Editors
Peter C. Papademetriou, Stuart Wrede
Designer
Aaron Marcus
Business Manager
Glenn Hodges
Associate Editors
Robert Coombs, Barry Feiss
Executive Secretary
Cornelia Cogswell
Perspecta Fund Secretary
Brenda Cross
Editorial Assistants
Philip Monteleoni, Herbert Short, Augusto Villalon
Design Assistants
Reginald Jackson, Susan Marcus
Correspondents
Richard Hamner, Lexington, Kentucky; Marianne van Grimberger, Bruxelles; Peter Stevans, New Haven
Advisors
Alvin Eisenman, Norman Ives, Charles Moore, Edward L. Stone, Dean Howard Weaver

Perspecta is a nonprofit journal edited, designed and published at intervals by students in the Yale University School of Art and Architecture, New Haven, Connecticut.

Copyright © *Perspecta:* The Yale Architectural Journal, 1969. Text and illustrations may not be reproduced without written permission.
Editorial address: Post Office Box 2121, Yale Station, New Haven, Connecticut 06520. Manuscripts and other materials are welcome; however, *Perspecta* cannot guarantee publication or the return of materials submitted without prior agreement.

Text type set in Helvetica by Typographic Art, Inc., North Haven. Printed and bound by Eastern Press, New Haven. Paper stocks by Champion Papers, New York.

Back issues of *Perspecta* currently available are *Perspecta 5,* 1959, *Perspecta 6,* 1960, and *Perspecta 8,* 1963. Inquiries concerning *Perspecta 12* and available back issues should be addressed to Wittenborn and Company, 1018 Madison Avenue, New York, New York 10021.

This journal is supported through the Perspecta Fund established by Edward L. Barnes; Daniel, Mann, Johnson, and Mendenhall; Hyman Feldman; Philip Johnson; Louis Kahn; the Edgar Kaufman Charitable Foundation; Henry Kibel; Charles Luckman and Associates; Orr, deCossy, and Winder; I. M. Pei and Associates; The Perkins and Will Partnership (A. Whitney Murphy); the Plasticrete Company; Roche, Dinkeloo and Associates; Paul Rudolph; Skidmore, Owings and Merrill (David Hughes); Edward D. Stone; The Fox Steel Company; and Harry Weese.

Contents

7 **Waiting for Printout**
Shadrach Woods

11 **Transformations of the Initial Structure**
Alex Tzonis

21 **Experimental Strategies: Notes for Environmental Design**
Melvin Charney

33 **On the Environmental Game and Taking Part**
Julian Beinart

37 **Advocacy as a Strategy of Political Management**
Frances Piven

39 **Black Commune in Focus**
Harry Quintana and Charles Jones

43 **Planning for Change**
C. Richard Hatch

45 **The Patrician Hangup**
Pat Goeters

49 **Mass Communication on the People Freeway**
Robert Venturi, Bruce Adams, and Denise Scott Brown

57 **The Formulation of a Design Discourse**
Emilio Ambasz

71 **Typology and Design Method**
Alan Colquhoun

77 **Maison de Verre**
Kenneth Frampton

129 **Lutyen's Architecture Restudied**
Allan Greenberg

153 **J.N.L. Durand's Architectural Theory**
Antonio Hernandez

161 **Walter Benjamin and the Arcades Project**
Ben Brewster

165 **Paris: Capital of the Nineteenth Century**
Walter Benjamin

Impasse

"No architect worth his salt would accept the *vox populi* as his client."*
Kingman Brewster Jr.
President, Yale University

The architectural profession's social polemic has become a *politesse*. The Modern Movement has attained social acceptability with the institutional establishment and thereby lost its revolutionary purpose. It has become another style. In this society, an architect who wants to build remains the dutiful servant of his client institution.

Accepted implicitly by this role is the essential validity and viability of the *status quo*. But the practicing architect who believes that a high level of design will mitigate against the social vacuity of the program is himself the blissful victim of a Pollyannaic denial. Of course, during this boom period of building, the success of currently accepted professional *modi operandi* and architect-client relationships tends to obscure such doubts. Yet it would seem that architects and their client-institutions, through an all pervasive sense of security, have distorted their own understanding of the realities in which they operate.

The *populus* have little or no control over our society's self-perpetuating institutions, which are responsible for the rapid deterioration of our environment. As users of the environment they may be consulted, but this formality merely institutionalizes their powerlessness. The institutional elite portrays the *populus* to be a chaotic mass of competing individuals incapable of rational action. It refuses to consider them as a group bound by common interests different from those of their institution. Because unorganized groups are slow to demand rights not clearly defined as theirs the elite assumes that such rights should remain its own prerogative.

The profession must re-examine its role in our society. Professional neutrality is a chimera. Only by accepting the *vox populi* as their client can architects shed their traditional role and cease being the unwitting pawns of the institutional elite.

In order to effectively question the social implications of building programs and the nature of our institutions, we must formulate a theory of the environment as a manifestation of society, but from the point of view of the *vox populi*, which would necessarily mean from a vantage point outside of our present society's ideology. Such a theory should not only encompass our present "reality" but also explain its contradictions, thereby enabling us to develop the means for transcending it.

The schools of architecture are still wallowing in the backwaters of a traditional professionalism. Rather than perpetuate the present impasse, they should take the lead in formulating such a theory and in suggesting strategies for its implementation.

*From the 1968 Report of the President concerning Yale's governance and its role in solving social problems.

About Perspecta 12

In this issue, rather than pursuing new directions, we have tried to bring to bear a new set of viewpoints and attitudes to the existing scene. However, we did not begin our search with a generalized theme which would achieve broad unity, and *Perspecta 12* came together as much by accident as by intention.

This issue organizes itself essentially into two parts. The articles in the first part deal both with ways of looking at the present and with a commitment to finding new avenues for social effectiveness.

The second part consists of contributions to design method, both theoretical and analytical in nature. The three historical articles are not meant to place the architects they deal with into a sharper stylistic perspective, but rather to lift the presented *oeuvre* out of context and analyse it for what it can contribute to an understanding of the design process.

