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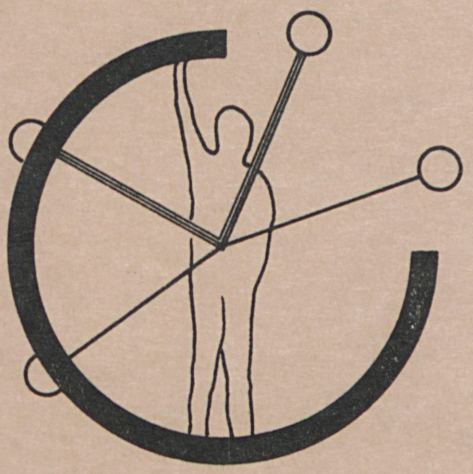

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Date 12 AUG '78

A PLANNED UNIT DEVELOPMENT FOR BOZEMAN

by

COLIN JONES

A thesis submitted in partial fulfillment
of the requirements for the degree

of

BACHELOR OF ARCHITECTURE

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TO THE READER

Throughout this work, pronoun references have been made in the masculine gender. The reader will please accept this as a limitation imposed by the English language and not as any attempt to exclude or slight the feminine element. For lack of inclusive pronouns, the writer states here that the masculine references herein are generally intended to include members of both sexes.

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INTRODUCTION

An impression is sometimes conveyed to students in an architectural design curriculum that architectural solutions can have validity without real world feasibility. 'Elitest' designers most often disdain real world problems and programs as too confining for their artistic ability. Perhaps this is valid in the realm of pure art or as the unincumbered environment necessary for the conception and refinement of new ideas. But unlike the work of art or fascinating idea which justify themselves to those who seek them out, architecture is tested constantly by the forces of nature, the various demands of society and the requirements of human individuals forced to circulate within and among architectural works conceived often without their representation.

A term from economics, externality, is useful in describing the responsibility of an architect beyond that of an artist or agent. In its broadest application, an externality is an effect of an action felt by some party other than the active participants. A city dweller breathing the air that industry has polluted is suffering a negative externality of an industrial society. As long as his health is not significantly impaired, he has no legal recourse and perhaps none even if his health obviously suffers. The foul air he must breath remains an externality as long as he has no avenue of retaliation against the source of his irritation.

An architect has considerable opportunity to impose both negative and positive externalities on society through the qualities he supports in the built environment. As a rule the general public has no recourse against him except in the relatively few aspects of a design that affect physical safety. This situation implies a significant ethical responsibility for the architect to beware of and to as much as possible control the external effects of his design on those who will never enter his office. Only the architect who lives up to this responsibility will deserve the professional credentials he has been granted.

The motivations that direct the design decisions of the architect are necessarily a compromise between the wishes that a client or society hope to meet and express and those that the architect feels personally. In many architectural curriculums, students are given design problems in which they must assume themselves to be the client and thus can exercise their personal preferences to the fullest. The arrogance this approach spawns in would-be designers makes their transition to the working world frustrating and difficult.

> In recent years, however, a number of architects and planners have begun to advocate a more user oriented approach to design, rejecting . . . the Fountainhead syndrome: to impose designs on people and to attempt to change people and society through grandiose design solutions.[1]

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[1]Herbert J. Gans, from Foreword, Easter Hill Village by Clare Cooper, p. x.

Complex and ill-defined client needs will encourage the designer to offer intuitive solutions that weigh heavily in favor of his own personal biases which may vary greatly from the values of the user. Though more tedious perhaps, actual scientific studies into the nature of user needs are better routes to a design solution of lasting quality. Careful evaluation of past designs, both successful and otherwise, are a valuable source of user response and the sociologists and behavioral scientists are best equipped to obtain this information. Yet their awareness of the types of information useful to the designer has all too often been insufficient. In exception is the work of Clare Cooper who has performed exhaustive studies in the Easter Hill Village housing complex in Richmond, California. She has gone beyond research and made numerous understandable suggestions to designers based on the success and failure of elements of design in an inhabited solution. Her knowledge of sociology has made it possible for her to screen out modifying variables in the context of user responses that were not design inspired. She has also made educated speculations as to how her findings might be projected beyond the low-income, multi-family housing environment in which her studies were conducted.

> The architectural-aesthetician does not require advice from the behavioral sciences as to what stimuli generate which reactions in the human beings who live in his work. This is because he is a man, and hopefully by the nature of his profession--the most sensitive type.[2]

He is a man, yes, and a man learns by experience, his own and hopefully that of others as well. By being called architect a man is not automatically filled with the integral wisdom of all of the sciences. The quality of his judgment are a measure of the extent of his experience and his awareness of the experience of those specializing in related disciplines. For the information I require for judgment in user needs, I have depended in large part on Ms. Cooper's book 'Easter Hill Village.'

After all of the analysis and synthesis is done, the solution still awaits the individual identity of the designer for its conceptual reality. If his program is accurate and complete and he has researched the best sources and previous works in a similar program for their time proven performance then the framework for the artist is complete. Within the criteria of performance for his design he may judiciously exercise his artistic preferences based on values he feels personally, without threatening user satisfaction.

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[2]Peter Kommers, Undergraduate Thesis, p. 47.

> As we look out into space we see no sign that life has intervened to control events anywhere except precariously on our own planet. Everywhere else the universe appears to be mindlessly burning up its reserves of energy inexorably drifting toward the state of final quiescence described imaginatively by Olaf Stapledon: 'Presently nothing was left in the whole cosmos but darkness and the dark whiffs of dust that once were galaxies.' It is conceivable, however, that life may have a larger role to play than we have yet imagined. Life may succeed against all the odds in molding the universe to its own purposes. And the design of the inanimate universe may not be as detached from the potentialities of life and intelligence as scientists of the 20th century have tended to suppose.[3]

Of the numerous religions and popular philosophies that have guided mankind through the last several millenia of his evolution, science is the youngest and yet probably the most ubiquitous and powerful. In the universal endeavor of socities to gain greater control over natural phenomena that impinge on their individual lives, the philosophy of scientific causality has yielded more tangible fruits than all previous and concurrent religions combined. Though it currently leaves gaps that turn many in part back to traditional religion, very few in modern societies would deny themselves the fruits of science or turn first for the solution to a problem to some other source than science.

Science is the product of man's mind and of that he is rightly proud and dangerously arrogant. Frontier after frontier has fallen to

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[3]Freeman J. Dyson, Energy and Power, p. 19.

his intellectual onslaught and he seems now to suppose that there is no survival related matter unsusceptable to his new god. His apparent attitude has long been that his position at the top of the food chain gives him dominion over the vastly complex and delicate mechanism that supports him and privilege to abuse it in any way he chooses. It is ironic that in the same geologic instant that man is reaching for the stars he finds himself sinking into a toxic quagmire of pollutants oozing forth from his arrogant myopia.

More recently, a reluctant awakening is stirring the seats of policy. The limits of our planetary environment are becoming too obvious to deny as species become extinct, as lakes and rivers turn septic, as densities and intensities become unbearable, as human population growth reaches an exponential rate. . . . We are now slowly but correctly coming to regard ourselves as an interdependent part in a tremendous, integrated process leading in a direction that is perhaps eternally unclear. We can, however, be certain that our well being is intimately tied to the well being of our earth bound biosphere. It is also coming to light that life on earth is a high order of the interaction of energy and matter that compromise the phenomena of the universe. Energy has been revealed as a major determinant of the extent and outcome of any process including life. That energy availability determines the carrying capacity of any biological environment is cooroborated by the fact that human population growth coincides

with the development of the processes that have made the energy locked in fossil fuels available for human disposition. The rate of conversion of fossil energy has essentially kept pace with demand for the last century and allowed mankind to increase his numbers and alter his life style to the extent that large scale energy conversion is essential to the survival of modern societies.

Although it is difficult to project fossil fuel reserves, it is nevertheless inevitable that fossil energy is a finite resource and will be increasingly difficult, eventually impossible to extract. An unprepared industrial world flung too rapidly into that situation could force manking into bitter global resource competition. As societies find themselves unable to sustain their numbers by less productive, more primitive energy conversion methods or presently undeveloped advanced methods, only human misery will reduce our numbers to the carrying capacity of our depleted energy resources.

Nuclear fission is at best a dangerous alternative to fossil energy. The radioactive waste it generates will remain a threat to all life on earth for hundreds of generations to come and that threat increases in proportion to the quantities of waste we produce and store in sites susceptible to natural or intentional disturbance.

Fast breeder fission, in addition to nuclear wastes, produces and utilizes plutonium which can with relative ease be fashioned into a nuclear explosive device which could place a whole nation or planet at

the mercy of a very small extremist faction. The danger of this has been considered sufficiently great to persuade an American president to stop the development of fast breeder fission as an alternative energy source for the United States. France has accepted the global danger of the breeder reactor and operated one successfully for twelve years.

Nuclear fusion is the process by which our sun produces the energy that it radiates to our planet. Man has achieved the reaction of combining hydrogen atoms into helium on earth in the specter of the hydrogen bomb. He now hopes to use this same reaction in a controlled way to produce energy for constructive purposes. If this can be achieved, the fuel will be an isotope of hydrogen, harmlessly extracted from sea water and the waste products will be negligible. Unfortunately, science has encountered tremendous problems in fusion technology and many in the scientific community feel that this seemingly ideal solution is an impossibility. Only time and intensive research will tell. As yet research efforts are not adequately supported.

The sun's radiation by direct or indirect conversion is thought by many to be mankind's salvation in the energy dilemma, but even total and ideal solar energy conversion would not meet the energy demands we now impose and at that would virtually cover our land masses with solar collectors. However, solar radiation in diffused

concentration is available on virtually every site on earth and can be used to advantage by techniques that are often simple.

Faced with no effective and desirable means by which to indefinitely maintain his current energy consumption level, man might well examine the integrity of his consumption patterns. Comparison of the United States to other developed nations reveals that we have obvious inefficiencies. Our wasteful attitude springing from our past energy wealth and world wide economic advantage, undoubtedly carries a large measure of the responsibility. For the last several decades all we have designed and built from Cadillacs to glass towers have been predicated on the unlimited availability of easily converted energy. Now our situation demands that reasonable need and efficiency substitute as design determinates for obsequiousness and pompous display.

