged, inconsequential life." The dances create what was called the eternal present, and are truly the markers of all aspects of life. This idea of no passage of time is a critical aspect. Since there is only the eternal present, everything that happens in a space is constantly occurring. This notion really starts to define the space where these ceremonies take place. But the interesting aspect is that the space created had little to no object-oriented qualities. The meaning and definition had to come solely from the experiential

qualities of the space. The actual form of the space was a void in the layout of the village. This void often was placed near the center of the village with all other buildings and dwellings framing it. It is marked out by a large sand mosaic that indicates the different realms of the spiritual world. On the four cardinal directions there is a clay stand that holds a representation of the four directions. Placed around these stands and scattered across the mosaic is a series of vertical prayer sticks, called *pa'hos*. These *pa'hos* rise up out of the earth and define points of significance and define spaces around which the ceremonies move. H. R. Voth writes about this space and its meaning:

Inserted at one end is a small



*crook, to which a turkey feather is fastened. The crook is the symbol of life in its various stages. Next to this is one of the *pa'hos* representing corn, the main subsistence of the Hopi. These *pa'hos* are sometimes called corn ears and carry a sprig of an herb that is different at each one of the four stands. These four herbs are used in making the wind-breaks in the fields, and their use here signifies a prayer or wish for protection of the plants and corn against the destructive sand storms for which these wind-breaks are made. Next to the herbs is inserted an eagle feather which is a prayer for warm weather (since these birds were considered to be warm weather birds). The last object inserted in these stands is a short stick called *ta'ka pa'ho* which is pointed at both ends. This stick is colored yellow on the north side, green on the west, red of the south, and white of the east. This *ta'ka pa'ho* is said to represent a warrior standing at the end of the void keeping watch over and protecting the various objects on the stands.*

The meanings and symbolism of all of these objects are always with the Hopi people inasmuch that they become part of everyday life.

Thus to experience the space, even when the dances are not taking place, is to be reminded of the dances. Like the dances themselves, the life in this central void becomes a part of the eternal present. Participants in the space become a reenactment of the dance by their interaction with the space. **In this sense, the space carries the same meaning and experience as that of the dance ceremonies; the space informs the dance as much as the dance informs the space.** Thus, the space and the dance become one. The meaning of each is in part contained in the meaning of the other, and the meaning of the space is expressed through the experiential qualities contained in the space. Hence the architecture is one of pure experience that draws from the participant an emotional response.

In a similar manner, the Hopi architecture of the kiva draws an emotional response from the participants within its space. This response is a combination of the experiential qualities of the space and the inherent definition that the form relates to the Hopi people. The Hopi believed that the structure at the physical level is integral with the structure at the metaphysical level. Thus the form of the kiva is essentially that of the metaphysical definition of the cosmos.

The cosmos is defined as being a contained spherical unit. The bottom part of the sphere is an earthen bowl, and the sky is the upper part of the sphere which is represented by the sky-basket. The cosmos is a place of opposing forces with the earth being a representation of the female and the sky being the representation of the male. These two opposites are connected by a vertical axis that is neither fixed nor static, but rather, a path of energy flow that was traveled by spirits. This path was often referred to as being a bamboo plant or reed, and even a ladder as shown by Franz Boas when he quotes an old Hopi legend, "Nautsiti ordered the shaman to make a prayer-stick (*pa'ho*) of spruce with notches on each side and the people climbed up to the upper world, as on a ladder." The kiva is placed half way into the earth since it is believed that the kiva was the place of emergence for all life. The *sipapu*, a small hole in the floor of the kiva is the place from which communication with the underworld is possible. The kiva is also a place of connection with the sky. The roof of the kiva is constructed as a dome that hovers above the lower half and is said to be the sky-basket. This half dome has a hole in the center of it to allow for access down into the space. The means of entry is by a ladder, thus depicting the energy flow between the earth and the sky. This flow of energy is further denoted by

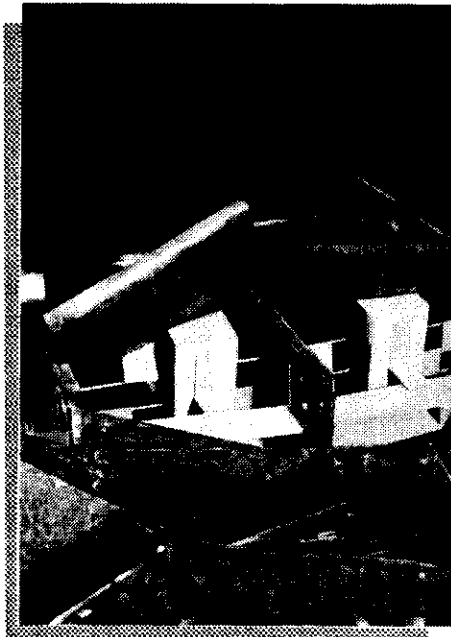
means of a hole in the center of the floor, called a *nansipu*, that is another connection with the spirits of the lower world. Inherent to the Hopi definition of the cosmos is a six directional grid system with this vertical movement representing two directions—upper and lower. The other four directions are the cardinal points which are represented by four main beams in the roof structure. The sun is said to emerge from a hole on the east side of the kiva and descend through a similar hole on the west side. Thus the entire layout of the kiva is part of a cosmological world view that is described by the myths and rituals of the people. The actions of the people inside this space are a constant connection and re-enactment of the function of the entire cosmos. Thus, the simple act of entering the space and moving about it is an act of tying oneself to the cosmological order of all life. In this sense, the space, not the object qualities of the structure, contains the meaning. This meaning, in turn, is brought out by the experiential qualities of the space.

This idea of using experiential space to convey meaning in architecture is also a modern concern. This is shown by the contemporary architects that are trying to use phenomenology to recapture this experiential quality, instead of relying on the object-oriented

qualities. Two excellent examples of such architects are Steven Holl and Daniel Libeskind.

Steven Holl is concerned with capturing the changing experience of simple forms. He believes that as the participants move around and through these simple forms the feelings and emotions experienced are constantly changing. Thus, the angle of perception controls how the form reads and the meaning it implies. He refers to this changing perception as parallax.

Parallax is the idea that the position of the body in relation to the surrounding forms forces one to realize space in different ways. As one moves through space the relationship changes, thus the definition



of the space changes.

This idea of parallax can easily be paralleled by the way that the Hopi defined the ceremonial dance space. In both cases the participant plays the major role of moving through the space and allowing the space to speak to him. Hence, the meaning comes from the participant's own perception of the space. Both cases also use the idea that the forms have little actual object qualities. The shape of the forms mean very little by themselves, but gain meaning, or the ability to imply meaning, only through how they aid in controlling and framing the perceptions. Thus, the experience of the individual becomes the design criteria and not the object that the design implies or represents. In this sense,



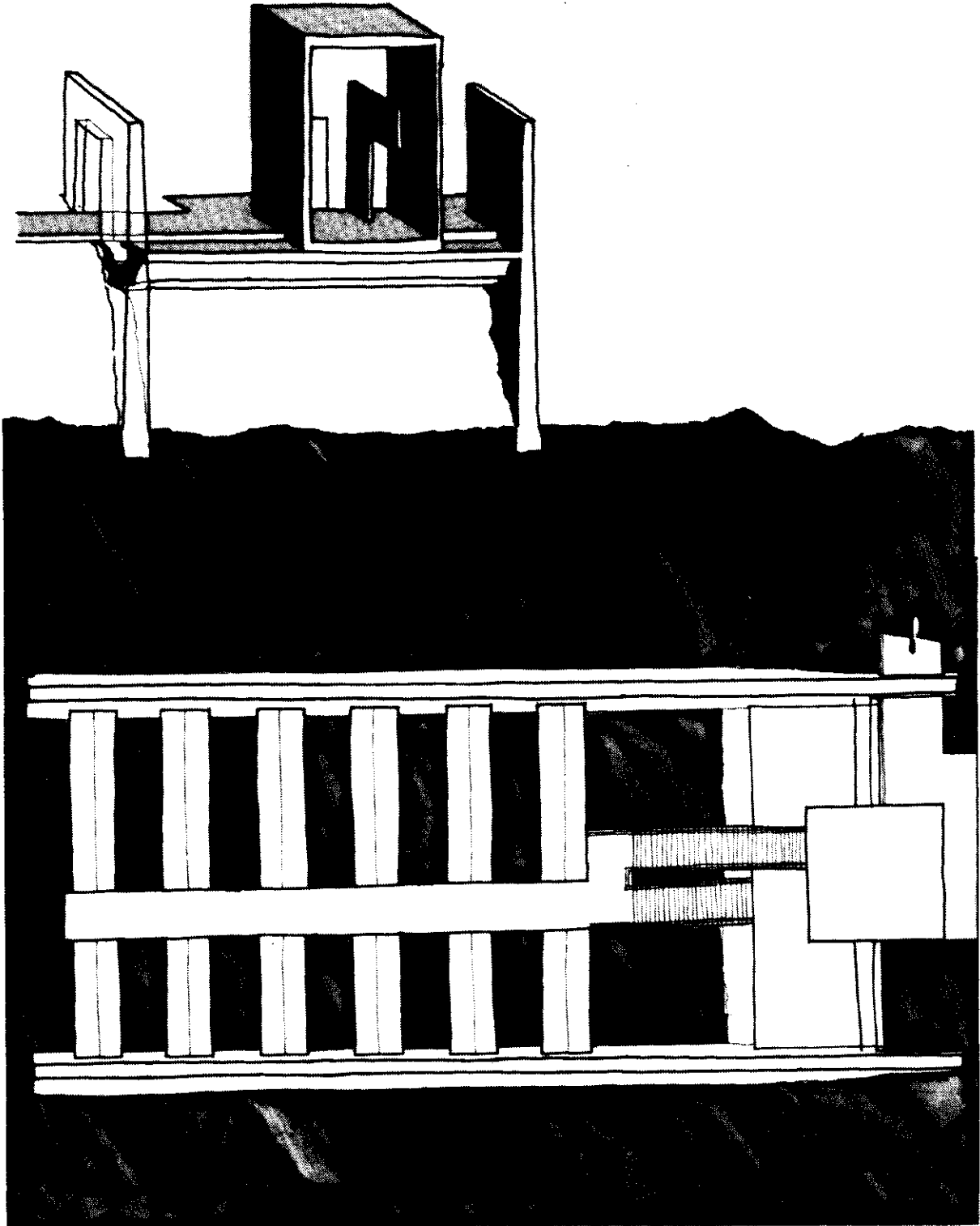
the old rational and nominalistic methodology plays a secondary part to the experiential and emotional aspects of the building.