The last article might be termed an *exposé* of nineteenth century urbanism through an analysis of Paris, one of its principal manifestations. Although the work was never finished and cannot be said to be based on a strict, methodical approach, it has strange parallels with the present and suggests a context within which to examine not only its own subject matter, but also that of today's patterns.

In short, *Perspecta 12* proposes that architecture cannot afford to move blindly onward, but should pause to challenge both its method and its content.

Peter C. Papademetriou
Stuart Wrede

This issue of Perspecta *is dedicated to Serge Chermayeff, who is retiring this year, after seven years on the faculty of the Department of Architecture at Yale. Alex Tzonis, a former student of his, now a friend and associate, has provided this short account of Professor Chermayeff's career.*

The generation of Serge Chermayeff will be characterized as the generation between two revolutions. The situation that Chermayeff found himself in as a young student has striking similarities with the one his students find themselves in at this moment, the time of his retirement from university teaching. As Chermayeff has pointed out, they are both revolutionary times because both challenged established priorities within the socio-economic structure and the cultural superstructure.

His individual contribution to the Modern Movement is already part of a well documented history.

Chermayeff joined the architectural profession when the revolutionary movement (known as the "Modern Movement") had succeeded in demolishing several of architecture's stylistic fetishes, opening the way for a more meaningful approach towards structuring of the human habitat. However, the war of unprecedented destructiveness and monstrosity that followed intercepted the processes of change. In the strange peace that followed it gradually became clear that the destruction of the human community and the ecological balance which was taking place, was as formidable and as total as the war that preceded it.

After the war part of the architectural profession began the piece-meal implementation of the ideas of the Modern Movement. It was the zeal of transforming the revolutionary ideas into an established authority rather than the continued search for a better quality of environment, relevant to the majority of the people. It was a hasty race without hesitation of the risk of banality and simplicism.

The rest of the profession went back to the good old pre-revolutionary times, the times of the private jokes concerning questions of style and puzzles of ornament. In the academies the students were assured that the revolutionary times were over. They were urged to be sitting on their professional affairs laying a "good design" as a hen waiting for an egg.

It was at that moment that Chermayeff decided to drop out of the profession and to stop designing. He resigned from the AIA and concentrated his energies on teaching and research. He tried to lead his students out of this prevalent pseudo professional approach where concern over monumentality was combined with intellectual superficiality and human irresponsibility.

That the designer of "the most elegant house of the thirties in England" decided to stop designing was a surprise. Neither his contemporaries nor the students could comprehend why. Some claimed it was the change in "style" that was taking place (against the "international") which caused him to do it; a change that Chermayeff didn't like and "could not cope with in his design". Others suspected that his involvement with academia had diminished his design abilities. Chermayeff's own indifference about stylistic matters proved how irrelevant these interpretations were.

It took almost a generation and the escalation of the environmental crisis, especially the urban crisis with all its traumatic events, to make clear what the concern and the commitment of Chermayeff was all about.

The new generation of student pre-professionals has become aware that it is trapped in the futile game of perpetuating and perfecting arbitrary, irrelevant and obsolete *hows* without questioning the *whys* of their discipline. They have come to realize that it is the structuring of activities which is important, not the forms.

In order to evolve a new role for the profession, an enormous amount of work has to be done, in most cases starting from scratch as we are facing an academic and professional void. The artificial barriers between disciplines must break down to make way for new approaches and methodologies.

Chermayeff tried, in vain, to start such studies at several universities. It is a common secret that no administration was ready or willing to implement such a program. The academic and professional institutions were once again obscuring reality by tailoring it to their abilities and to the assurances that those abilities gave them. Chermayeff's main contribution was that he pointed the way, proposing new professional attitudes and priorities of commitment; committing his whole life to them without hesitating to sacrifice the comfort of a very unprofessional professionalism.

Shadrach Woods

Waiting for Printout
(Previously known as the Technico-Sociological Hangup)

Having studied engineering at NYU before attending Trinity College, Dublin in 1945 to read literature and philosophy, Mr. Woods first turned to architecture in 1948 with Le Corbusier's studio, Paris. Presently practicing in Paris and Berlin, Mr. Woods is also a Visiting Professor of Urban Design at Harvard.

Vladimir: "Well? Shall we go?
Estragon: "Yes, let's go."
They do not move. Curtain

Waiting for Godot, Samuel Beckett

An alternative title might have been "Build in Uncertainty." For what I mean to say and to imply by this is that the question of "how to do it?" is often overshadowed in my mind by a greater question: "How not to do it?"

I am not, of course, opposed to the accumulation of information and the processing of it to make it usable. But naturally one should, as far as is feasible, strive to collect the information that is pertinent and that can be processed into something usable. To go beyond this fairly clear goal can lead to lucky discoveries perhaps, but seems more often to obscure the goal, or to press us into devious ways.

The goal is the establishment of an adequate physical milieu as the natural habitat of the men living in our society. We can apply any and all techniques to this end, but it will be essential to our approach to say that we are not really sure of the main characteristics of this society, which aims to accommodating diversity. It may then be said that the accommodation of unknown variables is a design discipline.

Urban design, or urbanism, is necessarily Utopian. (I should perhaps reaffirm my conviction that "Urbanism and architecture form an entity.") (dixit, Le Corbusier) Now the word "Utopia" carries no pejorative sense in my vocabulary, I would recall that Le Corbusier also said that Utopia was nothing more than tomorrow's reality. I *still* hold to the belief that our client is a new man in a new world, striving for autonomy, turning away from the old, inherited hierarchies, questioning the old established values. I grant you that, given the rise in power of the colonels and the cops, it is sometimes difficult to hold on to this optimism but without some such conviction it is impossible to continue in a creative capacity. The alternative is cynicism. One also has a simpler choice: drop-out. We might go a step further and say the choice seems more and more to be between complacent conformity and revolution. Dropping-out is spectacular, but not very effective. Its virtue is as a way to accede to a revolutionary spirit.