The United States is a nation founded in the spirit of conquest of nature, the taming of the wilderness. In this ethic nature is considered the rightful servant of man. It is difficult to imagine a transition of the national ethic to one of man as the husbandman of nature, but that is certainly what our times demand. We are finding that conquest is a myth and harmonious coexistence is our only alternative. The architect in realigning the priorities of his design determinants can act as both a vehicle and a respondent of this needed transition in values. He may pay closer attention to the details of his site analysis and assign a higher priority to means of

energy flow modification than to, for instance, the latest popular architectural style element. In past cultures, appealing architectural aesthetic systems have emerged from their various methods of dealing with environmental forces. It seems likely that a viable and effective architectural aesthetic can be derived from our responses to the forces in our natural environment. Such a common awareness could serve as the cohesive force so obviously lacking in our recently constructed residential neighborhoods.

This is not to say that all buildings should now be covered with solar collectors. The new born 'solar industry' is ripe with deceptive and insensitive product suppliers who would happily blanket our residential environment in glass and copper. But all determinants of design must be given just consideration and those which can be coordinated combined and those which are exclusive balanced according to their importance. Energy awareness need not be particularly exclusive if applied imaginatively and not just handed to a solar or mechanical engineer. Active means of solar conversion are still expensive, complex and unreliable while passive means are yet to be fully explored by designers. There is reluctance to assign any active role in the system to the home dweller. Belief that the thermostat on the wall is the source of human comfort is an important manifestation of energy wasteful ethics to be overcome. If a dweller can with some minimal activity adapt his home to the changing conditions of nature, then his

awareness of the natural processes he participates in may be sharpened. The architect may thereby act as a vehicle by which our culture adapts to the attitudes that will help man as a species to attain the goal the universe has assigned him.

CONTEXT

An amorphous mass of crowded and desperately jumbled stock house plans spread like a fungus across a once productive wheatfield that now yields only lawn mower fodder and asphalt. Natural terrain is regimented into tiny uncoordinated and desperately defended childish miniaturizations of vast estates by avaricious and deceptive marketing specialists whose last concern is environmental quality. Where a definite housing need is obvious, speculative interests move in to raise the price of available housing out of the reach of the needy while overnight anyone who can borrow a hammer is automatically a qualified carpenter and everyone with a pickup truck becomes a contractor. Union tradesmen extract wages totally out of proportion to the difficulty of their work, and exclusive qualification procedures and legislated demand for their services insures maximum work load with minimum competition. Financial institutions double the long run price of the home and then dictate rigid guidelines within which it can be built. And orchestrating the entire fiasco is the infinitely overpaid in relation to product improvement real estate agent whose role as agent of the seller at the cost of the buyer is to extract the maximum price for the minimum quality.

It is a bleak but not inaccurate picture of the situation faced by a potential home owner in a growing community. When faced with the absurdly deceitful and inequitable system he must support by buying a

home, it is small wonder that he falters at the prospect of serving it for some thirty years. But they've offered him something else . . . a membership in the system. By 'owning' a home, he becomes an investor; assured as he is that whoever follows him into the home owner system will have to pay more for a home than he did. Tax breaks will help him with his interest and as long as he follows the guidelines of the banker and insurer he is serving, his ticket will gain in value. He wanted a home and he got an investment. If he works hard or, more effectively, if he is tricky in his dealings, he might be able to keep it.

At no point in this process are the services of an architect involved (unless he is moonlighting). The stock plan that the speculative builder followed was probably assembled by a draftsman from popular parts, stamped FHA-approved for anywhere from Tampa, Florida to Seattle, Washington, and then sent to those diverse corners so that it can be safely sold as a 'unique design'.

It is safe to say that a major portion of the housing created presently in the United States is a product of a system similar to the one described. Home buyers are faced with an outrageously expensive product, responding in no way to their particular needs or to its tiny site or even position in the universe, and designed with little attention to its cost over its life span. Other than living in the bus station, there often is no alternative and since the home buyer is

persuaded that what he is getting was not really intended as a home but rather as a 'hedge against inflation', he elects to become the pseudo-owner of a housing unit. An irony in this process is that by holding a needed resource off the market as a hedge, one is aggravating the very inflation he is guarding against.

Ideally, a capitalistic economy provides mechanisms by which consumers communicate their quality demands to producers. This system demands that the consumer be allowed to determine whether or not to buy a given product and what price to pay. The present home financing methods place the buy or no-buy option essentially in the hands of the financial institutions whose only measure of quality is the past record of marketability. Banking is traditionally a conservative profession and not one in which innovation or change is encouraged. The effect is that a home buyer seeking financing is essentially committed to status quo in terms of housing quality determinants. Therefore, the housing industry is very reluctant to accept design variations as the marketability of their product hinges on its familiarity. This rigidity works to the detriment of the consumer particularly in times such as these when home user needs are changing both in living patterns and energy requirements.

> Many factors have combined to push up housing prices in recent years and months. They include: 1) new home costs (land, materials, and financing), which inevitably have spilled over to increase costs of older units as well; 2) numbers of working women buying houses; 3) family breakups

> and divorces; 4) the growing preference and economic ability of single persons to have separate living quarters; 5) post-recession resumption of extensive corporate executive geographical moves; 6) migration for weather-energy-related reasons; 7) shortages of developed land for new buildings; 8) foreign buyers; and 9) fear that availability of fixed-rate, long-term mortgages will disappear.[4]

Bozeman, Montana in 1978 displays most of the characteristics thus far described for the housing industry. Demand is high due primarily to regional migrations into the area. High pricing has attracted speculative builders of dubious intent and qualifications. Tradesmen name their own price, and materials suppliers can sell their merchandise at higher than typical margins. Monopolistic land ownership and rampant land speculation has constricted the availability of building sites. Real estate agents are prolific and eagerly encouraging everyone to grab a hedge while it's hot. Bankers pick their debtors at their will, insuring the least risk to themselves. It is what is known as a seller's market and heaven help the buyer.

Heaven being somewhat unreliable, the buyer might take this opportunity to help himself. Traditionally, the consumer in a home buying situation is very much alone, facing a coalition of builders, bankers, realtors, and the speculators among them. Each in his own way will extract their tithe from the hapless buyer who, being inexperienced in the housing industry, accepts his fate for want of any option. He

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[4]Walter E. Hoadley, "Soaring Housing Prices: Will Galloping Costs of Ownership Kill the Boom?" Duns Review (June 1977), p. 9.

takes what he is dealt and arrives in a neighborhood of strangers who have shared his fate.

Since most home owners will inevitably live in close proximity to a number of other family units, there could be an advantage in a coalition of future neighbors who together choose a site for and build their own neighborhood. Therein would be the opportunity for the association of home owners to economize by limiting or eliminating subdivision expenses, speculative inflation, site development costs, and for taking advantage of various scale economies. In addition, their chances of a coordinated neighborhood plan and a design that responds to their particular needs as well as their actual site would improve greatly. Assuming that within the group there was some reasonable technical expertise, the association could perform many of the functions of the general contractor and perhaps even contribute labor on various levels according to ability. A designer would probably be employed with an elected representative of the group serving as the client spokesman in consultations with the designer. It is reasonable to expect that in a cultural milieu that stresses rugged individualism and competition, there are many potential conflicts of personality within any real home owner association that could destroy the spirit of cooperation and trust necessary for such a closely interdependent group. However, those incompatible personalities will, hopefully, leave the organization early in the planning stages of the project,

a suitable number of compatible and mature minds will remain and, given the pitfalls awaiting them in dealing singly in the housing market, will be sincerely committed to the success of their joint endeavor.

It is in the faith that this avenue of solution to our nation's housing dilemma is a potentially productive one and specifically in the housing production environment of the Gallatin Valley in Montana, 1978 that the following thesis is proposed.

THESIS

Important to an understanding of the stated thesis is the concept of cost effective quality. Cost effectiveness is most often associated with the cheapest overall product that will meet a stated need. The interpretation of the need is often very specific and narrow so that it may be easily decided whether or not the need has been met. In that context, a term as nebulous as quality seems almost alien but it so broadens the concept of cost effectiveness as to give it validity in architecture.

The free reign of the artist pays little attention to cost as he assumes his message has quality and is priceless, just as his work of art may be if society is sufficiently pleased with what he has done. The architect, as stated earlier, must meet the additional criteria of functionality with his art and will be judged by a two-headed master. He must appease the human body craving comfort and convenience as well as the human soul seeking enlightenment and joy. Most building programs will favor the former but still seek satisfaction of the latter. Comfort and convenience are easily measured and are the accustomed realm of cost effectiveness but quality dwells most naturally in the company of enlightenment and joy. These immeasurables are what the architect can give that the engineer cannot. Quality is what he must provide but on a budget and in conjunction with comfort and convenience. He must provide cost effective quality.

DIVERSITY, COMMUNITY, & FLEXIBILITY ARE ROUTES TO COST EFFECTIVE QUALITY IN HOUSING.

THE ALTERNATIVES AVAILABLE TO THE HOME BUYER IN THE UNITED STATES ARE SEVERELY LIMITED BY THE RIGID AND SELF-SERVING NATURE OF THE PRESENT HOUSING INDUSTRY. A DIVERSE MIXTURE OF FLEXIBLE HOME UNITS COORDINATED IN A SPIRIT OF COMMUNITY THROUGH ALTERNATIVE TECHNOLOGY AND REVISED METHODS OF CONSTRUCTION WILL IMPROVE THE OVERALL HOUSING ENVIRONMENT.

DIVERSITY

INCOME GROUP
LIVING UNITS TO BE OF A RANGE OF COST AND AMENITY TO ENCOURAGE A MIXTURE OF INCOME GROUPS

FAMILY UNIT
A VARIETY OF LIVING UNIT SIZES AND PLANS TO SUIT A MIXTURE OF FAMILIES WITH CHILDREN, SINGLES, ELDERLY, ETC.