Daniel Libeskind would consider this idea of experiential and emotional space to be an irrational beginning for a project. He considers the irrational, as opposed to the rational, as the proper beginning for all architecture:

Thus, to speak about architecture is to speak about the paradigm of the irrational. In my view, the best works of the contemporary spirit come from the irrational, while what prevails in the world, what dominates and often kills, does so always in the name of Reason. The irrational as a nonbeginning of this project was my starting point.

The project he refers to is the Jewish Museum in Berlin. He goes on to talk about how Berlin is more than just a physical place, it is a spiritual and mental reality that belongs to the past which never was present. This notion of a spiritual reality, and even the notion of time, can be seen in the Hopi definition of the metaphysical and physical realities, and even in the definition of the eternal present. There are many similarities between these ideas, but the most critical is the way these ideas lead

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t h e s i s

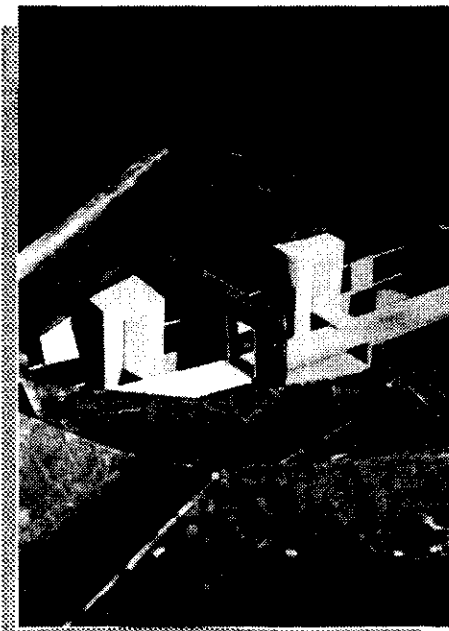


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to an architecture. This paper has already pointed out how the Hopi expressed their architecture through a phenomenology that centers on experiential and ritual aspects, and in a similar manner Libeskind does very much the same thing. The "rituals" he has chosen for this project are the influences of those people who have created this culture of Berlin, both on a physical level and on a spiritual level. The means he has chosen to express these "rituals" is the experience of a void. This void is to give a voice to the invisible forces that shape Berlin; thus making the spiritual meanings implicit in the experiential aspects of the building. The void is to be seen as an experience that as one moves through it and chooses one's way, one comes to understand the

forces that made up the definition of Berlin that we have today. Thus, the experience and the meaning become one and the same. They both speak to and about one another. In other words, the physical is informed by the metaphysical.

In all of these examples, the Hopi ceremonial dance space, the Hopi kiva, Steven Holl's work, and Daniel Libeskind's Jewish Museum, there is a common thread that is shared—they all use participation of the individual to include experiential aspects of phenomena, and none are subservient to a controlling rationality. All of them combine the experiential aspects of the space with the emotional and spiritual aspects in such a way that the line between these aspects becomes unable to be defined.



a r c h i t e c t u r a l
t h e s i s

modern
technology

It is hard to imagine a world without Modern Technology. It seems that everything that came before must have been a product of the stone age. Technology advanced in such small increments that the general population never realized how it totally altered the times nor bothered to even questioned it. Yet today, the speed at which technology is developing and altering our society is accelerating logarithmically. Thus it is apparent that there needs to be some understanding of how technology grew, its contributions to society, the ingredients of the paradigm it has formed, and what the alternatives are.

First, one must start with how technology gained such a vital part of society. To achieve this one only needs to go back a short time of about fifty years.

It was in the early 1940's that technology started its role as a major influence in society. It started out as promising to create a utopia. This utopia was proliferated by the 1940 New York World's Fair. That year the corporate pavilions housed an exhibit called "Democracity" that predicted sparkling-clean techno-cities. Within these cities everything was fast, clean, and toil free. People were depicted as being in a con-

stant state of free time, while robots took care of the "chores" of life. The DuPont exhibit, in particular, contained such a leisurely prediction. Their exhibit was "a typical house of the future," where the natural environment could be changed by pushing a button, and the house was essentially self-cleaning and totally automated. The exhibits predicted that there would be an endless energy source; everyone would be happy and live forever; and all disease, insect blight, and poverty would be eliminated. The means for achieving such a perfect state of living was by advancing our technology. It was not a question of if these things could exist, but rather when would these things exist; and of course the more we spent on advancing our technology the sooner we could reach this utopia.

The next step in advancing technology was to make the people of America feel that is was a necessities to achieve higher levels of technology. According to Jerry Mander, this is where the role of advertisement did its part in creating a technotopia. It was advertisements such as the 1942 B. F. Goodrich campaigns that really promoted technology:

Following our victory in this war will come a new America. An America which will startle the world because of the way

people create...the men and machines are already on the job. The will and determination are already at work. But today the effort is devoted to winning the war. Tomorrow, they'll be devoted to the creation of a new America.

Technology reached new speeds of acceleration during the time after World War II with such promises. But Goodrich was not alone; DuPont claimed, "Better things for better living through chemistry," and Westinghouse claimed, "There's a lift to living electronically." Technology was said to be able to make everything possible, and the times became a place for pure optimism and little skepticism. There were even reports such as the one by H. G. Moulton, president of the Brookings Institution, that said, "the production capacity of the U. S. could support a population of 300 million people at eight times the 1949 standard of living." Technology, during this time, created a euphoria in the American Dream. It said that through technology everyone could own their own brick house with white trim and a front and back yard. Everyone could and should own a new car every two to three years. It became the accepted truth that technology was good and growth was healthy. Technology even became the means to save

America. In the Truman-Eisenhower years, buying a washing machine was a blow against communism. Buying kept America on top by keeping the assembly lines going, so buying commodities was our patriotic duty. Thus, technology represented democracy and freedom. According to David Morris, it was during these times that four basic assumptions became accepted as the truth:

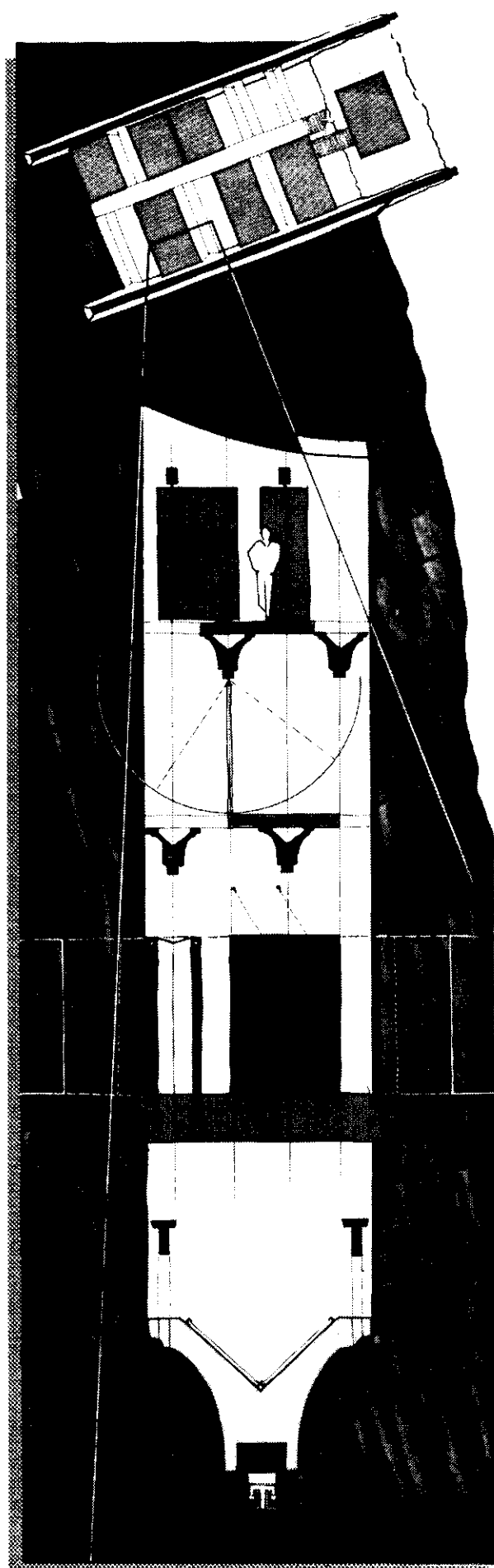
- 1) *Energy made up only a small percentage of the G.N.P.*
- 2) *disposal costs were nil because trash just had to be covered up by dirt.*
- 3) *long lines of delivery are good because it comes from where it grows naturally, and most of all,*
- 4) *the future is predicable based on the 1950-1973 trends.*

We took these slogans and these assumptions about our society and formed viewpoints that saw technology as the key to all our problems. Unfortunately, these ideals about life in the 1940's through 1970 have continued to be accepted as truths that cannot be put away. We claim that we cannot reverse our course and try something else, so we must continue on this road toward a technotopia. We use such phrases as "you cannot stop progress" to make it seem like there is no choice to be made or

evaluated. This theology is one of letting the past control our future. By using this theology, one would assume that our society today is on the verge of becoming this technotopia. Yet, there are very few people who would say that this is true. Still, there are those who say that technology has given us a great deal. But what contributions has technology really given us?

Some would argue that technology has given us an improved standard of living. It has made our lives faster and given us a greater range of choice. While it is true that we can travel at a faster rate and exchange information faster, the real improvement is that we can accumulate material possessions quicker. But this idea of having a large and exuberant collection of material goods is in itself a product of technology. Thus, one is asked to evaluate technology by criteria that is given by technology. Likewise, greater choice, which is usually associated with freedom of choice, only gives one more commodities to choose from and not necessarily greater satisfaction.

This notion of a higher standard of living also carries with it an idea of a healthier society. While it is certain that there have been advancements in medicine, it can be said that these advances have only added to the longevity of life and



not to the overall health of the society or the individual. Ivan Illich argues that modern medicine is really a "double-edged sword." He believes that modern medicine has separated people from a holistic self-care practice. He says that due to the onslaught of drugs and surgery, medicine has caused as many deaths as it has cured. He sights the examples of how doctors went on strike, and the death rate of the area actually went down over a period. Illich continues this idea by illustrating that population stabilization, improved housing, and sanitation did more for health matters than big hospitals and medicine could ever hope. These three factors are minimal technology as opposed to the large scale technology of today. This brings up an important distinction which should be made between modern medicine and health care. Modern medicine is really an extension of technology into the field of health care. It treats health on a problem by problem basis and rarely addresses the whole issue. It is often unaffordable by most, and it causes as many problems as it cures. The longevity that is accredited to technology is in constant danger of decreasing due to pollution and contamination of the food chains and water supply by technology. Thus, the very thing that supposedly added to longevity is beginning to take away from it. Health care, on the other hand, is

an individual practice that guides and informs the individual on how to manage all aspects of life. It considers physical, occupational, emotional, spiritual, social, and intellectual matters to be inseparable. Solving a problem, therefore, means dealing with the person from a holistic approach. The focus is not on the longevity of the person, but on how the individual lives. Health care, as opposed to modern medicine, is a qualitative not a quantitative approach to dealing with life.

A higher standard of living also would imply that there is greater luxury and leisure. It is said that technology has reduced the burden on the individual, and created more free time to enjoy the luxuries of life. Yet, the time spent "working for a living" has not gone down at all. Instead, it has risen tremendously. Robin Clarke says that primitive man only spent about fifteen hours a week in gathering food and hunting—basic survival necessities of the time; the rest of the time was spent in fulfilling personal ambitions. In the book *Stone Age Economics*, Marshall Sahlins supports this claim by saying, "primitive societies had twice the leisure time to pursue spiritual matters, personal relationships, and pleasure." As far as how most leisure time is spent today, leisure time is really only time filling—watching television and shopping,

society's favorite pastimes. Jerry Mander argues that television is truly time filling because it creates a catatonic state where the viewer becomes an inactive participant. The mind can actually reach a state where alpha waves are produced in the mind; this is the same state as if the person was under hypnosis. Likewise, shopping is just a way of decreasing leisure time. Its only purpose is to increase the luxury by increasing the material commodities. These commodities, in turn, give our lives no meaning but to gain more and more, and thus keep the cycle of technology going. Ivan Illich says that if one takes into account the time spent earning money to pay for and repair all the expensive "time-saving" gadgets and "luxury items" modern technology actually deprives us of time and, thus, luxury.

All of these aspects of an "improved standard of living" address only the basic essentials of life. Totally left out is the quality of life which is composed of such things as love, friendship, meaningful work, happiness, security, human contentment, and peace. Jerry Mander believes that these things have actually gone down due to the technological world. He gives a series of statistics to support his claims. Listed below is a brief selection of these statistics:

According to figures from the

San Francisco National Council on Crime and Delinquency, the rate of criminal activity sharply increased in the period following World War II. By 1989, the national murder rate had reached more than 30,000 per year.

The National Institute of Mental Health reported that suicide was the third leading cause of death among young people, ages 15 to 24.

The U.S. Census Bureau reported that more than 13 percent of the U.S. population (32 billion people) lived in poverty.

Likewise, Mildred Loomis has her own list of failures of society along a similar line. She believes that society has failed to provide the quality and satisfaction for five reasons—dependency, delinquency, disease, degeneration, and decadence. Thus, it is apparent that technology is not creating the promised technotopia nor is it adding to our standard of living in any respect. But why then does technology continue to be seen as the answer to even our present day problems (the ones created by technology)? The answer lies in the paradigm that we have created by living in this time of promises, and the inability of present day man to

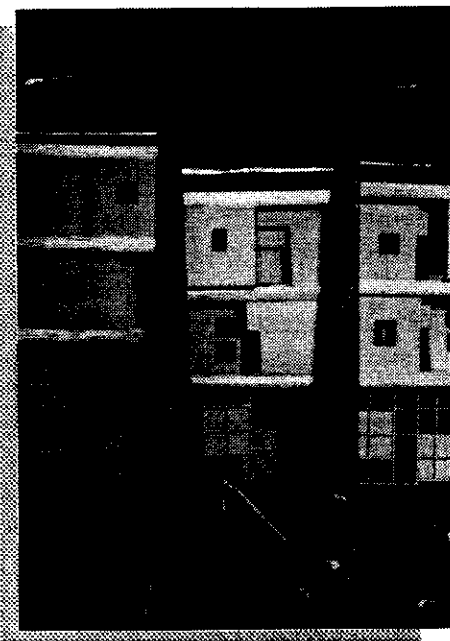
look at technology for what it is worth. Langdon Winner refers to this situation in his book *The Whale and the Reactor*:

The most interesting puzzle in our times is that we so willingly sleepwalk through the process for reconstituting the conditions of human existence... Why is it that the philosophy of technology has never really gotten under way? Why has a culture so firmly based upon countless sophisticated instruments, techniques, and systems remained so steadfast in its reluctance to examine its own foundations? In the twentieth century it is usually taken for granted that the only reliable sources for improving the human condition stem from new machines, techniques, and chemicals. Even the recurring environmental and social ills that have accompanied technological advancement have rarely dented this faith... We are seldom inclined to examine, discuss, or judge pending innovations. In the technical realm we repeated enter into a series of social contracts, the terms of which are revealed only after the signing.

This indicates a complete and unquestioning acceptance of technology. We have established a set of perceptions that make us overlook the problems, and see only the promises of technology. But even when these promises are not fulfilled, we still insist that technology will help us. According to Jerry Mander, this lack of seeing the entire picture is due to four main perceptual aspects that are dictated to us by the technological paradigm that dominates our society.