But to return to architecture and urbanism, which is our chief concern: if it is Utopian in essence and therefore perhaps not very realistic to today's decision-makers, we must then face certain facts. We can operate at a lower level, be more cool and become more effective, without losing sight of our principal objective, which is to make our cities more, or simply, habitable for the individuals who live in them and for the constantly evolving society which will flourish in them. Since we know that the large-scale improvement is still inaccessible, owing to the power of the established chaos of things (urban renewal programs, which are often large in scale are seldom/never improvements), we attack the problem of life in the cities from a smaller scale: the thin end of the wedge.

I am impressed by the extent of the technico-sociological hangup in America. The idea that nothing can be decided, because of lack of information, but that given enough information (now called inputs) a solution would produce itself.

I think that we got beyond arbitrary formalism a few years ago and were able to go through a rational process to design that had its basis in non-formalist organizations and systems of relationships, and this begins to produce a new kind of architecture, not necessarily as dead-pan as so many examples of it are, when delight, humor, love are left out of the systems. We got away from arbitrary form-making and went all the way to the other extreme of over-emphasis on systems and systems analysis, of not knowing enough to be able to decide, not enough about new and constantly evolving technologies, not enough about sociological implications of urbanism and architecture, not enough about a welter of perplexing new disciplines. And we then fall back upon the computer, waiting for printout.

Now I would like to suggest to you that the computer may be an excellent tool (my friends who are engineers assure me it is most useful), but it won't perform beyond its capacities.

It seems that a certain emphasis on problem-making, implying as it does that there is a solution, has led some of us into a dead-end (architects and urbanists, that is) where our design efficiency is lowered and we either produce nondescript environment or we hide behind a veil of rationalistic mystification, making diagrams instead of buildings. If we take the line that we can't do because we don't know, then we must be prepared to admit that we will never, can never, know enough to start, and like Vladimir and Estragon, will remain desperately in starting position, without ever going anywhere.

Vladimir: "Well, what do we do?"
Estragon: "Don't let's do anything. It's safer."

As Marcel Duchamp, I think it was, said, "There is no solution, therefore there is no problem." This is not just a boutade.

If we wish to discover and to discuss the potential of urbanism today, then we will try to distinguish the main features of the social, physical and economic context in which we are living and working. I speak of "today" deliberately, and with steadfast intention, for it is my belief that urbanism can only be concerned with the present (that is to say the present in which the immediate future is also contained), and not with the future, for that is a realm in which speculation is idle and projection may even be harmful, because it would limit future development to present imagination and current knowledge. The

La Belle . . .

predictions of a Herman Kahn or of a Madame Irma, or of any gypsy fortune teller, do not dishearten us, since we are sure that they cannot be realized, however dire (or rosy) they may be. Indeed, we are even beginning to question the exact science of actuarial prediction itself, although we still must include its data in our picture of the context of urbanism today.

Which of these data are important to us? The chief one, of course, is that which announces the doubling of the population of the globe in a little less than 40 years time, with some areas in the East tripling or even, in Latin America, quadrupling. Now if this is so, it is obviously going to be an essential ingredient of urbanism, wherever it may be practiced. We will assume that it is so, since that is probably the worst assumption we can make. What we need not guess at however, for we know it immediately through all our senses, is the state of cities today. I say again that urbanism concerns itself principally with today and not with unpredictable futures. The urban world as we know it now is badly conceived, disordered, unadapted, squalid. We urbanists know, of course, what needs to be done. So why isn't it done? Possibly because to do anything, we would need to make radical, profound changes in the economic, political and social structure, and this is far beyond the reach of our urbanism. We can only state the problem and indicate temporary, suitable treatments. I say temporary treatments because I wish to underline two aspects of our approach to urbanism: one is that there are no solutions, and the other that we should take care to leave maximum room for maneuvering in the future. We know nothing of tomorrow or of the city of the future except that its roots are in today and in the present city. The future might or might not live up to or down to whatever rosy or dire predictions that are made. But today is here, and there is so much to be done here that we need not look to the future to occupy ourselves. The future is now.

In the present state of the world, we are appalled (or not) to see, for instance, that some 70% of mankind is sharing only 20% of the resources of the globe. An uneasy feeling comes o'er me stealing when I read the prediction (produced, I believe, by someone in a university) that America, or rather the United States, is expected to be consuming 80% of the world's resources in the near future. This leaves the same remaining 1/5 to be shared by the other 94% of the population.

When Roger Vailland, some years ago, examined the economic and social situation of the Island of Reunion, in the Indian Ocean, he demonstrated that the island was in fact a prison, in which more and more people were sharing fewer and fewer resources. Every year the economy worsened as the cane crop consumed the soil, and there was no longer any possibility of renewal, since the long cycle of the bio-ecological replenishment had been interrupted decades ago, through over-cutting of the forests. Vailland concluded his report with these words, "Et, si, à l'échelle de l'univers, le monde était une île?"

We have then to consider these two essential conditions of urbanism:

1. The absolute limitation of certain natural resources of the planet, coupled with rapidly increasing population. (Perhaps the way out of this will come through substitution of skills for resources, but that remains to be shown.)

2. The present inequity in the distribution of the world's resources among the world's inhabitants. (This seems to be increasing.)

The first condition – rising population and stable, or decreasing, resources – gives us the image of the world as an island. The second – the increasing inequality between the rich and the poor of the earth – shows us the world dangerously near to a revolutionary state – comparable perhaps to Russia or China at the beginning of the century. In any case, both will necessarily condition the decisions of urbanists, wherever they may be exercising their art.