LAND USE
ALLOWING COMPATIBLE ELEMENTS OF INDUSTRY, COMMERCE AND AGRICULTURE TO OCCUR WITHIN AND BRING RICHNESS TO THE RESIDENTIAL FABRIC

COMMUNITY

COOPERATIVE FORMATION
A GROUP OF PROSPECTIVE HOME OWNERS FORM A NON-PROFIT CORPORATION FOR THE DEVELOPMENT AND CONSTRUCTION OF A NEIGHBOR HOOD — THE CORPORATION GAINS FINANCING AND EMPLOYS A DESIGNER AND CONSTRUCTION MANAGER. — COMMUNITY IDENTITY BEGINS BEFORE AND CAN THEREBY DETERMINE DESIGN

DESIGN FOR SOCIAL INTERACTION
MAINTAIN THROUGHOUT DESIGN PHASE THE AWARENESS THAT SELF-DETERMINATION OF EACH INHABITANTS DEGREE OF SOCIAL INTERACTION IS A MAJOR FACET OF ENVIRONMENTAL QUALITY — THE BUILT ENVIRONMENT SHOULD FACILITATE AND REINFORCE INTERACTION WITHOUT PUSHING IT

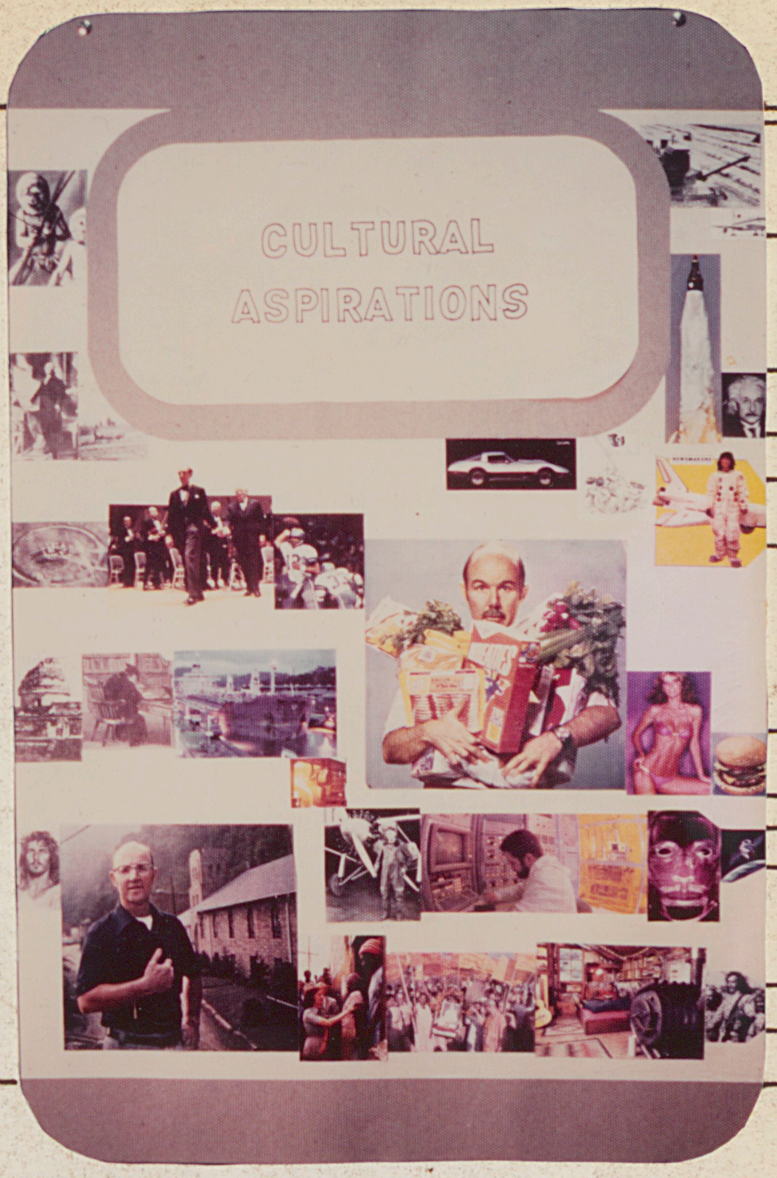
FLEXIBILITY

UNIT PLAN
GENERALLY OPEN PLANNING WITHIN UNIT. OPTION OF LIGHT, MOVABLE PARTITIONS.

COMBINING AND DIVIDING OF UNITS
PROVISION FOR JOINING OF ADJACENT UNITS AS FOR COMMUNAL LIVING OR CLOSING OFF AN UNUSED SEGMENT PROVIDING A RENTAL INCOME.

PERSONALIZATION
MAINTENANCE OF A FRAMEWORK ON DWELLING EXTERIOR WITHIN WHICH OWNER CAN LIBERATE CREATIVE ENERGY TO DEFINE HIS DESIRED DEGREE OF SOCIALIZATION.

DESIGN FREEDOM



DESIGN FREEDOM



POLITICAL IDEOLOGY

SOCIOLOGICAL CLIMATE

ECONOMIC STRUCTURE

VALUE STRUCTURE

TECHNOLOGY LEVEL

HOUSING

DESIGN DETERMINANTS

To analyze a whole by its parts is at best a dangerous route to enlightenment. Impressions are distorted by the method of dissection and the emphasis placed on the individual parts during their study may not follow the priority of their importance to the whole. An important part can be missed and the process of reassembly can go astray. Nevertheless, systematic study of a subject by its parts is the method of science and the customary process of the western mind.

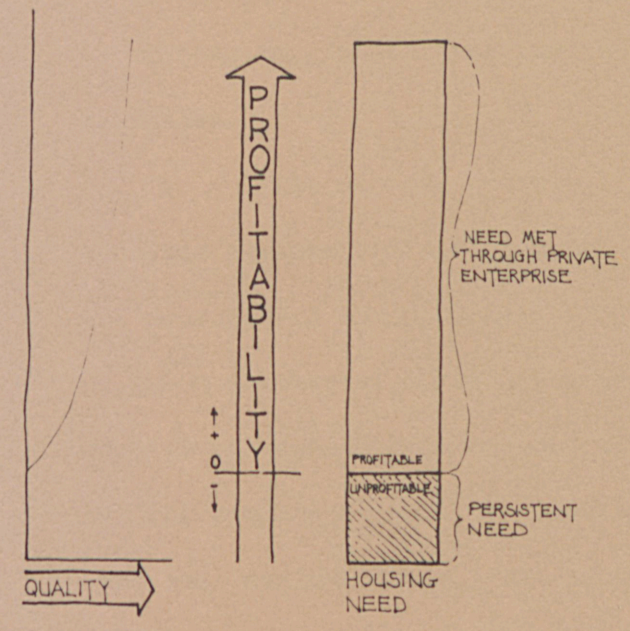
Aware of the dangers involved, I have sought to isolate several of the parameters that must be monitored by an architect who is interested in responding appropriately to his cultural environment by carefully controlling the messages in his work. The topics covered are by no means a comprehensive list, but rather were selected for their assumed importance and limited by the time available for their study. It is not intended that the five topics be recombined and used exclusively as the guidelines for a design, but rather that impressions be gathered from the study to serve as a test for the thesis and an overall intuition to guide the design intended to reflect the thesis.

Politics

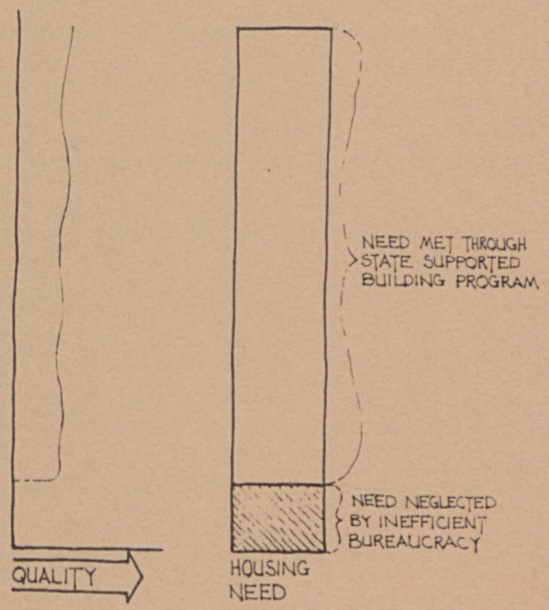
A political system is a means by which a society reflects and affects its values. It has pervasive influences on all that takes place within a nation and significantly guides the image in which architecture is conceived and the method by which it is realized.

POLITICAL IDEOLOGY

CAPITALIST



SOCIALIST



Totalitarian governments will seek to display their supreme and centralized power with monumental institutional buildings. A capitalist democracy may build its temples to commerce and mercantilism. Housing in a socialist country may be ideally a complex of densely intermingled dwelling units while the ideal in a democracy is perhaps a house out of sight and sound of all others. The communist ideal of each person receiving according to his need and contributing according to his ability would likely be best reflected in an architecture of uniformity. Diversities would too easily be judged as inequalities in violation of basic socialist tenets. A system based on competitive free enterprise would wear the face of diversity as each individual strives to reach his highest potential and reap the benefits bestowed on the achiever by his capitalist economy. An architecture of contrast is at home here where differentiation and personal identity are lauded qualities.

To a large degree, political systems determine the operation of economic systems and indicate the way in which need is communicated by the consumer to the producer. In communism the producer is directed by the governmental bureaucracy to produce according to the consumer need it has sensed by some sort of survey. The theory seems workable but the complex network of information is subject to distortion, intentional and otherwise, that subverts the operation to the extent that at times need is neglected or resources are squandered. In a

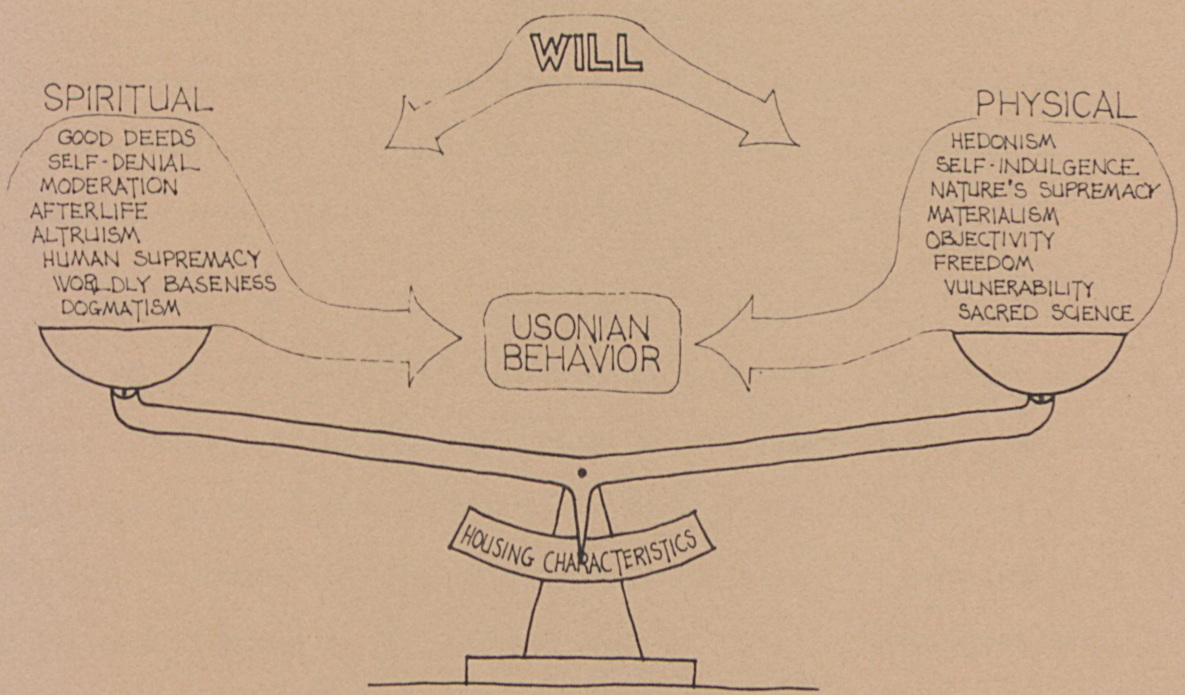
system in which profit motive is employed to relate consumer desire to potential producer, only the need which can yield a profit to a producer will be responded to. Some portion of unprofitable need will always exist in the purely capitalistic housing industry. Perhaps a blend of the techniques employed by both systems can provide the most adequate need satisfaction.