One of the major perceptual aspects is the way in which technology is presented to the public. Due to the capitalist society in which we live, the agencies that invent new technologies are usually the people who promote them. These people are only interested in getting the public to buy and use the technology that they have invented or bought. Thus, they only present it in a positive light; the best case scenarios are the only scenarios that are given. Even when these agencies have knowledge of the possibility of negative consequences, they promote the product as if it was the answer to a problem. They never mention the problems that it might create, because these problems can be solved by inventing another technology. Hence, we become trapped in a non ending cycle that has technology as the center.

Technology is also very aloof. Although it is at the center of everything we do and it saturates our society and even our daily lives, its presence is overlooked and unnoticed by everyone. Unknowingly, we essentially live totally within our own invention. Technology is so pervasive that it forms the framework of our perceptions and awareness. We do not understand technology from any other viewpoint than the one from within it. Thus, it makes is hard to see any other solution than technology. In this sense, man is evolving and becoming a part of his own invention. We become trapped in the web of technology and do not even acknowledge the threads that tie us down.



Linked with this notion of living within a technological web is the idea that we tend to evaluate technology from a personal rather than a holistic viewpoint. The technologies that exist today are so vast and complex that they are hard to comprehend. James Burke, in the television series *Connections*, talks about how many of the technological systems of today are beyond the common man's comprehension due to the amount of information that exists in each system. He states that the systems are so vast that only those people who designed the systems are truly able to know the complexities and the working of the system. He sees all technology as coming into existence by means of a ripple effect caused by another technology. He states, "if you don't know how you got somewhere, you don't know where you are." Thus, if one does not know the present workings of a system, then he is totally isolated from the entire realm of technology. This isolation of man's understanding from the machines that he uses creates a situation in which man uses his only tool available to him—his personal viewpoint. Man is uncertain of how the entire system works, so he only judges the value of the technology on whether or not it works for him. The "big picture" is thus never fully grasped. Failing to see how machines connect, we fail to question the effect technology has on

the planet, or even question who gains and loses because of its existence. We fail to see the social, spiritual, and economic effects. We see only personal benefits.

Personal benefits also make the technology have an inherent appeal. We are often amazed and dazzled by the glitz and promises made by the newness of technology. We want the technology to do what it promises because it would prove that we, as humans, have succeeded. Lewis Mumford talks about how there is a horn of plenty—the unlimited material goods from a technotopia—that is a magnificent bribe to lead us into the future. This is exactly how technology appears to us, as a bribe. We want to have all of the new toys and gadgets because of the intrigue that they hold for us. Mander equates this intrigue with technology as being the same kind of intrigue that deer have with oncoming headlights or fish have with the mask of a diver who spears it. Both examples point out how the fascination aspects takes over and rules out the natural instinct of perceiving danger. Because we are so intrigued by technology we do not question it.

Questioning technology is rarely done, but when it is, technology is usually considered to be neutral. This is the single aspect of perception that allows technology to con-

tinue at such a rapid pace. It is also the most dangerous. By thinking that technology has no inherent direction or bias, we open ourselves to letting technology guide the future of the entire society. We say, "the problem, is not with technology, but is instead with the people who use it and the manner in which it is used." Nothing could speak louder of the pro-technology paradigm. This idea—the bias of technology—has been supported by many people. Hazel Henderson talks about how certain technologies steer society toward a centralized or decentralized society. An excellent example of this is nuclear energy as opposed to solar energy. Nuclear energy has the inherent bias of creating a centralized government because of the size and expense of running such a facility; it takes constant observation and testing to keep nuclear plants functioning. Solar energy, on the other hand, is capable of a personal application. Anyone can manage and maintain a solar collector or even passive solar energy, as is suggested by Tom Bender in *Living Lightly*. Jeremy Refken would agree that technology has an inherent bias. He believes that computers, by their very make up and functioning, add to the notion of a society obsessed with time. He would also argue that computers steer society away from the natural world. All of these examples point to the idea

that technologies truly do have directions and inherent goals, and that any use of these technologies will steer society toward that goal. Thus, every technology has, by its very nature, a controlling force that guides us in a direction. Jerry Mander even goes as far as to state:

The idea that technology is neutral is itself not neutral, since it blinds us to the ultimate direction in which we are heading and directly serves the promoters of the centralized technological pathway.

Thus, to assume that technology is neutral is to give up the control of society to technology. It allows technology to develop without being analyzed. With technology growing at its present rate, this attitude of letting technology control itself has never been more dangerous. Someday, we might wake up and not even know where we are.

But today, our position is definitely definable—we are in a atmosphere of pure and unadulterated worship of technology. We accept technology according to what it promises and not what it delivers or how it affects the entirety of society. In a way, this is in contradiction with Richard Lamb. He says that we do not have a great project of today; it is only by hav-

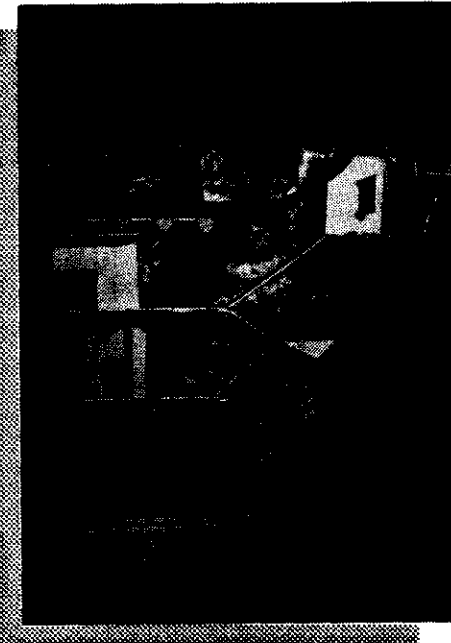
ing this great project, that we will make sacrifices in our lives to achieve an ultimate goal. I would say that we are making tremendous sacrifices today, all for the hope of someday living in a technotopia. We are only interested in the best case scenarios and pay no attention to what the consequences might be. We are consumed by technology to the point that it is all we can see as a solution. Yet, we refuse to look at technology and debate whether or not it is serving us or we are serving it.

Mander and the like would have us believe that there are other possibilities. One such possibility is given to us by Chellis Glendinning in an article titled "Notes toward a Neo-Luddite Manifesto":



Neo-Luddites are twentieth-century citizens who question the predominant modern worldview, which preaches that unbridled technology represents progress. Neo-Luddites have the courage to gaze at the full catastrophe of our century...Western societies are out of control and desecrating the fragile fabric of life on Earth. Stopping the destruction requires...new ways of thinking about humanity and new ways of relating to life. It requires a new worldview.

This refers to a movement in nineteenth-century England that destroyed mass-production textile equipment. They claimed that this equipment was a threat to their



way of life. Chellis is not alone; Reine Doubo obviously believes that we should return to life at the turn of the century. She says that the peak of human existence came on a small American farm at the turn of the century. Whatever the other possibilities there are, they should be looked into and evaluated with a careful and steadfast eye. But all of them do make us do one thing—think about the role of technology in our society. We need to examine it from a holistic point of view that sees the pros and cons. We need to think about how technology controls our very existence and whether or not we can afford to follow the same path. Jerry Mander gives a list of recommended attitudes about technology that are worth thinking about:

1. *Since most of what we are told about new technology comes from its proponents, be deeply skeptical of all claims.*
2. *Assume all technology "guilty until proven innocent."*
3. *Eschew the idea that technology is neutral or "value free."*
4. *The fact that technology has a natural flash and appeal is meaningless. Negative attributes are slow to emerge.*

5. Never judge a technology by the way it benefits you personally. Seek a holistic view of its impacts. The operative question is not whether it benefits you, but who benefits most? And to what end?

6. Keep in mind that an individual technology is only one piece of a larger system of technologies, "megatechnology." The operative question here is how the individual technology fits the larger one.

7. Make distinctions between technologies that primarily serve the individual or the small community and those that operate on a scale outside of community control.

8. When it is argued that the benefits of the technological lifeway are worthwhile despite harmful outcomes, cite the figures about crime, suicide, alienation, drug abuse, as well as environmental and cultural degradation.

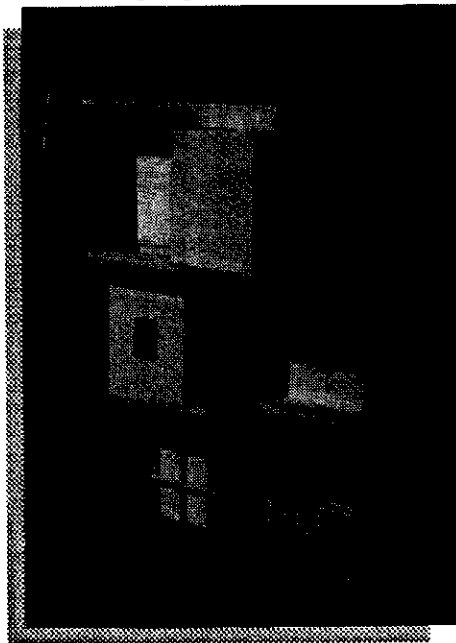
9. Do not accept the homily that "once the genie is out of the bottle you cannot put it back," or that rejecting a technology is impossible. Such attitudes induce

passivity and confirm victimization.