We see, then, that increasingly the concerns of urbanists are global. The global village of McLuhan is really a global city. We have long been considering urban regions (east and west coasts U.S.A., the Ruhrgebiet and the Benelux countries, etc.); we have gone from this to considering Europe, for example, as a great city with rather large open spaces in it, we may well go on to considering the planet as a single city-organization. The importance of such considerations is that we realize that urbanism is as much concerned with the country as with the city, that increasingly all of our natural habitat is built or cultivated, but controlled in a coherent and comprehensible organization. There is no more "terra incognita," and the decisions which are taken, or not taken, in the city or in the country, affect the whole of the environment. It is impossible to prescribe rural reform without weighing its consequences for the cities, and vice versa. If, in Western Europe, for instance, we know that 20% of the population is living on farms or directly involved in agriculture, and further that agriculture represents 10% of the national product, then we must assume a reform in

which half the people will or must leave agriculture in order that the remaining half may achieve some kind of parity. This then becomes a problem of urbanism. On leaving agriculture, where do these people go? Does leaving agriculture mean leaving one's native region? If so, what is the city doing to accommodate the immigrants?

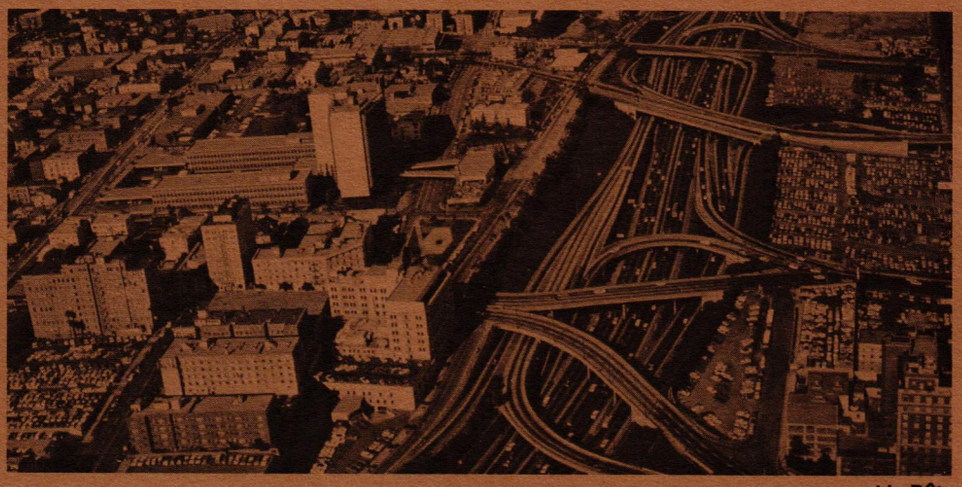
Here are some other clues as to the context of our profession: the city-country complex, that is, our natural environment, is made of volumes and spaces, of ways and places, of activities and tranquility, of community and privacy, of circulation and dwelling, and many other matching or opposing pairs. The city is characterized by change and exchange. Change is the only constant of urbanism (exception – man) and exchange is the essence of the city.

The city is experienced as a random series of urban events. These might be considered in isolation, as a way of comprehending and judging the environment. For instance: mayhem is an urban event, smog is an urban event, noise is an urban event, exchange is an urban event, delight is an urban event, and so on. Riots are urban events. (Even the farmers in Brittany go into the city to riot.) And of course so is war, an urban event, and the atom bomb, although the H-bomb can apparently also deal with the suburbs.

All of the preceding discussion was aimed at situating urbanism in its current context. This constitutes a kind of introduction into the matter of urbanism, to point out that the urbanist, and I naturally include architects under this category, is today faced with enormous responsibilities. His is one of the professions directly concerned with the use and allocation of the world's resources. These resources must be assumed to be limited although the number of persons in the world cannot be. The glaring inequities in the exploitation of global wealth represent a grave danger. The urbanist is fully aware that the cities we know today are not entirely suitable for human habitat and he knows what can be done about this, although he doesn't know quite how to do it. The quality of the environment results from a multitude of sensory and psychic impressions and this quality can be improved, or at least changed, by operating on these stimuli. We can certainly assert that the quantity of noise, smog, mayhem or delight in a city has a direct relationship to the quality of life in that city. We can then with equal certainty affirm that urbanism must concern itself with these and other manifestations which, directly or discreetly, influence city life. In other words, urbanism concerns itself with all manifestations of a society insofar as they create or modify the environment. Clearly then it becomes political.

There are, of course, many kinds of urbanism: urbanism of the rich and urbanism of the poor, Sunday urbanism and everyday urbanism, and so forth. I should perhaps explain these terms. When we speak of the urbanism of the rich and the urbanism of the poor, we are referring to the amounts of money, energy, and materials which go into realizing a physical milieu. For instance, in developing inclined terraced housing, we could contrast the very rich, i.e. very expensive, Habitat '67 with the favellas on the slopes behind Rio. Or we could evoke the motorways of Los Angeles and compare this kind of investment with that which is made for the oil workers' housing in Caracas or Abadan.

Sunday urbanism is like Sunday-best suits of clothes. Its connotations are the same: formal, not often used, and representative. Everyday urbanism is what we live and work in comfortably and at ease, going about our business in man-sized spaces. Almost anything called "Center" is an example of Sunday urbanism. Thus Lincoln or Government, etc., but not, strangely, Rockefeller: more efforts seem to go into making Sunday urbanism, more care is taken, more sensitivity is mobilized than is the case with everyday urbanism. Thus in the making of Lincoln Center in New York, or in the Les Halles projects in Paris, or in Brasilia, or even in Chandigarh, the most high-powered talent is directed at making what Paul Rudolph once called the "foreground" buildings, which are in fact those least frequently used, while the rest, the "public" housing and the offices and the ancillaries, is left to the ineptitude of blind



. . . et la Bête

bureaucrats and indifferent designers. No wonder the physical milieu continues to deteriorate while the inspired, imaginative, ingenious urbanists-architects opt out, restricting their talents to those poor packages, the allegorical, free-standing, representative and pretentious government or cultural center.

This kind of urbanism – Sunday-best urbanism – springs, I believe, from a refusal on the part of administrators to admit that the old Baroque concept of authority exemplified in building can no longer be considered valid in a society where the concept of authority is constantly being challenged and revised. There is no need for monuments in the permanent cultural revolution.