Architecture is a means by which a political system manifests itself both in the physical form and interrelationship of buildings; and in the exercise of the economic systems that identify the type of government. The architect should be consciously aware of the effect of his work in support of or in effort to modify its political context.

Values

Although they are reflected to some degree by the political system of a culture, values are more comprehensive and flexible than the rigid simplicity of a political system can completely capture. Values are held individually by the members of a society. A relatively stable body of common values comprise the collective value system of the society and the background against which individuals can be judged for the conformity or non-conformity of their beliefs. Within the larger framework of 'normal' values, smaller bodies of beliefs compete for followers and attract those individuals who find in those groups some consistency with their personal values.

VALUE STRUCTURE



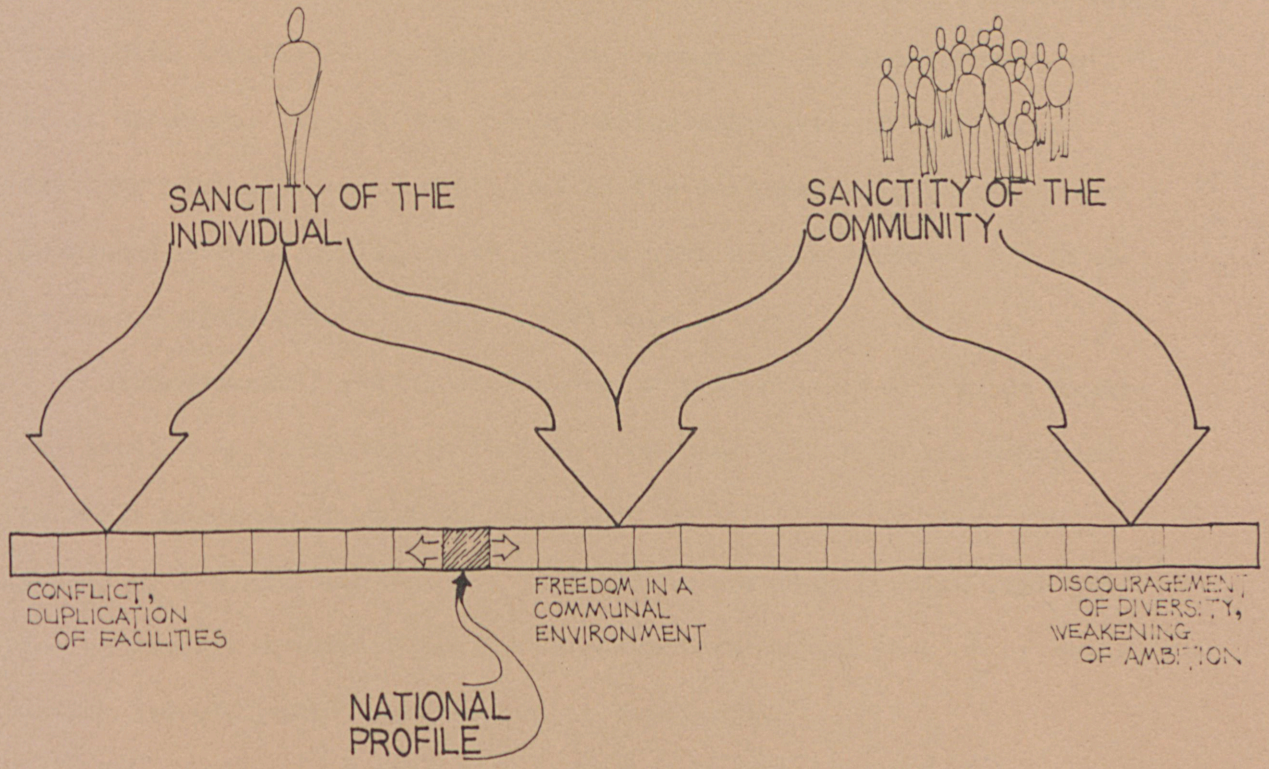
An architect is an individual who likely feels his personal values quite strongly. He by professional image is likely to diverge from the norm yet is approached by society to display their values in the physical form of architecture. It is usually a delicate compromise that must be maintained between the values a client wishes to express and those which the designer feels personally should appear in his work. Sometimes that compromise is impossible and in such cases we may be grateful that there are many architects. The ideal situation is one in which a designer's personal beliefs are coincidentally well aligned with those of the client who employs him and the user who circulates within his work.

It is essential that the architect be aware of the systems of value that surround a potential project and that he propose a solution that is effective in his intent to support or defy the value system in which his work will stand the test of use.

Sociology

By far the largest portion of activities served by the built environment involves the social interaction of human individuals. The ways and degrees in which they relate to one another are determined by an interplay of innate human behavioral characteristics and culturally conditioned responses. The physical setting of their interaction can either support or interfere with the participatns' natural tendencies in socialization. The built environment controls the extent and

SOCIOLOGICAL ENVIRONMENT



character of its occupants' perception of and encounters with one another. If the architect allows people to meet in one way only or demands that they meet or prevents them from meeting then it is tyrannical. A more sympathetic architecture will allow freedom of choice and the opportunity to display or conceal one's self according to one's momentary socialization requirements.

An architect can probably find one of his more valuable consultants in the field of practical socioloty. A practical behavioral scientist whose ambition is material improvement in the sociological environment can contribute substantially to an architect's efforts to attain user acceptance and client satisfaction. Some sociologists who are not trapped in the academic recycling system have the methods through which meaningful studies can be made of the impact of architectural solutions on users. The person communicating a behavioral study to a designer will desirably be attuned to the information requirements of a designer and will perhaps with the designer's help condense his findings into architecturally meaningful data.

Unfortunately, social scientists of this character are not common and it will be infrequently that an architect will have his services. In their absence, it must suffice that the architect be aware that sociology and architecture are inseparable and that he will with his design product determine whether architecture struggles with or reinforces its occupants' natural social tendencies.

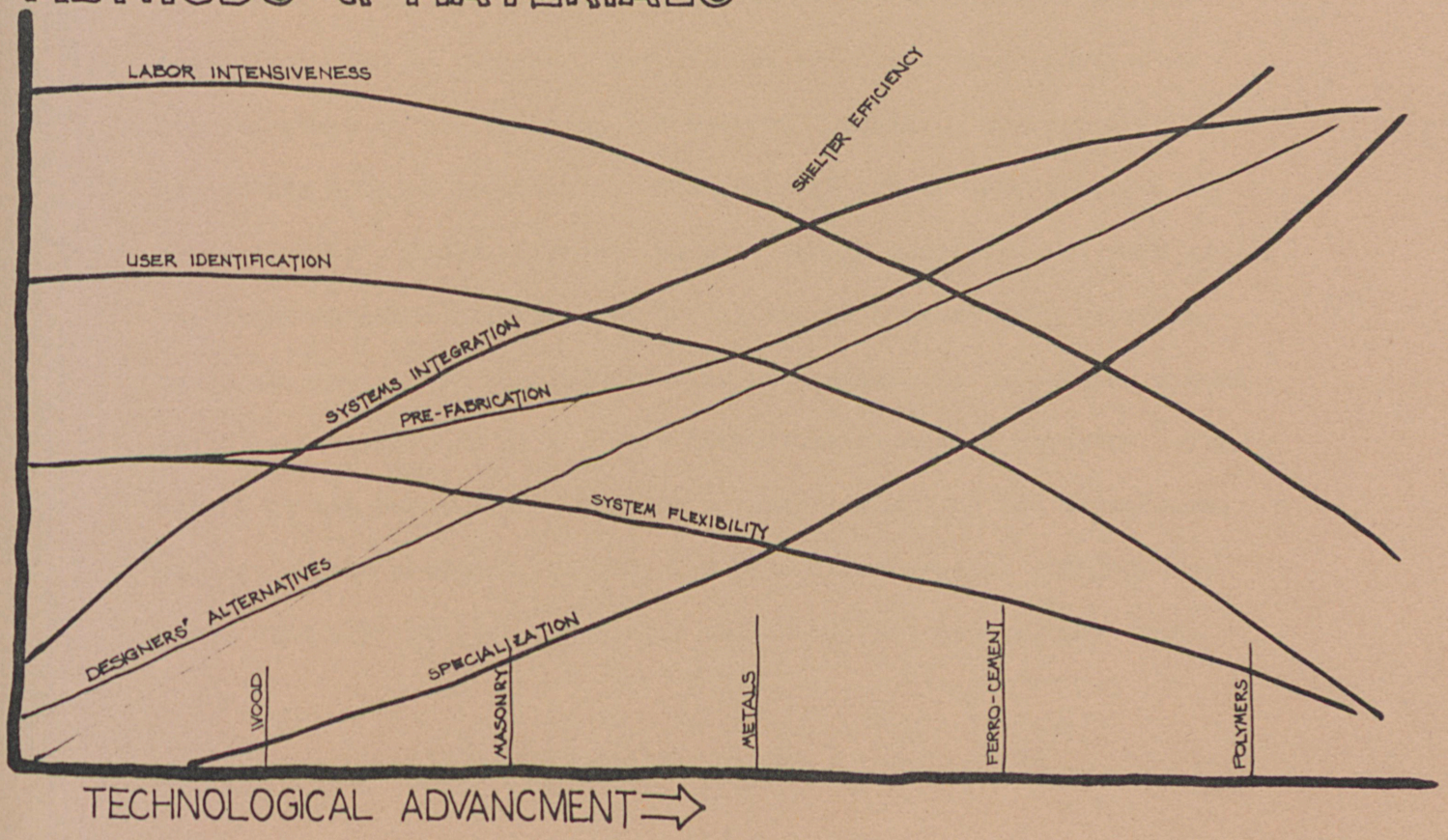
Technology

The march of technological advancement has been measured by the increasing numbers of methods and materials that have become available to the designer. At present, virtually every age of man from stone to space contributes to the bounty from which a designer chooses his medium. An architect will select the ideal materials for a project according to the structural performance required of them and the spirit that the building is intended to convey. The actual materials used must ultimately be limited to those which are economically available. Unfortunately, the development of a new product that sets advanced standards in performance does not necessarily automatically attain popular aesthetic acceptance. Even an accurately expressed work in modern high technology and synthetic materials can rarely attain a feeling of human identity equal to that possible in a structure of wood and stone. Yet modern building programs demand the performance that only high technology materials can provide.