10. In thinking about technology within the present climate of technological worship, emphasize the negative. This brings balance.

These ten attitudes toward technology are good because they make us question and analyze the society in which we live. It is only by this examination of today that we can hope for a better tomorrow.

Jerry Manders offers us one other alternative. He believes that the land-based native people are a good source for us to study and pattern our society after. He thinks that these people have held on to

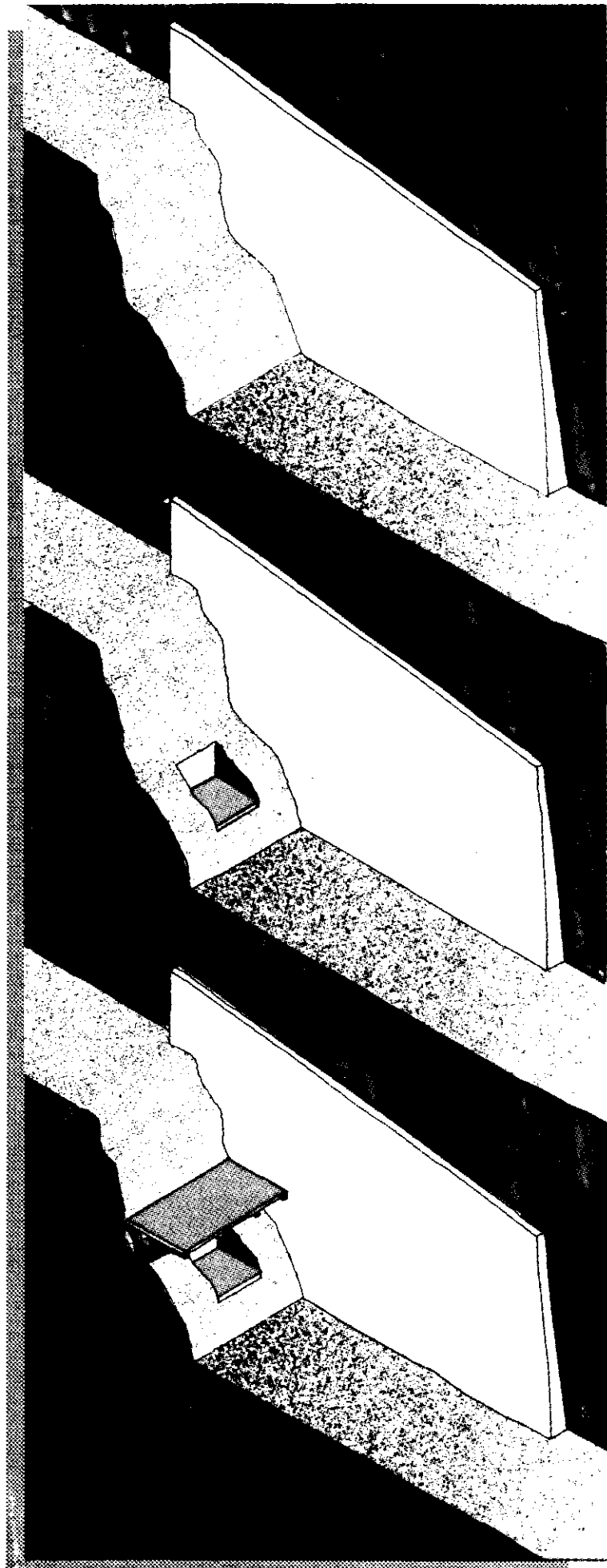


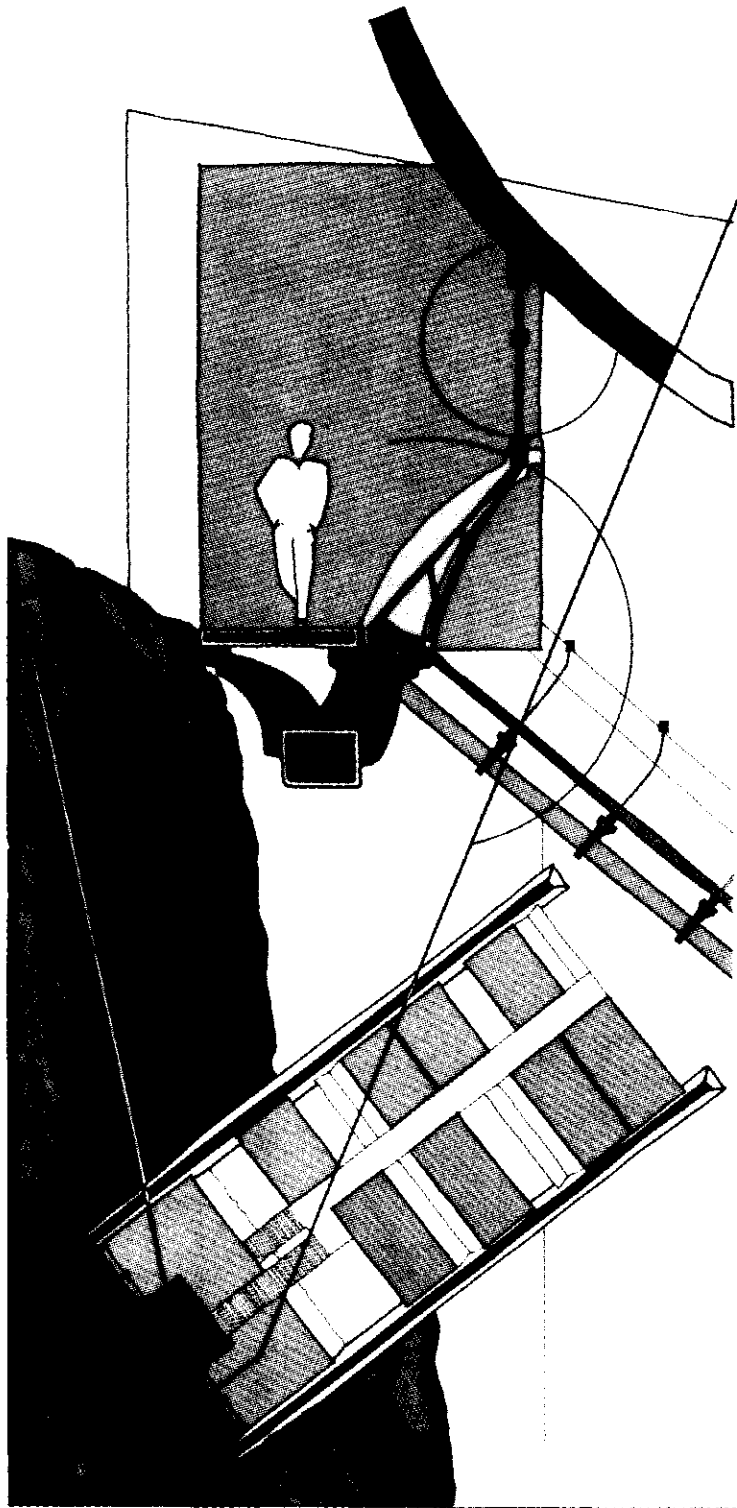
d e s i g n

My project is a housing facility for the University of Arizona and deals with a college of the university called the Environmental Laboratories. This college is presently composed of environmental design and environmental

b a s i c
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sciences and has as its goal the study of how architecture can be designed around the idea of living with nature. They strive for the use of natural forces to help create a space instead of imposing the space on the land. They hope to find answers for a better tomorrow. It is the intent of this thesis to create a housing facility for the faculty and the students of this college. In reaching for a more encompassing scope, I have decided to expand the scope of the college to include the field of archeology. I have also given the goal of the university a second function—looking at the past for guidance in defining the future.





sacred attitudes of the environment and life itself; these attitudes guide them in their decisions and lifestyle. In this sense, these people do have much to teach us. While we claim to be more "advanced," these people have done feats that would look impossible to us. A good example of such an accomplishment is the way in which the Hopi have lived in the desert for hundreds of years. The Hopi settlement in northern Arizona is the oldest settlement in the history of the world. It has stayed in the same location longer than any other society that we know. Thus, these people obviously know something about living with the land that we do not (as demonstrated by our depletion of one of the richest areas in the world—the North American continent prior to the twentieth century). We have much to learn from many native people in the world. Our vision and our attitudes are greatly lacking. As said earlier, we need to examine technology, but to do so means we must examine our entire way of life. As Americans we like to claim how good we are and how we always rise to the challenge. The new challenge is the hardest—self-scrutinization. I hope we are up to this challenge before it is too late.



d e s i g n

With this premise in mind, I decided to look to the Anasazi Indians for the guidance of this project.