What can urbanism do, then? Well, first of all it can, and only can, deal with present realities. It cannot be visionary; it is not "futurible." But the present reality is sufficiently difficult to occupy us all. And in the present, what urbanism can do, first of all, is to establish or to prescribe organization. Now by organization we mean dynamic structuring devices or systems. Organization means action; it refers to the act of ordering, which act can never be accomplished because that which we would order is constantly changing. Organization is in most ways more of an intention than an act. We will forever be organizing our environment without ever getting it completely or definitively organized.

Although it might seem that organization is a fight against chaos, this notion is superficial. Without organization there is a lack of organization, which is not necessarily chaos. It is true, for instance, for certain organisms (of which we are) that life, which is

development, is only possible within the framework of a certain organization. But it may be equally true that other life forms proliferate without any discernible organization. Organization may be necessary to sustain life but life will seek constantly to modify organizations.

In the context of urbanism, which is the organization of our physical environment for the best accommodation of our activities, this need for dynamic organization which is clearly demonstrated in our cities whose activities are constantly changing, not only in their nature but also in their relationship to each other, leads us to seek forms of organization, systems, which present the character of adaptability. Whence a reliance on simple geometrics, because these are the easiest to conform, or to deform should the occasion arise. We developed linear systems (Stem) as well as poly-directional ones (Web). These are variously applicable and relate to the size of development, to a large degree.

But whether they are stems or webs, their purpose is to organize a field (similarity to irrigation systems) for the practice of urbi-culture, the growing of cities. The chief characteristic of such devices is their intent of total organization, this meaning that they are not exclusively concerned with certain aspects of the problem, in contrast to circulation systems for example, or hyper-sensitive space-making.

We must realize that our dynamic organizations should be as concerned with tranquility as with activity; as much with standing still as with dashing about. We can imagine that the purpose of organization is to order the growth and change of our (natural) habitat, so that we can do those things which we wish to do in a way that least commits our successors to doing the same things in the same way. For nothing is less sure than the durability of our attitudes and of our activities and probably nothing is more certain than the rejection tomorrow of what we consider sure today.

If we can grasp this reality of unpredictable futures, and the essence of the city, exchange and change, then perhaps we can begin; not to solve problems, not to propose cure-alls, not to come up with ultimate solutions, stratified organizational diagrams, petrified flow-charts, but simply to begin. To begin to hope to cope with our problems, in an activity that has world wide import. To begin to include all God's children in our urbanistic elaborations.

We can already deduce from what goes before that, if we are to accept the concept "organization of the environment," then we must consider that organization in these terms:

1. The only viable organization is one which is potentially dynamic.

2. The dynamic of organization is concerned with the evolution of human habitat.

3. The organizations with which we must deal are global in scope and discipline. They are conditioned by everything that happens in the world.

4. In urbanism there are not three but at least four dimensions, of which the time dimension is perhaps the most important. (This obliges us to restrain irresponsible graphic gestures.)

Now what urbanism does is to combine ponderable and imponderable factors into a dynamic organization which starts with the present realities of its given space-time, and takes minimum commitments so as to leave the greatest possible number of options open. It then prescribes minimum structuring systems. If we consider that a plan is a combination of ponderable and imponderable factors, we can see that if some of these are allowed to dominate it will be so at the expense of others. Thus good orientation might tend to exclude identity, convenience may take away from tranquility, and short-term financial considerations tend to preclude practically all other desiderata, especially identity, compatibility, comfort and convenience.

This is only a schematic indication of a planning attitude which states that a plan is composed of conflicting and complementary factors and that over-emphasis of one quality will automatically lead to an under-emphasis of another. Urbanism strives to combine all factors into a suitable *temporary* compromise.

Alexander Tzonis

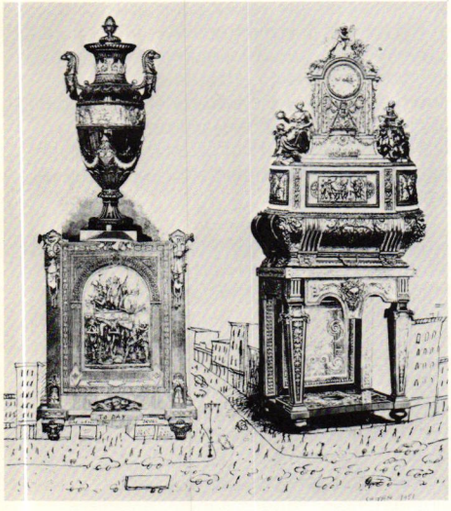
Transformations of the Initial Structure

Alex Tzonis has worked as stage designer in both theater and opera, and as Art Director of Never on Sunday. *Having studied architecture in Greece, he completed his M.Arch at Yale, where he recently taught. He is co-author, with Serge Chermayeff, of a forthcoming book,* The Shape of Community. At present he *is Assistant Professor at Harvard's Graduate School of Design.*

The Competition entry for the town of Espoo, Finland was done in collaboration with Donald and Marja Watson. Donald Watson is a visiting lecturer at Yale and a ACSA-AMAX Research Fellow in Architecture. His wife Marja is a graduate of the Institute of Technology in Helsinki and of the Masters program at Yale.

This article was written with the help of Donald Watson, David Handlin, Henry Moss and Tod Stuart.

1



Evidence of a systematic approach to the study of the environment can be found in the *description* of the behavior of the natural world.[1] Archaeologists and anthropologists have had successful results in the description of the man-made environment.[2] But when one looks to the *explanation* or, even remotely, to the *prediction* of the man-made environment, the results are limited and incomplete.[3] The work of designers and the production of physical objects have as yet little assistance from a general theory.