Technology in all that it provides a designer can hardly be thought of as a limitation, yet the physical performance and spiritual qualities of materials and their processing are relatively fixed parameters within which the architect must work. The success of his efforts will hinge on his familiarity with materials and construction methods and his facility in their expression.

TECHNOLOGICAL LEVEL

METHODS & MATERIALS



Economics

Of all the parameters that demand the consideration of the designer in the building industry, dollar cost is probably the most unforgiving. Budget is one of the first bits of information communicated by a client to a designer and the extent of it rigidly delimits the extent of the options available as solutions to the project. It is often in the realm of dollars that the personal interests of an architect for achieving meaningful architectural works and the objective of the clients for meeting the needs of his program with the amount of money he has to spend, come into conflict. It is in anticipation of this problem that potential clients often elect to pursue their building program without an architect's services.

As it is through the home that many of the benefits of modern technology come to the user, our economy invests a large portion of its resources in the building and housing industry. Housing unit starts are a major indicator of the state of the economy's health in general. The process of providing the nations housing being such an important national priority, it has attracted a great many entrepreneurs who see in the housing industry an opportunity to magnify a need which by meeting they will insure themselves financial security. They attack at any point in the process of need perception and definition, product design and construction, and product conveyance and improvement. The army of title insurers, assessors, mortgage agents, real



COST CATEGORIES

PRODUCT IMPROVEMENT

LABOR

MATERIAL (LESS CONTRACTOR MARKUP)

DESIGN

LAND

UTILITY HOOK-UP

ADDITIONAL COSTS

REALTOR COMMISSION

SPECULATOR PROFIT

FINANCE EXPENSE

INSURANCE

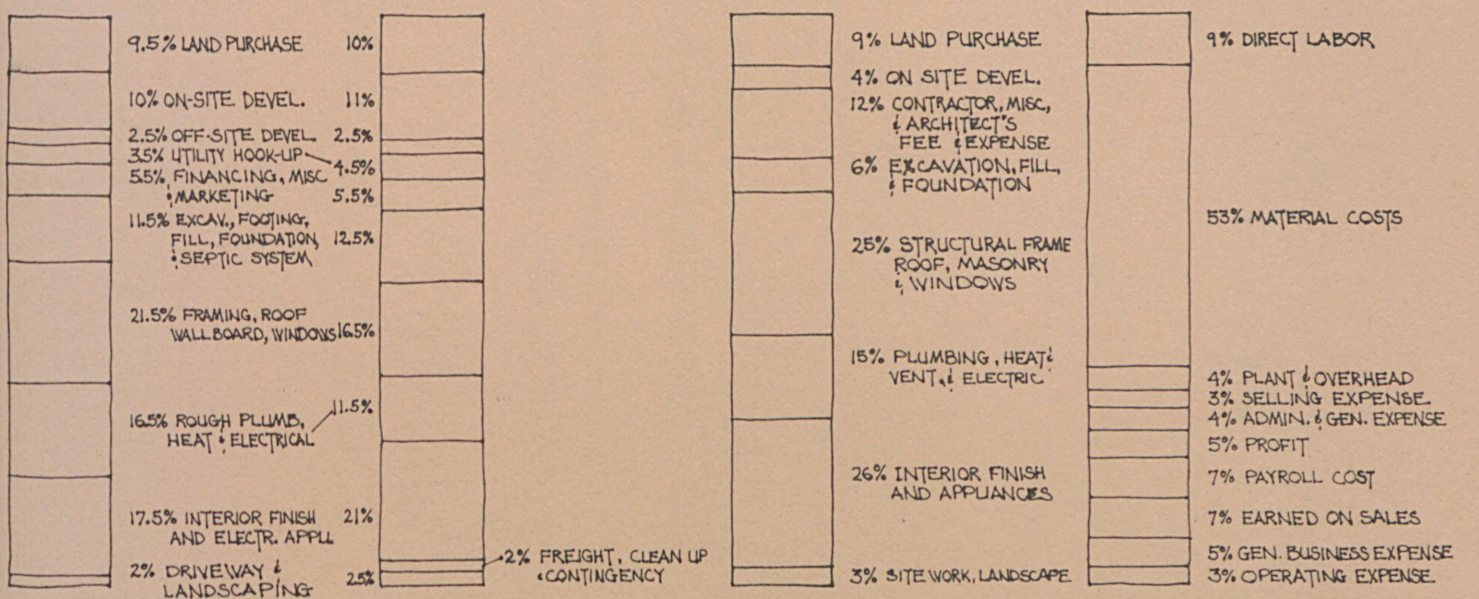
MATERIAL MARKUP

CONTRACTOR PROFIT

CONTRACTOR OVERHEAD

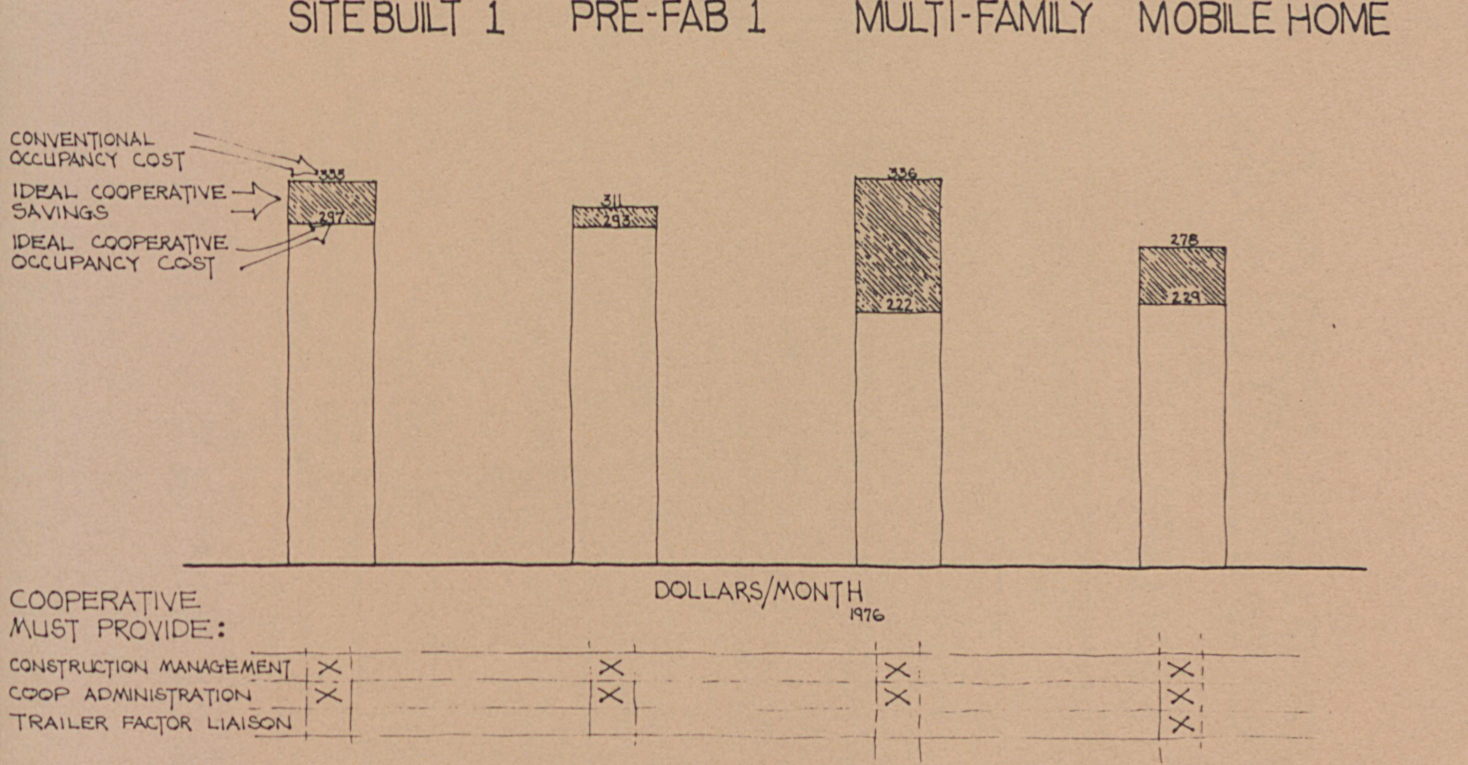
estate salesmen, property speculators, etc., who must receive their required toll for their dubious service to the housing process is ominous. Almost no one can escape their grasp on our solutions to our need for homes. Faced with all of the required costs of a home that contribute little or no improvement to the product and the unjustly high cost of trade services inflated by restricted competition, the buyer or builder of a home for himself is forced to limit his costs whenever possible. Since site and client specific design is not a legislated requirement and can be superficially substituted for by stock design, architects' services are usually the first expense to be eliminated.