The reason for choosing the Anasazi is their history in the region; they were the first known humans to

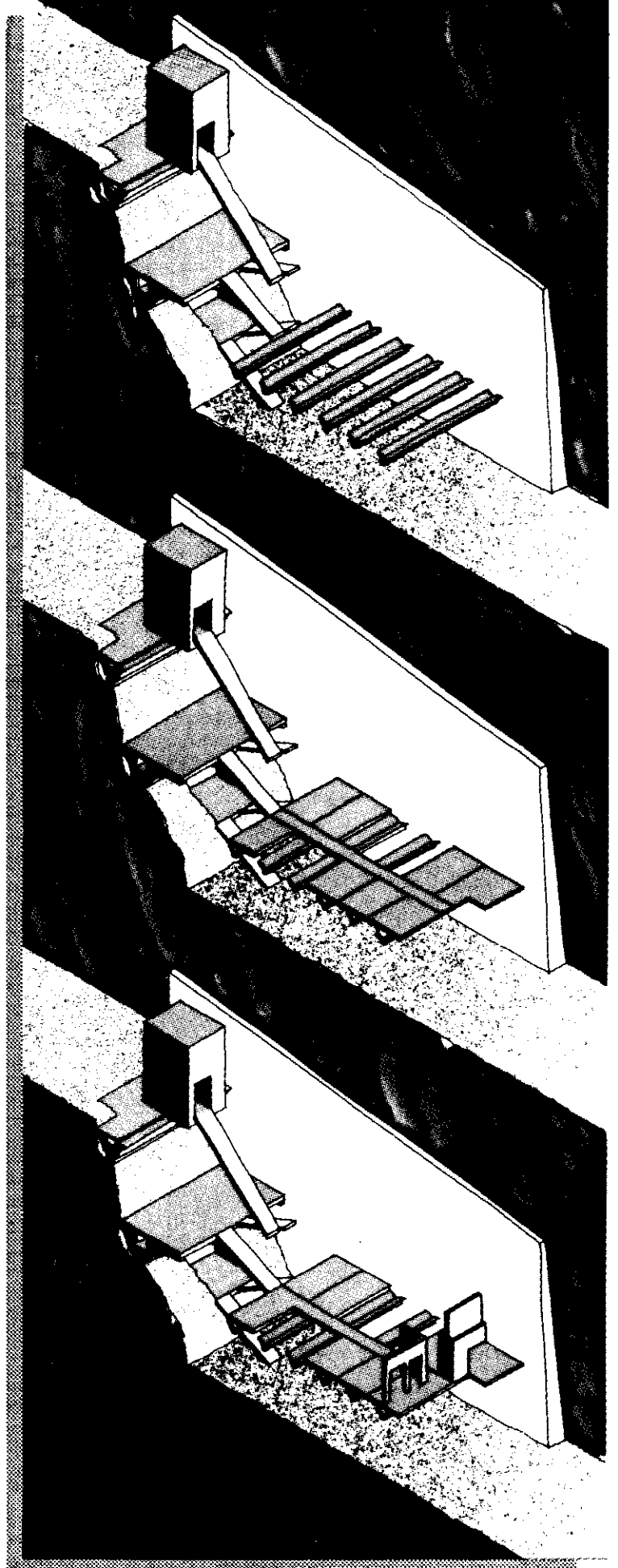
archaeological
qualities

settle the region and they did so in a very harmonious manner with nature. They preceded the Spanish and the English by several hundred years, and created settlements that still exist today. The Anasazi were truly the beginning of human life in the region, and thus, they are noteworthy for the project; but their greatest contribution to this project and to the goal of the college of Environmental Laboratories is the means of creating an architecture that responded to and contributed to the natural environment. Their dwellings are so connected to the environment that the two are forever bound together.

There are several common concerns among the many Anasazi settlements; these concerns came from this connection with the land. All of the settlements deal with the notion of the four cardinal directions and the power(s) that protect and live at the corners of the world. They also are concerned with the notion of a living architecture. They believed that their buildings were actually alive and "breathed" the breath of life from nature.

d e s i g n

Thus, to impose a structure or even mankind upon the earth was to take away from this breath. They also believed that the world was made up of three levels—the upper spiritual level, the lower spiritual level, and the earth. They considered the earth to be a temporary place of existence between the upper and the lower spiritual levels. Energy was always flowing between the two spiritual levels, and around the earth. All the irregularities in the earth became places where energy could flow between the levels, and thus, a place of communication between the earth and either spiritual realm. Mountains, springs, caves, lakes, mesas, kivas, and the village were all places of energy flow. They were all connected. The village and everything in it was a microcosm of the entire world and was often considered to be at the center of the world. The village was not only defined by the physical structures around it, but by these mountain peaks, springs, caves, and the like. The entire world and the village existed together. Everything that was built was “endowed with a soul” and was connected to the earth and the spiritual worlds. Thus, the dwellings and even the way of life were rooted in the element that nurtured them—the environment.



d e s i g n

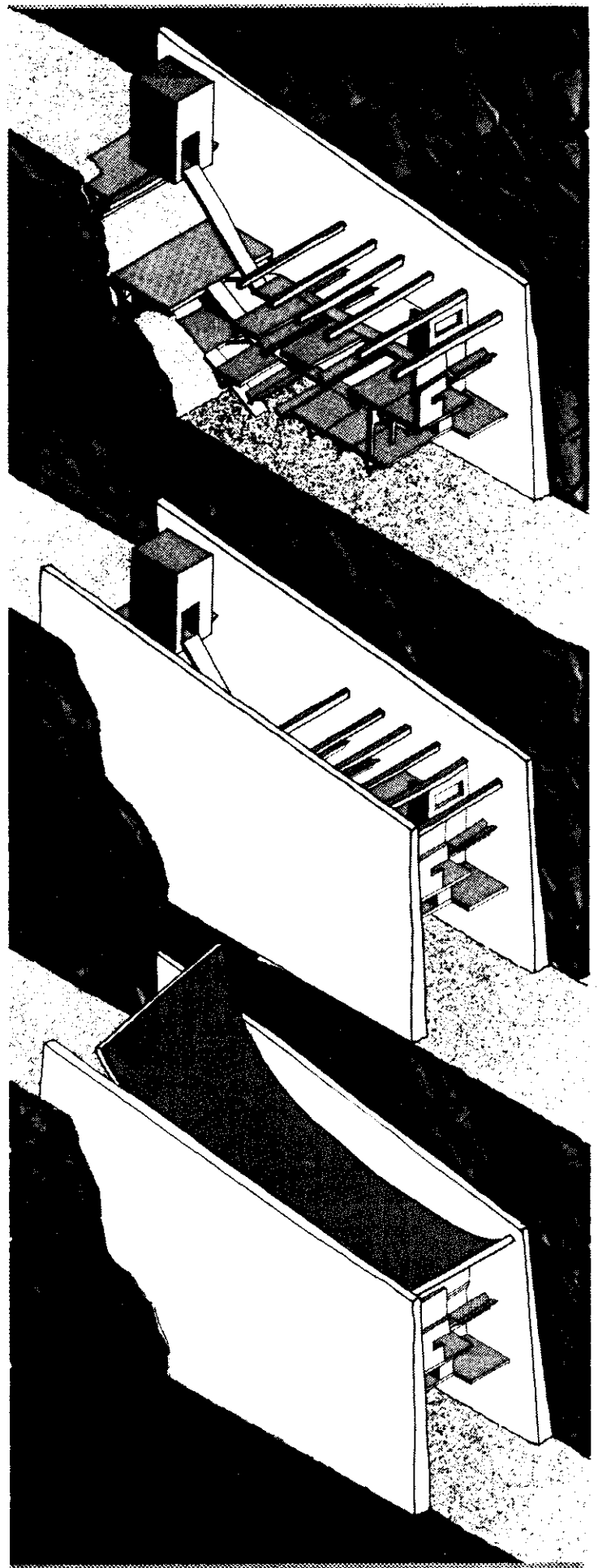
In this study of the Anasazi and nature there seemed to be one recurring theme—repetition and diversity. In nature this theme abounds. It is in the clouds, the rocks, the trees, the plant life, and the form of the earth. There are great similarities between every tree or cloud, but there is also a note of individuality. Everyone is the same and yet different. There are no two alike; there are no two totally different. They repeat across the earth, and within that repetition there is a great range of diversity. This is also true in the dwellings of the Anasazi. The villages all look very similar to each other, but each one is unique. Even within the village itself, there are sections of the village which compose the whole, and the sections all look very much alike, and different. The individual housing units, likewise, have a similar note. They are totally different from one another, but there is a great deal of similarity. Thus, the notion of repetition and diversity is a key organizing pattern.

environmental
d e s i g n

The basic form of the individual housing units stems from a metaphor. The idea is that the cliff was formed by the natural forces—wind, water, and sun. After the shape was carved out of the land, man came and built within the space that was created. Thus, man

d e s i g n

plays a secondary role in forming the space. He takes what nature has given him, and then creates his living conditions within that space. In this case, the cliff was first formed by man, as will be discussed. The natural forces then changed this cliff to create recesses inside it. These recesses are where man first lived, the cave. The cliff face was further changed and extended by man to accentuate these recesses. This was done with large vertical walls which extend out from the cliff. Hence, the project was a combination of the cave (the past) and the vertical wall (the present). The roof takes the form of the wind. It curls between the vertical walls and then swoops up over the top of the cliff face. Thus, the form of the roof becomes the still shape of the wind. Man, in turn, comes into this shape and creates his dwelling. He suspends this dwelling between the vertical cliff walls. The still wind gives him protection from the elements. He lives partly in the recesses in the cliff as his predecessor did, and partly on the suspended dwellings. He is in constant contact with nature. It surrounds him and forms his dwelling place. Thus, his own dwelling becomes a connection with the environment and not just a protection from it. Man lives with nature.