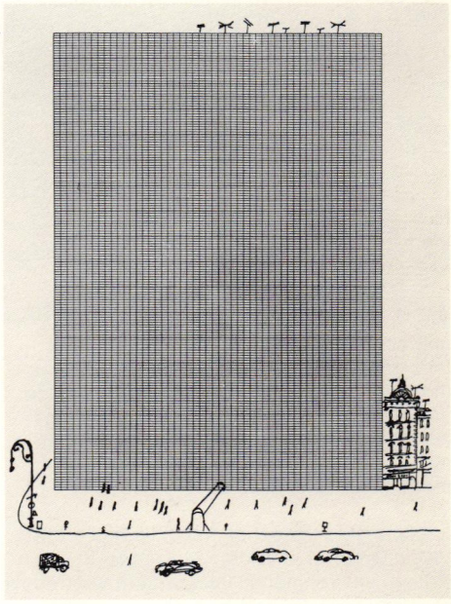
The positive side of such attempts has been expressed in terms of negative action: hesitation. We are not as hasty and optimistic in our decisions and we are aware that any attempt to control a particular set of objects in an environment must involve an evaluation of its entire structure.

Architects as a profession have spent a great amount of time and energy in efforts to establish a *System,* though it is not stated as such. The method by which architects generally interpret the physical environment can be called the System of "Visual Ordering", meaning thereby a set of three dimensionally interrelated patterns (color and texture interrelationships can be added). The function of that System is dual. First, the behavior of the man-made environment is manifested in its Visual Ordering, and secondly, a visually appreciated pattern can be used to control the environment. A more universal system may not have been produced by culture. But the systematic nature of its aspirations is matched by the limitations of its applications. To expect the system of Visual Order to organize the man-made environment is an illusion (and a superstition). Yet, when it becomes obvious that what happens to the man-made environment can neither be related nor regulated in such a manner, the apologists for the system do not accept its limitations.

Everyday decisions of human activity become less determined by Visual Ordering principles and the environment is characterized by "visual squalor." We hear as a reaction the customary lament: "The tragic consequences of our time . . . that so many people have become blind to the meaning of form," the shock that people could "absorb meaning without form".[4] No matter how much such an environment is operational, nevertheless, they argued, its results are lacking "beauty" because "beauty evolves when meaning and form are together"[5] (**1**).

Architects, architectural historians and critics find fault in existing visual forms and

2



try to replace them with others (**2**). This misses the issue completely: the value and relevance in the first place of Visual Order[6] as a cultural system. In answer to secondary arguments on the manipulation of solids and voids, on the so-called priority of spaces and volumes versus the decoration or articulation of structure, on the rectilinear, on the curvilinear or on the organic,[7] the "modern style"[8] was created and considered *the* answer to the essential basic need of a human

[1]Kenneth E. F. Watt, *Systems Analysis in Ecology,* Academic Press, N.Y., 1966. Waterman and Morowitz, *Theoretical and Mathematical Biology,* Blaisdell Publishing Co., N.Y., 1965.

[2]K. C. Chang, *Rethinking Archaeology,* Random House, New York, 1967.

[3]We refer here to the micro-environment on the scale of settlements and not on the regional scale of human Geography where a tremendous amount of work has been done. Richard J. Chorley & Peter Haggett, ed., *Models in Geography,* Methuen, London, 1968; Peter Haggett, *Locational Analysis* in Human Geography, Sig Martin's Press, London, 1966.

[4]Rudolf Arnheim, *Gestalt Psychology and Artistic Form,* in L.L. White, *Aspects of Form,* Indiana Press, Bloomington, 1951.

[5]*Ibid.*

[6]S. Giedion, *Space Time and Architecture,* 1959, pp. 290, 426.

[7]Eliel Saarinen, *Search for Form,* Reinhold, N.Y., 1948, p. 245. Vincent Scully, *Modern Architecture,* George Braziller, N.Y., 1961, pp. 21, 12; Zevi Bruno, *Architecture as Space,* Horizon Press, N.Y., 1957, p. 24.

[8]Henry R. Hitchcock, Jr., & Philip Johnson: *The International Style, Architecture since 1922,* Norton & Co., N.Y., 1933, pp. 41, 51, 70, 73.

being for visual order[9] or the fundamental method through which any object, created as answer to practical purposes, could become creatively articulated.[10]

Given the fact that the Modern Style failed in a manner similar to all styles, we face a dilemma: to accept either that the system of Visual Order is relevant, and the environment we are producing is becoming more

3

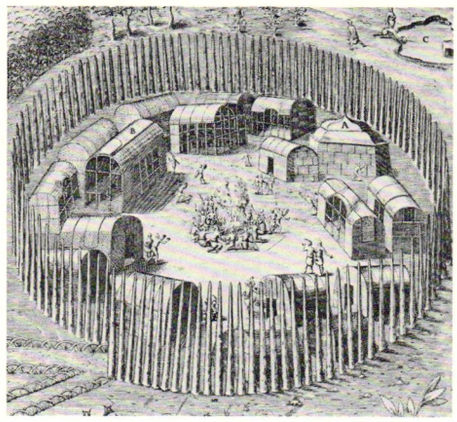
unpredictable and uncontrollable (**3**) (and thus potentially human-destructive); or that the frame of reference used in the first place has failed.[11] In the latter case other systems may be available not only to shape the man-made environment but to guarantee its prohuman nature.[12]

In contrast to the belief that to abandon the Visual Order of physical objects results in a state of environmental laissez-faire, destructiveness and the elimination of art as a human activity, an alternative can be proposed.

The System of Visual Ordering had a special but limited use in the past. It is not only obsolete but in some respects an obstacle in the contemporary use of the environment and its organization. If we consider the *uses* rather than the *manifestations* of objects,[13] we find ourselves dealing with two parallel cultural systems instead of one. The System, to use the terms of Mary Douglas, of Visual Order is now joined by the System of Dirt and Purity.[14] They shared the same use but they had a different environmental expression.