A study, shown on following pages, shows the impact of costs (that do not improve the product) on several types of housing. A cooperative effort on the part of home owners as discussed earlier is proposed as a means of limiting the resource drain that these ancillary costs constitute. It is proposed that the prospective home owners will align themselves prior to the construction of a neighborhood, purchase and develop land as a group, and operate throughout the construction phase as a cohesive economic entity. The following study shows how such an organization can increase the proportions of resource invested in actual product improvement in the various type of housing approaches. Multifamily housing shows the least cost after resource drains are eliminated and is further studied for possible



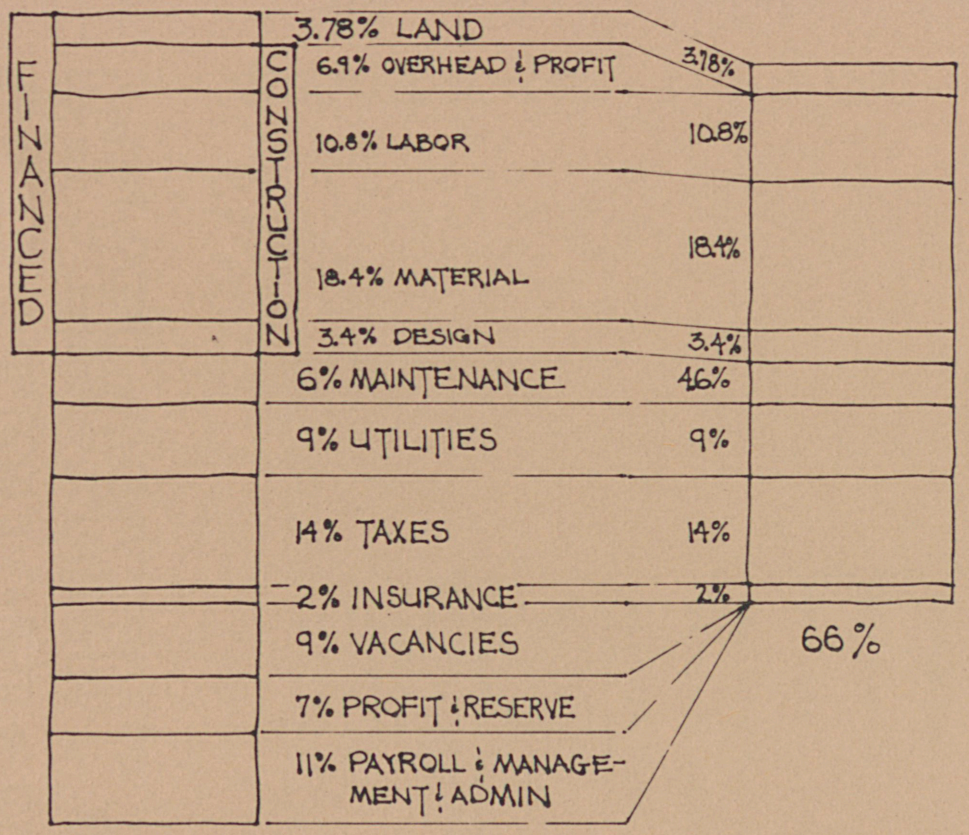
FROM: The Report of the President's Committee on Urban Housing, 1968

DEVELOPMENT & CONSTRUCTION

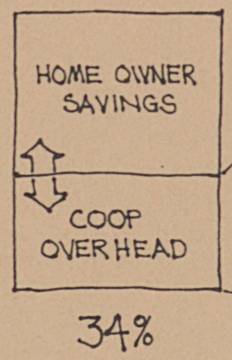


RELATIVE OCCUPANCY SAVINGS

MULTI-FAMILY



RENTING



COOPERATIVE

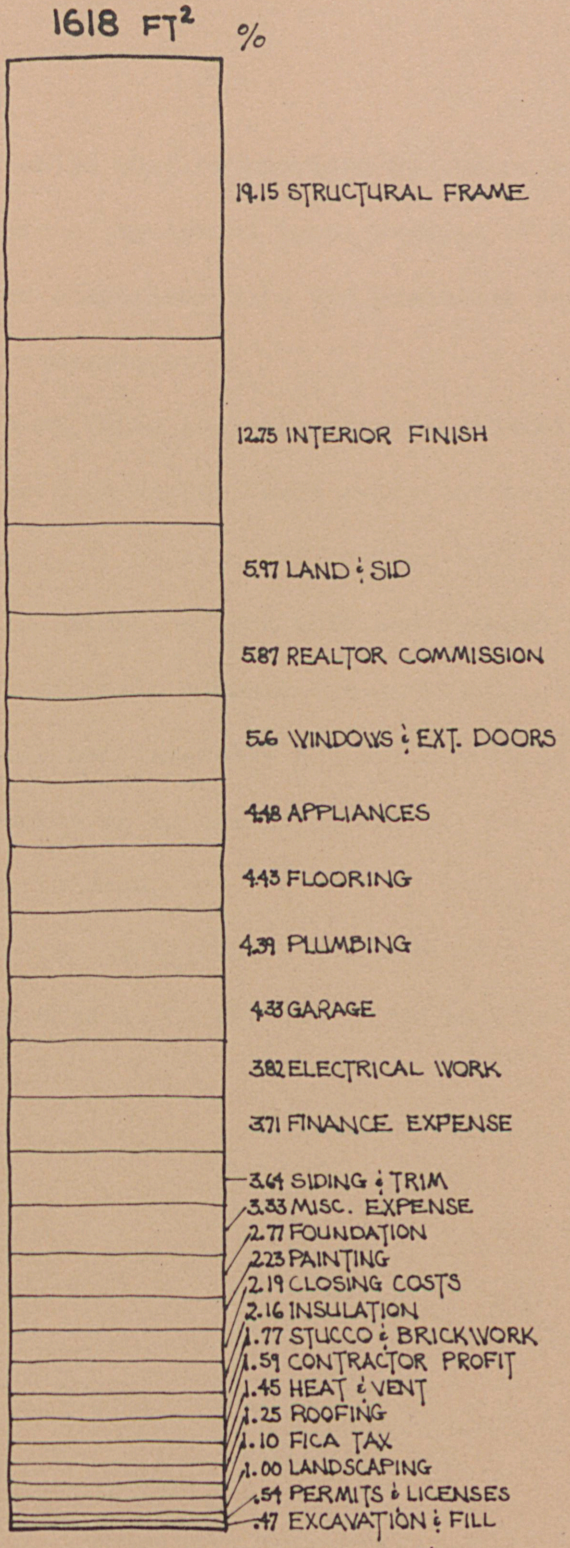
COOPERATIVE MUST PROVIDE:

CONSTRUCTION MANAGEMENT
EMPLOY CONSTRUCTION MANAGER

COMMONS ADMINISTRATION
EMPLOY ADMINISTRATOR & MAINTENANCE PERSONNEL

OCCUPANCY COST REDUCTION

MULTI-FAMILY



LOCAL EXAMPLE

DEVELOPMENT & CONSTRUCTION

savings and for those services which must be provided by the homeowners' cooperative. An analysis of an actual local example of a multifamily unit is included for comparison with the preceding study which is derived from national statistics.

It is understood that some of those cost elements considered as not improving the product do, to some degree, each represent a required service and that the association will be required to meet these needs adequately. The efficiency with which they are able and allowed to do this will measure the advantage of their cooperative approach. Since they are present to protect their own interests and are combining the inflated profit margins of a number of ancillary operators, the likelihood of a substantial savings is good.

The formation of a homeowners' coalition of the type described here and earlier is part of the context of the design project related in the subsequent section.

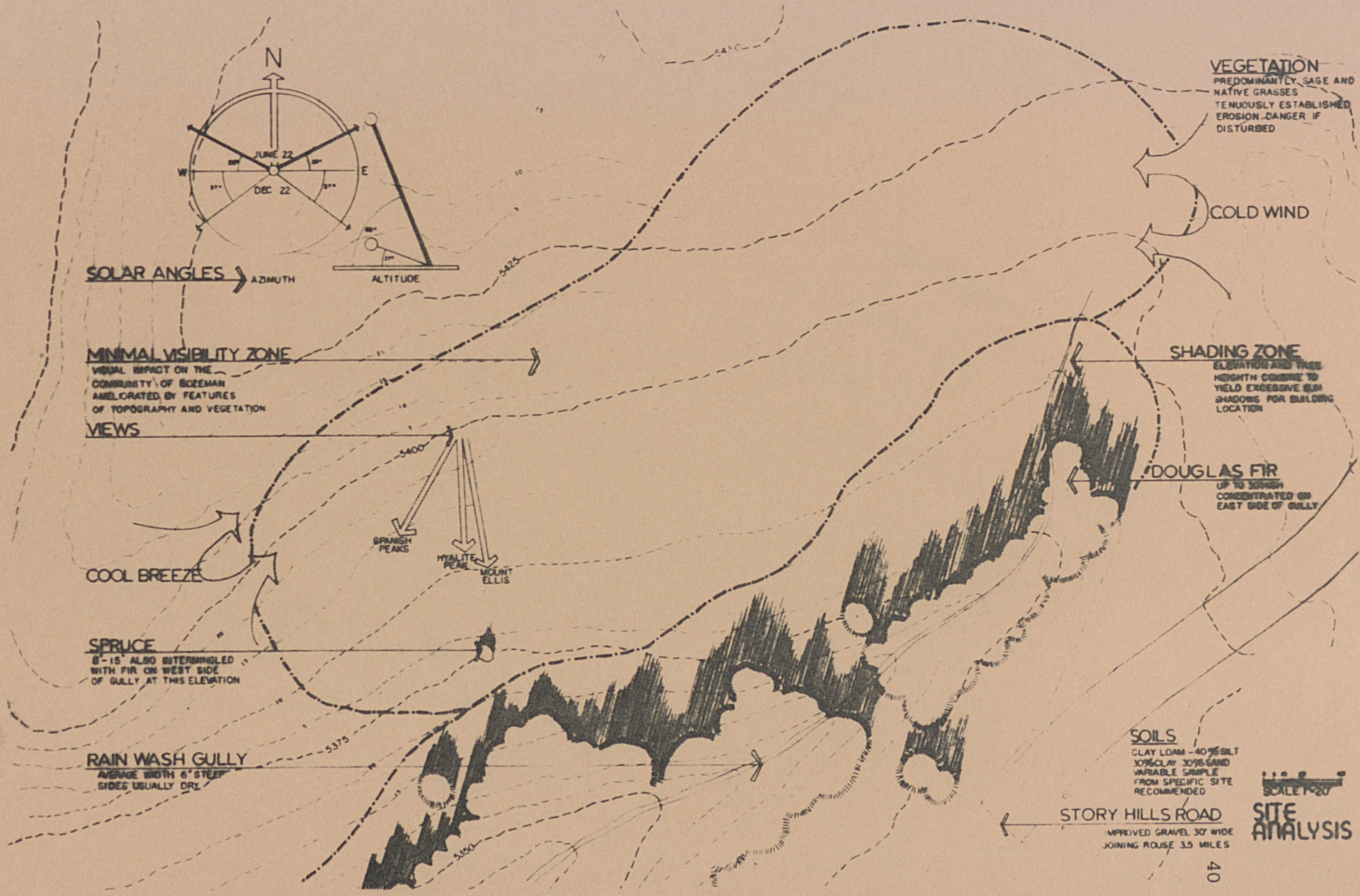
A PLANNED UNIT DEVELOPMENT FOR BOZEMAN

GENERAL CONTEXT

POLITICAL IDEOLOGY	A COOPERATIVE COMPETING IN THE FREE MARKET
VALUE STRUCTURE	HUMAN COMFORT, PRIVATE PROPERTY, SELF-DETERMINATION SUPREMACY OF NATURE, SACREDNESS OF SCIENCE
SOCIOLOGICAL ENVIRONMENT	INDIVIDUAL FREEDOM IN A COMMUNAL ENVIRONMENT
TECHNOLOGICAL LEVEL	A BALANCE OF LOCALIZED INDUSTRY AND MASS PRODUCTION EFFICIENCY
ECONOMIC STRUCTURE	CONCENTRATE EXPENSE IN PRODUCT IMPROVEMENT, EXCLUDE TRADITIONAL RESOURCE DRAINS & SPECULATION