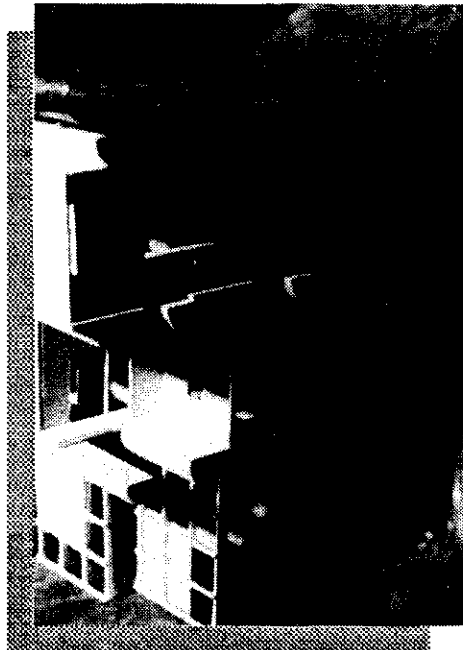
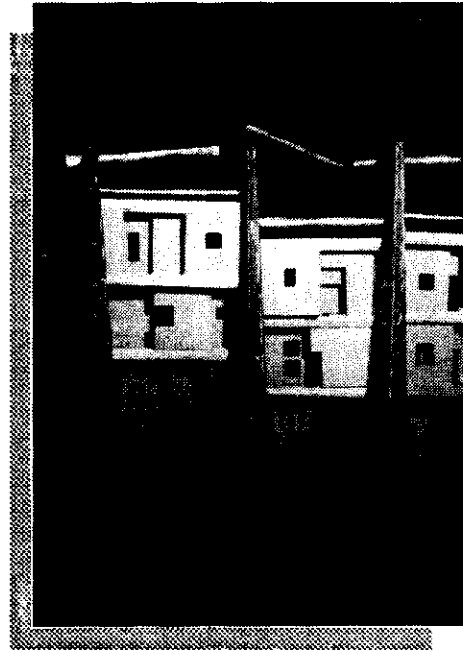


d e s i g n

As mentioned earlier, the cliff face and the roof structure are a metaphor for the natural forces. They are also the elements which are designed to give the benefit of natural heating and cooling aspects of the environment to the space. Today, man is in a constant state of battling the natural forces. He tries to overcome them instead of letting them help him. These forces that make present day man work so hard are also very capable of making his life quite comfortable. The natural cooling of the wind in the arid region is considerable if there is some shade. The roof structure offers both of these. Obviously, the roof blocks out the sun. The hot summer sun is not allowed to enter the space due to the positioning of the roof over the cliff face. At the same time, the roof extends up over the cliff face to catch the cool breezes. The wind generally comes from the southwest direction. The roofs poke up over the cliff to direct these winds down across the cliff face and out through the openings. This provides a natural cooling system. In extreme cases, these winds can be further cooled by adding a small water misting spray at the top of the cliff. This will cause the movement of cool, moist air in a downward direction which will further cool the space. Likewise, the cliff

environmental
sciences

face, which the air moves across, is giving off a constant 55 degree temperature. In summer, this will add to the cooling process; in winter, it will help in the heating process. This brings us to the next advantage of the roof. As mentioned early, the roof is positioned in such a way that the summer sun cannot enter, but the winter sun can. The winter sun, because it has a different angle, can enter into the space and create heat. The sun will also heat up the roof structure and the adobe walls, which store heat during the day and release it at night. This process is helped by the fact that the roof is essentially a basin. It is designed to catch the rain and pool it on top. This water adds to the thermal storage capacity of the roof in the winter time, and helps cool the space during the day during the summer. Thus, everything within the structure will have natural heating and cooling systems. This, in turn, adds to the notion of living with and being aware of the natural environment.





All of these factors led to the choice of the site. The site for the project is an old quarry that is owned by the University of Arizona. It was the place from which the university removed rock in order

s i t e
d e s i g n

to construct a wall around the campus at the beginning of the university. The wall was used to protect the campus from what was then the wild desert; thus, the rocks were used to separate man and nature. The means of removing the rock was strip mining. This method left a large rip in the earth's surface and can be seen as a violation of the earth. In this way, the quarry represents man's destruction of nature—the separation of man and nature, and the violation of the earth. This is how man has and is relating to nature. But this project is about a new paradigm, one of harmony between man and nature. Thus, the site was chosen because it represented the old paradigm, and now is going to be an example of the new.

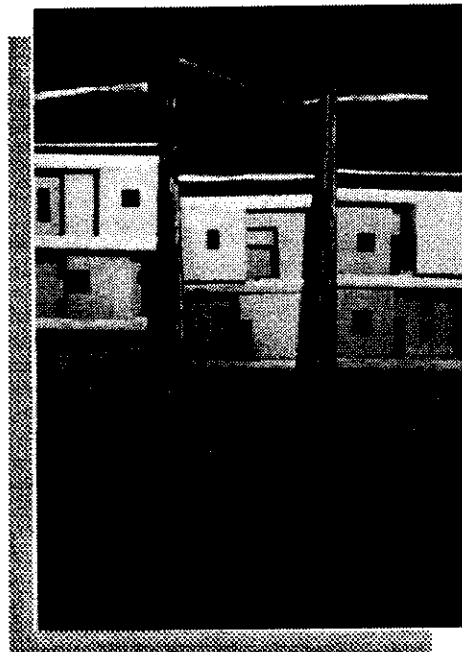
d e s i g n

The notion of community is perhaps the most important idea that the Pueblos can teach us. The

Pueblos were established around this idea to such a high degree that it became an organizing system

for the entire village. Central to this notion of community is the central plaza. The plaza is the public space where most of the activities of the community took place. The plaza is the place from where the life blood flowed. The element of nature once again comes into this formation of the central plaza. These plazas are not totally enclosed by buildings, as they are in some European cities like Ravenna at the Piazza del Duomo. Instead, the plazas in the pueblo villages were usually open on one side in such a way that a large geographic element could be seen. The geographic element was usually a mountain or mesa; this then served as the last wall to complete the plaza. Thus, the plaza was extended outside of the village to include the natural environment. This all plays a part in the idea of community. For the people who lived in these villages, the plaza gave them a sense of place—place in the natural environment and place in the community. To know one's place in the environment was to be assured of one's place in the community. Karsten Harries states this idea:

community
space



a r c h i t e c t u r a l
t h e s i s

d e s i g n

One task of architecture is still that of interpreting the world as a meaningful order in which the individual can find his place in the midst of nature and in the midst of community. Time and space must be revealed in such a way that human beings are given their dwelling place, their ethos.