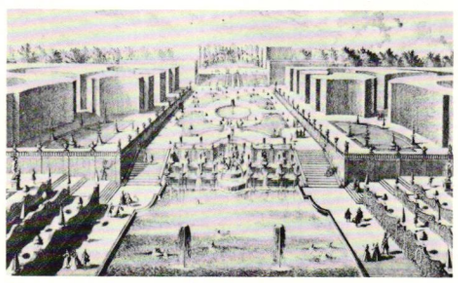
They organized the exterior environment from very similar points of view. Studying the phenomenon of Dirt and Purity we observe first of all the classification of matter and then the rejecting of inappropriate elements[15] from a defined territory of space, time, conduct, people or activities, together with the acceptance of appropriate ones. In the

4



System of Visual Order (**4**) we observe the selection of appropriate three-dimensional interrelationships between elements of matter within territories which it defines. In both cases certain changes are applied to the exterior environment according to conceptual structures. From all the possible alternatives certain patterns of territorial continuity or

5



discontinuity are established (**5**), coupled by groups of properties which could be found within these and only these territories. With this physical transformation of the external world one can observe an internal psychological change of the human. Relieved from a state of anxiety and tension the human becomes satisfied and secure. The attempt to change physically the environment into a prohuman one is preceded by the conceptual humanization of the environment. It is the initial battle by the human being to relate an unfamiliar situation to a familiar one; to the most basic and universally familiar one, the psychological mastering as a preparation for physical mastering.[16] This humanization is more complex and abstract than simple anthropomorphism. In the roots of the "infantile model"[17] are not only the concrete physical characteristics but the abstract behavioral characteristics as well: the basic internal principles of consistency and completeness.[18]

When internal principles of consistency and completeness are introjected into the exterior world,[19] they are translated into interrelationships of its elements (**6**). These are the structures we find in the System of Visual Order and in the System of Dirt and Purity. They involve:

1. the establishment of territories (kinds) of relative consistency and completeness

2. the establishment of their boundaries (in and out, prerequisite of expressing consistency and completeness)

3. the establishment of what is permitted and what is prohibited to enter those territories (manifestation of consistency and completeness)

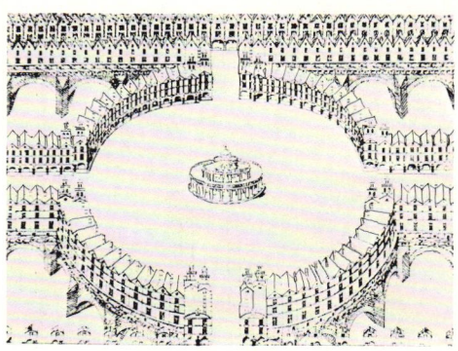
4. relative or cross-boundary interrelationships and their properties creating over-all orders of consistency and completeness.

Food prohibitions, decoration patterns, the removal of certain objects from a territory as dirt, shaping a wall in a certain geometrical configuration are actions that reduce the uncertainty and fear of mixing and confusion.[20]

Visual Order and Dirt and Purity are environmental controls in the stage of the ritualization of the environment. They injected the structures of the myths in the environment through their complex semantic systems. Doing so they did not generate a practical prohuman environment. They made a hostile situation more bearable. On the other hand the creation of environmental semantic systems assisted the establishment of the human community. Like money in later societies, its structure became the primitive fixed eternal, a recognizable sign for what could otherwise be confused and conflicting operations. From Chaos, a *k-d-sh* or *temenos*[21] is offered not as an end-product but as a hope, a promise and a blueprint of action.[22]

The system of problem-solving processes is only a complementary part of the culture of magic. The System of Visual Order and the System of Dirt and Purity can be considered from this point of view almost arbitrary products of the human mind, actions to relieve tension and confront ambiguity aroused by what was perceived as environmental inconsistencies. At the next stage, the Systems or their parts which are proven by experience (as much as mathematical theories can be tested by reality), start showing characteristics of problem-solving processes. A kind of applied magic develops out of the theoretical magic as applied mathematics is derived from the theoretical. Thus the System of Visual Order, like the System of Dirt, is applied consciously or sub-consciously for purposes of

6



[9]Gyorgy Kepes, *Language of Vision*, Paul Theobald, Chicago, 1947, pp. 98, 107.

[10]Edward Sekler, "The Function of Architectural Theory and Criticism," *Architectural Design*, Aug. 1968.

[11]In Prof. Kubler (George Kubler, *The Shape of Time*, Yale Univ. Press, New Haven, 1962) is envisaged a study of the history of art (including the System of Visual Order referred to here) which would contain "unexpected potentialities as a predictive science." But art considered within the system of visual order does not provide enough real continuity as a body or consistency as a process, in its *use*, for such a purpose.

[12]The function of a *prohuman* environment is dual: to assist human existence and to shape human behavior so that it does not threaten (directly or potentially) human existence.

[13]L. Wittgenstein, *Lectures & Conversations on Aesthetics, Psychology and Religious Belief*, Cyril Barrett, ed., U. of California Press, Los Angeles, 1967, pp. 8, 9.

[14]We apply the term "System", as in the case of the phenomenon of art, to indicate that visual patterns or works of art are not unique, isolated, individual events, but exist within "a set of ordered relations and a contravention of that order," Mary Douglas, *Purity and Danger*, Frederick A. Praeger, N.Y., 1966, p. 35.

[15]Mary Douglas, *op. cit.*, p. 35.

[16]Sigmund Freud, *The Future of an Illusion*, Doubleday & Co., N.Y., 1927, p. 31.

[17]*Ibid.*, p. 31.

[18]Mary Douglas, *op. cit.*

[19]Mary Douglas, *op, cit.*

[20]The Biblical *tebhel*. See Mary Douglas, *op. cit.*, p. 53.

[21]The Hebrew root *k-d-sh* is both "holy" and "set apart", the same as the Greek *temenos* meaning "temple" and "cut out".

[22]"Our world" was found by imitating the paradigmatic work of gods, Mirae Eliade, *The Sacred and the Profane*, Harper & Row, N.Y., 1957, pp. 8-65.

orientation, identification, or storage of information, although not created for that purpose. The structures of magic which are not used for such utilitarian or practical purposes and which do not disappear are either conserved behind a reactionary force of conservatism and superstition, or they become redefined and reinterpreted through a new use as in the case of the Visually Ordered pieces which were adopted by the System of Art.