STORY HILLS COALITION



SCALE 1"=20'

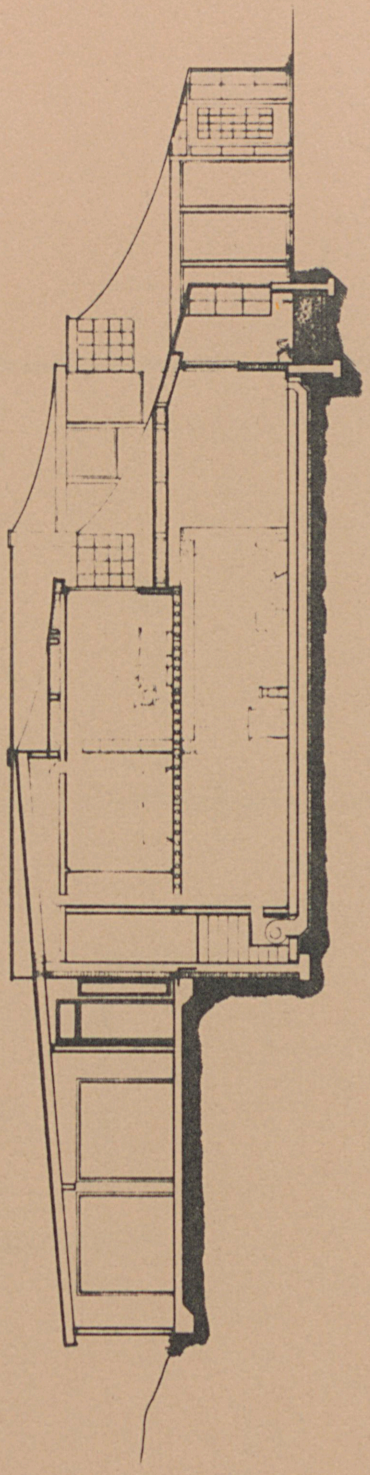
SITE ANALYSIS

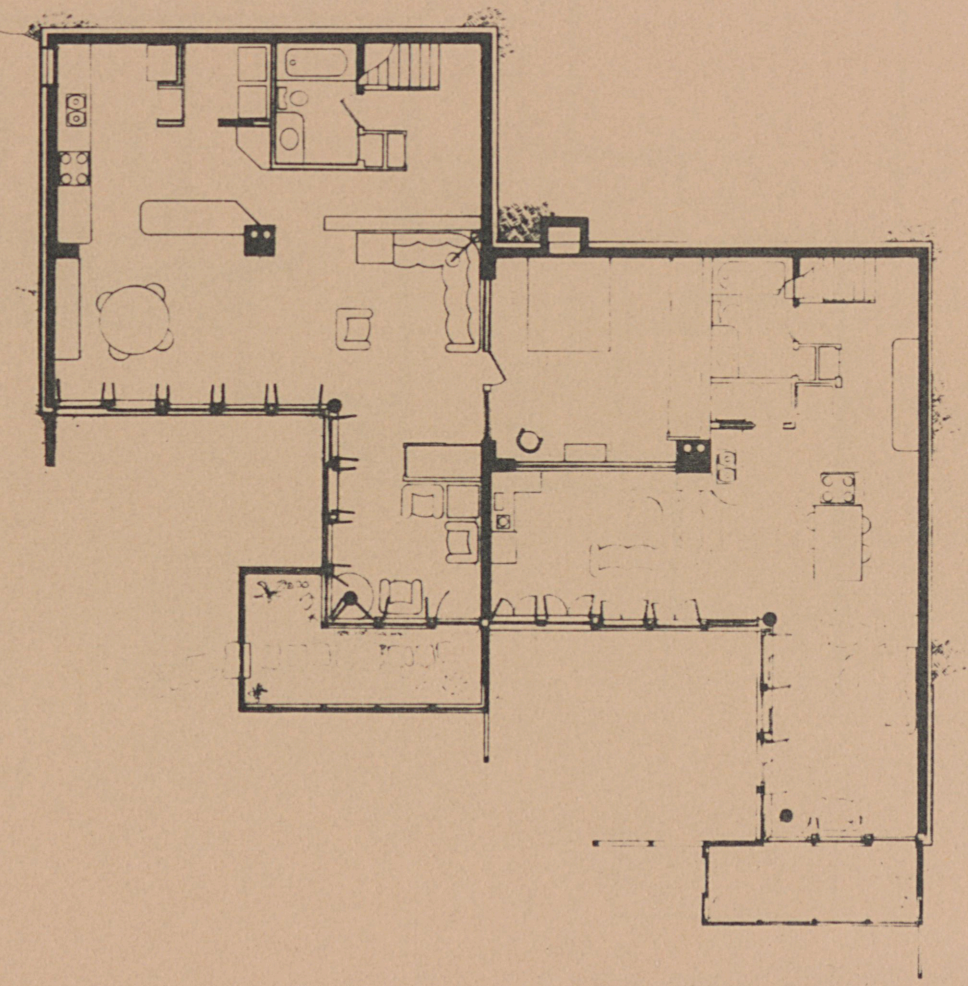


SITE

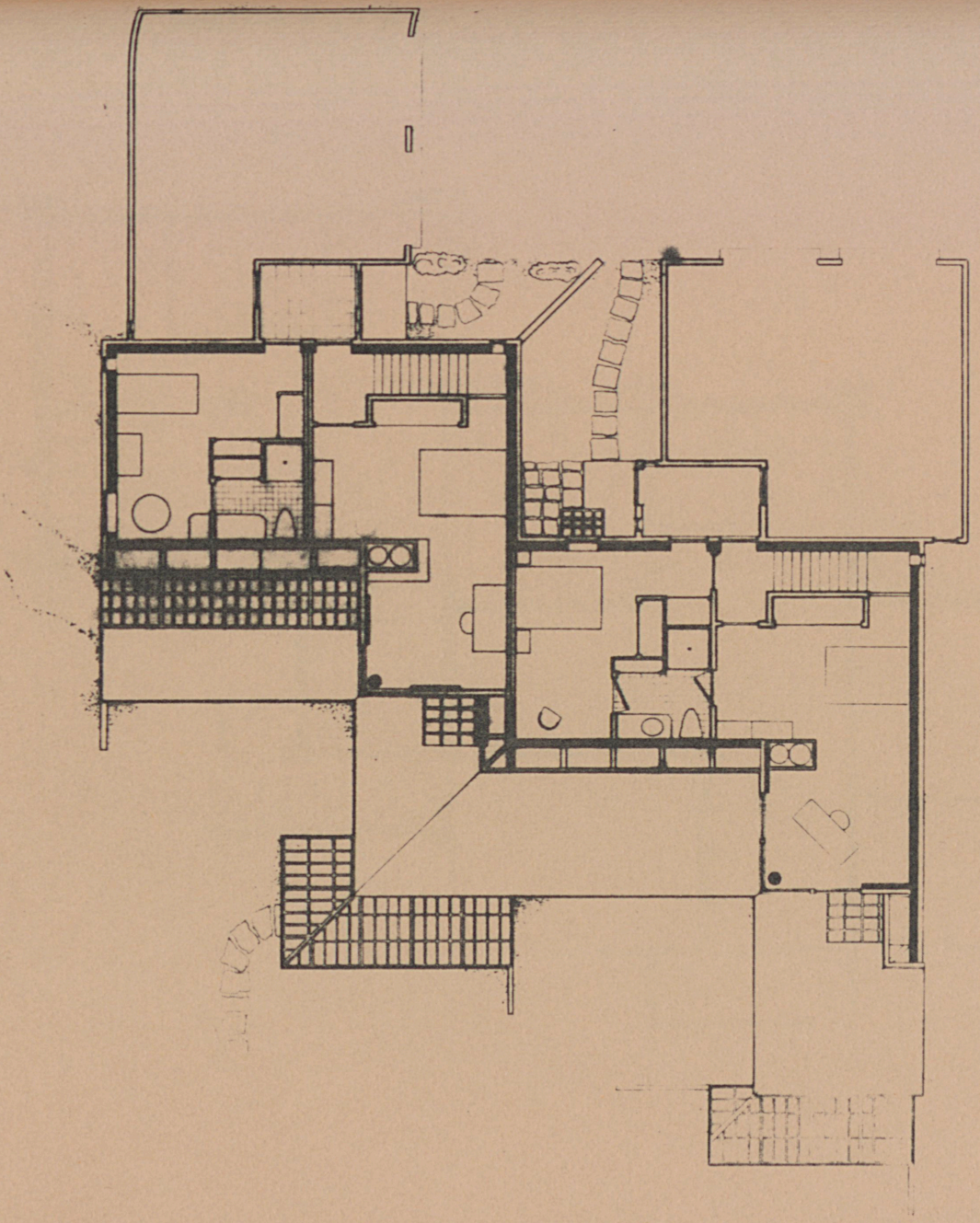
SECTION

SCALE 1/4"=1'