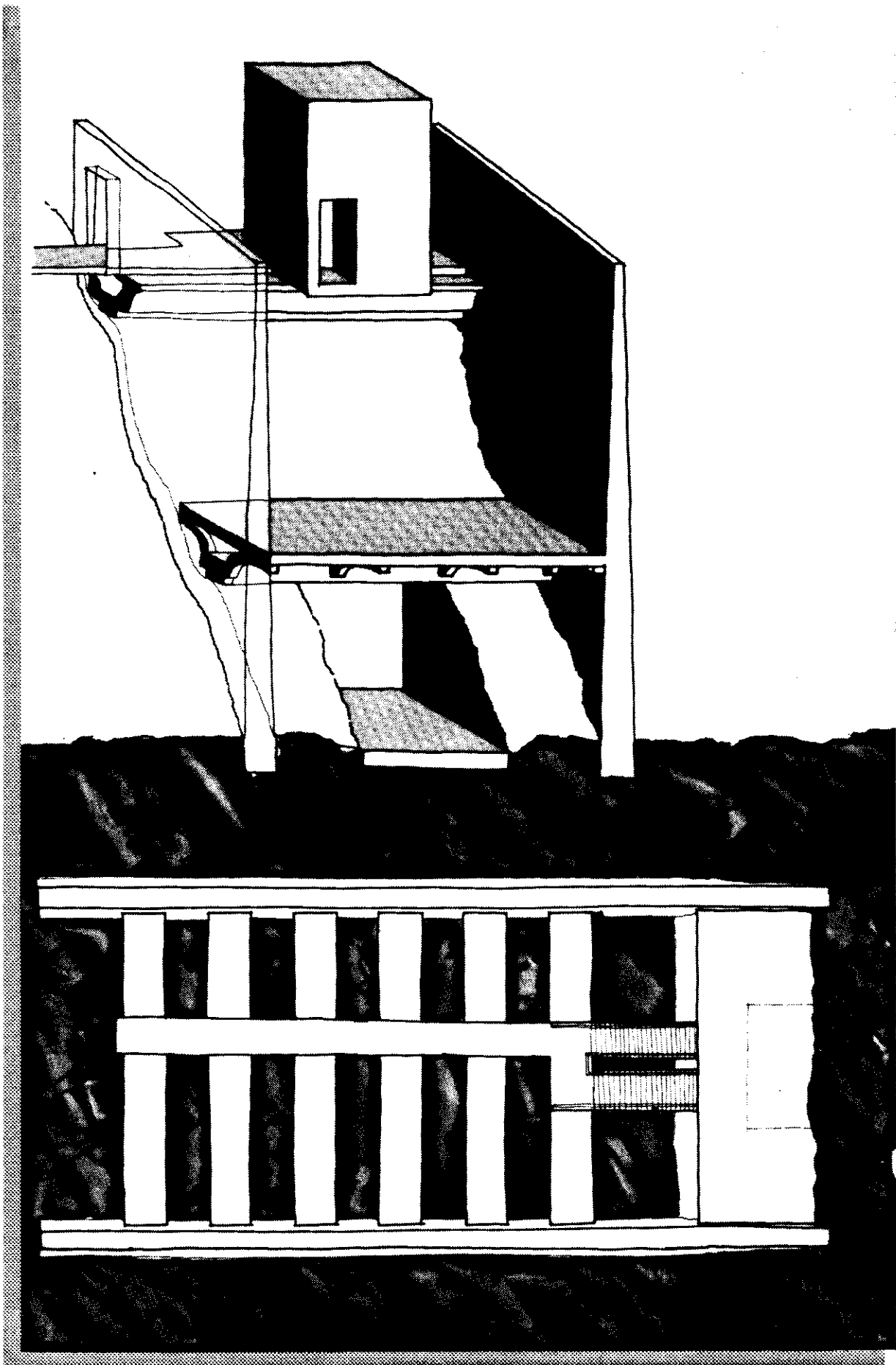
This ethos is the key element. It gave the people a feeling of knowing where they belonged in the world and letting them know that

they belonged together as a community. Thus, the two key elements of community are the natural enclosure and the central plaza.

Both of these elements are incorporated into my project. The natural enclosure is the surrounding cliff face toward the north. The enclosure is completed on a larger scale by the Catalina mountains towards the east. The Catalina mountains create the entire "village" of the project by including the city of Tucson. Thus, there are really two levels of the "village."



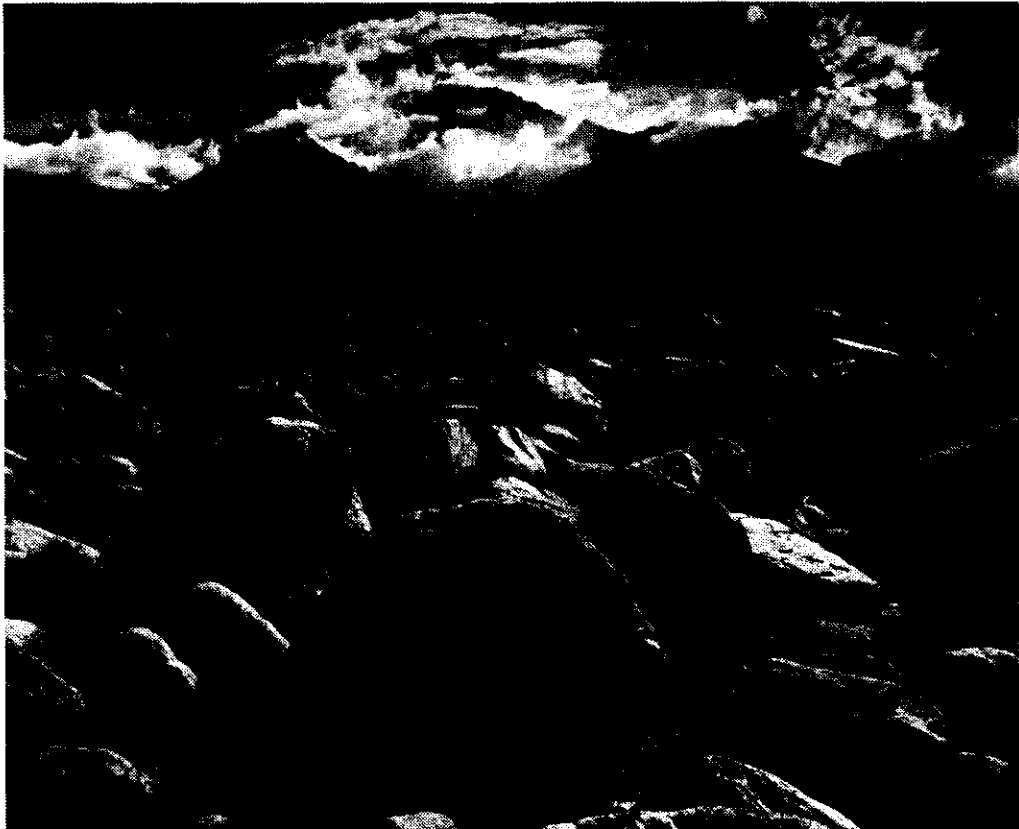
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t h e s i s



d e s i g n

There is the level of the small college community that is dwelling within the old quarry site and is surrounded by the cliff face. There is also the level of the college with the city. This level is created by the way that the quarry opens up on the northeast side so that the city comes into view. The Catalinas give a terminus to this view on the opposite side of Tucson. The college and the city become one on this larger scale. The notion of plaza also plays a major role in the layout of the site. The plaza, in a

sense, is where the college actually is. The housing for the college lies around the edge of the cliff and is an extension of it. The plaza, on the other hand, is in the very center of the site, which is flat. This becomes the focus of the housing units. The plaza contains the actual working buildings of the college where the studying takes place. Therefore, the layout of the site reflects the organization of the college—the studying aspect is the central focus and the housing is a support function to that studying.



a r c h i t e c t u r a l
t h e s i s

c o n c l u s i o n

Present day man has truly isolated himself from nature. He no longer has any relationship to the natural environment that used to surround him. He has, instead, surrounded himself with the only thing he knows—technology. He is obsessed with his own inventiveness. In a time when he is rapidly approaching his own extinction, he knows is trying to find a solution, but he is only looking at technology to provide it. This is not where the answer lies; this is where the problem came from. The answer is not in the “great future,” but instead, in the past. He needs to learn to venerate once again the idea that man and nature must be in constant contact and not separate. Man is dependant upon nature and not its keeper. He must learn that to construct a dwelling upon the earth is in itself an act of connection to the land. We must learn from our ancestors and not consider them to just be primitive man who had to build with nature because he had no other choice. Primitive man practiced a way of life which held nature at the center. If we ever expect to exist on this planet, we too must rediscover the truth of this type of lifestyle. Lincoln Barnett made this statement in 1948:

In the evolution of scientific thought, one fact has become impressively clear: there is no mystery of the physical world

which does not point to a mystery beyond itself. All highroads of the intellect, all byways of theory and conjecture lead ultimately to an abyss that human ingenuity can never span. For man is enchained by the very condition of his being, his finiteness and involvement in nature. The farther he extends his horizons, the more vividly he recognizes the fact that, as the physicist Niel Bohr puts it, 'We are both spectators and actors in the great drama of existence.' Man is thus his own greatest mystery. He does not understand the vast veiled universe into which he has been cast for the reason that he does not understand himself. He comprehends but little of his organic processes and even less of his unique capacity to perceive the world about him, to reason and to dream. Least of all does he understand his noblest and most mysterious faculty: the ability to transcend himself and perceive himself in the act of perception.

Today, the situation is no better; instead, we have only made it worse. Can we learn from the past and apply our knowledge to the future before there isn't one? Lets try.

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