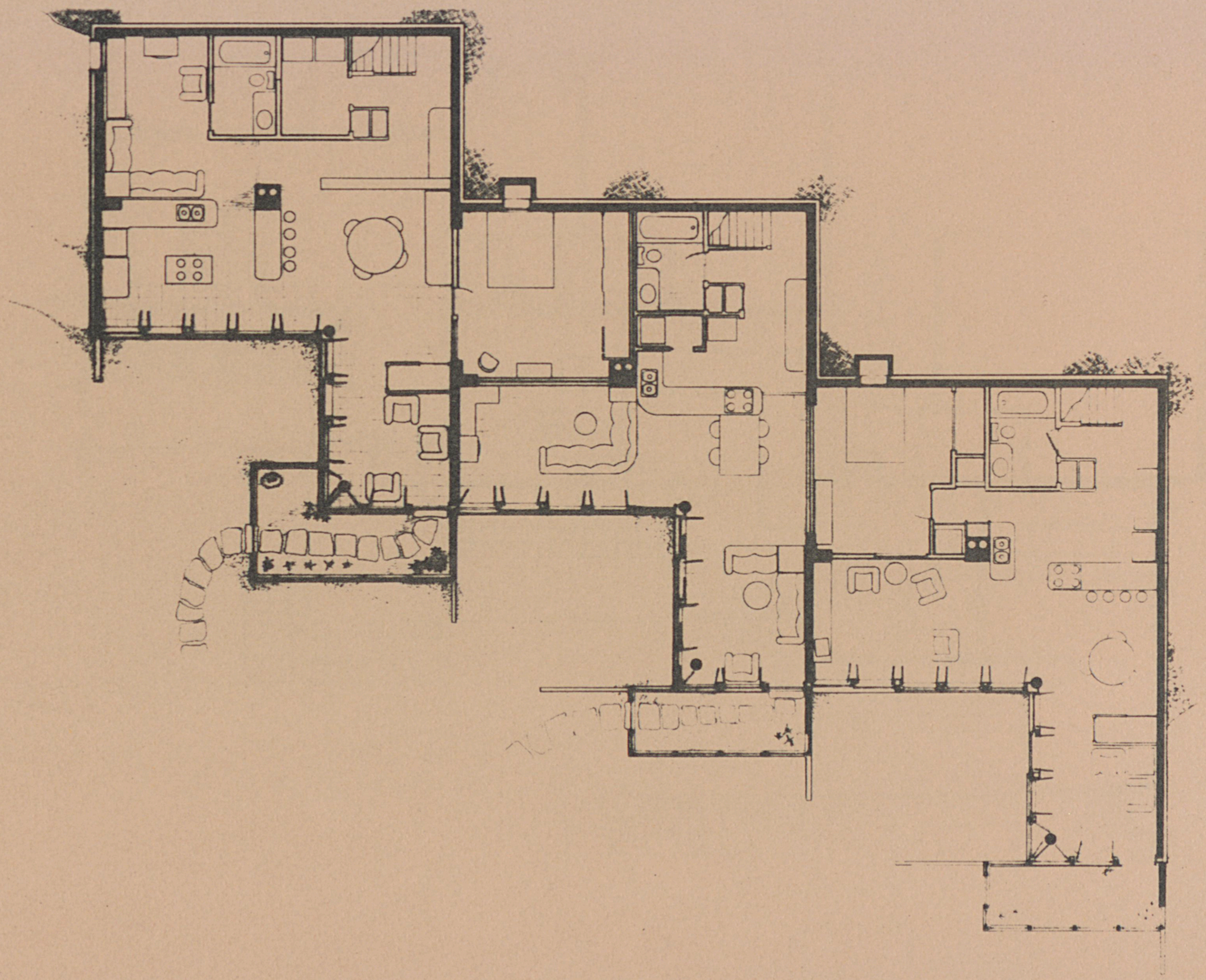


LOWER
LEVEL 1 & 2



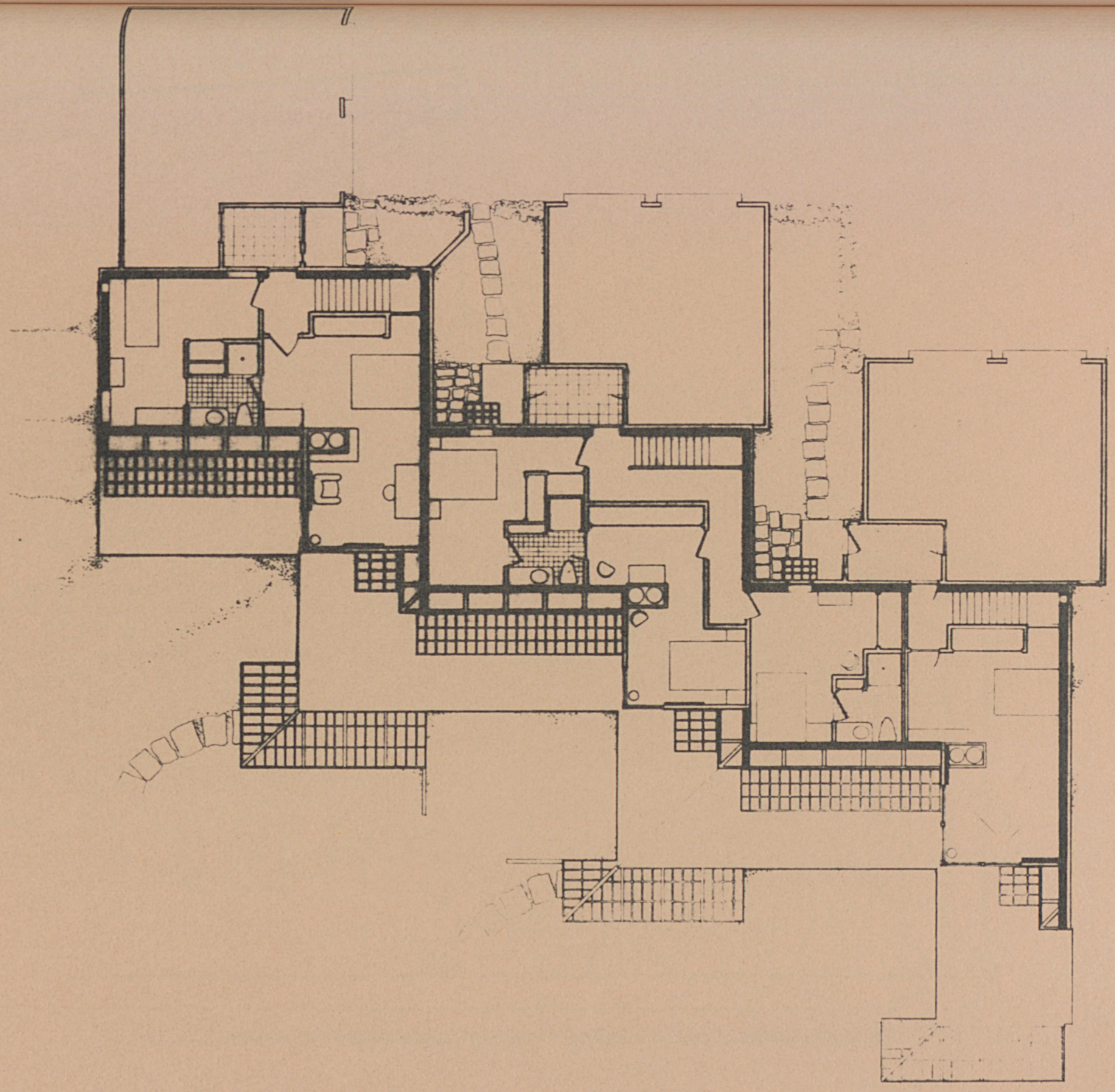
SCALE 1/4" = 1'

UPPER
LEVEL 1 & 2



SCALE 1/4" = 1'

LOWER
LEVEL 3,4,5



SCALE 1/4" = 1'

UPPER
LEVEL 3,4,5

CONCLUSION

The only real conclusion to a thesis of this nature would be the construction and occupation of a representative design conceived in the cooperative context. Only such a test could prove conclusively that the innovation regarding coalition and flexibility leading to diversity can in actuality achieve higher quality and/or lower cost.

After the reading and study that has occurred since the initial thesis was proposed six months ago, it is appropriate to consider how the thesis might be improved in a restatement and perhaps a new definition for future study suggested.

A cooperative approach to minimizing resource drains in the economics of home creation appears to be a promising alternative. Since it may indicate a sacrifice of some freedom, real or imaginary, on the part of the parties participating, its success hinges on the advantages gained relative to operating singly and on how the participants perceive those advantages. That is to say that the human personalities involved will determine the success of the cooperative. Their number is important in that too few will not gain significant economic savings and too many will be plagued by difficulties in achieving agreement. A group size of eight to twelve parties is speculated to be ideal. Like mind and values among participants are essential and it is desirable that there be a more or less equal ability to pay in the group.

Although the concept of community remains strong as a route to cost effective quality, it has come to light that diversity and community may be somewhat mutually exclusive. Among architects there is a tendency to think of an ideal community as the extended family of man with generations mixed in various age groups and perhaps, especially in the United States, as mixing cultural heritages thus adding interest to the community texture. Sociologists conclude that this is more of an utopian delusion than a practical ideal. Community cohesiveness demands likeness of values among its members and that essentially implies that they have in common: stage in the life cycle, social/income status and cultural background. Therefore, it is necessary to limit the application of diversity in the original thesis to that differentiation in design of housing units necessary for individual identification and expression among project occupants.

In the way that diversity might be limited in a restatement of this thesis, flexibility likewise might be expanded. A variety of options in living space requirements among home units stands as an important feature insuring efficient utilization of housing space. In that space can be traded among adjacent units flexibility concerns the ways in which units relate to one another. Flexibility within each unit will allow the occupants to mold the interiors of their spaces according to their particular requirements. In that way basic similarities in the flexible frameworks are a source of economies of

standardization and scale. The third application of flexibility can be found in the ability of a building to adapt to the variety in human requirements and environmental forces. Flexibility can thereby substitute in some measure for the energy that must flow through a building to compensate for a more brutal confrontation between man and environment in a building unresponsive to nature.

Community, flexibility, and diversity within the requirements of individual identity can be applied in the design of housing with consequent improvement of the prospect of cost effective quality. Until actual testing or further research proves otherwise, this thesis remains as a worthwhile guide to the designer of housing.

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