Here the identities of the System of Visual Order and the System of Art are confused. The phenomenon of their *transformation* in time is taken as their congruency. The transfer of the use of the same objects from the Visual Order to Art is possible because of the similarities of their internal structure as environmental units. What distinguished the System of Dirt and Purity from Visual Order was in the structures that each one offered: rigid, simplistic, general, for Dirt and Purity; flexible, complex, full of individuality for Visual Order. Form making through the System of Visual Order, valued as art, could be something spectacular but cleaning up is only respectable. Thus their fate was different. But as much as they are different, they come very close in their first application being equally irrelevant to the System of Art. Works of art are made up of selected elements, assembled in a certain structure according to certain interrelationships. They form a semantic system within the existing systems with identifiable properties, (defined by their boundaries) which tend to have attributes of completeness and consistency. One of the reasons that the System of Art borrowed objects from the System of Visual Order together with several of the methods producing them is that both systems share the attributes of completeness and consistency.

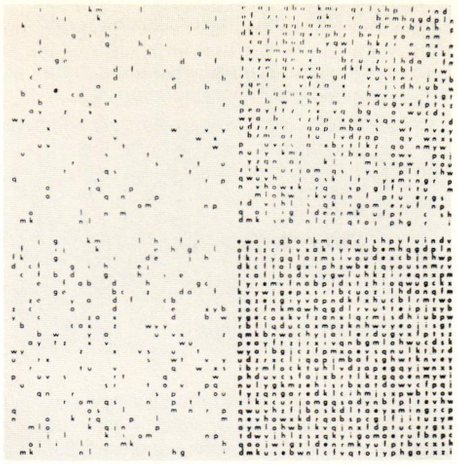
Art assemblies serve as models of the exterior world in some ways not unlike scientific models. Art, indeed, like science is a form of knowledge. Like the body of a scientific theory it is made up of a set of interrelated elements. Like a scientific theory a certain set of interrelationships can be extrapolated out of the familiar art object as a model and projected to unfamiliar situations.[23]

However in a scientific model a minimum of ambiguity and unpredictability is desired, while a work of art generates the maximum of interpretations not rationally connected. A work of art generates the most unpredictable structures and interrelationships out of its body. Thus the work of art is in this respect opposite of a scientific model and to a problem-solving process. Art generates strategies rather than tactics. It creates problems, questioning and establishing goals, rather than solving them. Art is an activity that induces randomness and desirable ambiguity. While games have the same effect through concrete activity as outcome, art functions as an agitator of structure production in culture.

Works of art are not random assemblances. They build in randomness within their components and their interrelationships (**7**), a randomness which is revealed when works of art are interpreted and used. This initial internal structure (a minimal pre-established determined order) traps, limits, excites and squeezes a new set of structures (an undetermined outcoming order). Thus the use

[23]Karl W. Deutsch, *The Nerves of Government*, The Free Press, N.Y., 1963, pp. 3-72, for definition of the function of models in relation to familiarization.

7



of art is the performance of structure extrapolation.

My thesis here is that art as a system is one of the tactics of culture. It is not an internal psychic need. It is a temporary semantic system still in operation.[24] The system of Visual Order in its turn was, temporarily, tactics to art. Art which once used visual form for its purposes is abandoning it at this moment. Art scatters and hides itself behind several physical manifestations and systems

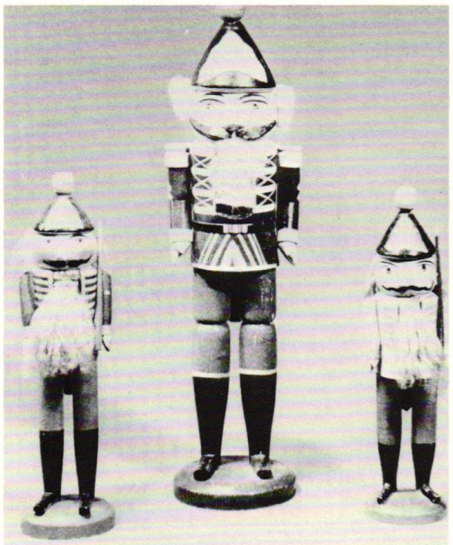
8

(**8**). It changes dress at convenience. Visual Order may be irrelevant to the manifestations of the System of Art as it develops in our time. The problem-solving applications of Visual Order for purposes of information or identification are inefficient, unreliable, or redundant compared to communication signals that serve this purpose better.

Deprived of the above uses Visual Order is ordering very little. While in the culture of

[24]Wittgenstein, in 1938, found "very funny, very funny indeed", the "idea that psychology is one day going to explain all our aesthetic judgments" (*op. cit.*, p. 19). Instead he urges the definition of it by its use within a culture.

9



magic, together with the System of Dirt and Purity, it was the fixed eternal for the man-made environment, it is becoming now, when faith is shaken, more like useless currency.[25] Visual Order, in a situation of self-defense, conservatism, and superstition, becomes petrified into a hoard.[26] The production of its insignificant and irrelevant forms is formalism, the fetishism of form, a process of populating the man-made environment with the components of alienation and ultimately of suppression (**9**).

Following this idea, any revolution against a particular visual form for the sake of another visual form is an attempt to "practice nonrepressiveness within the framework of the established order" (**10**), but even the "wilder paraphernalia of hot or cool life" remain a "vehicle of stabilization and conformity rather than change".[27] The designer of the man-made environment is faced with the situation of: total negation of any formalization (dropping out), total

10

submission to the system of repressive-deformation, continuing the acceptance of visual order; or the search for a non-repressive formalization; relevant and prohuman. The next step to be taken is the investigation of a way to organize the man-made environment which will be more effective through a system more explanatory, descriptive and predictive.

A profile of the use of the environment can be developed starting from the *use* of the objects or places, recording as closely as possible the different interactions between persons and environment at a point in time. We can select space and time limits for such observations. We can repeat this process in other areas of time and space until we get enough facts to form a kind of constant pattern, a group with its permutations, a life style, and from it the most primitive level of a theory, "a field theory."[28] We can make our study even more dynamic, sending questionnaires and asking people for alternatives to what was recorded, things they wished, which were frustrated. This description is empirical and objective. We minimized the values of the observer carried to the observed. Besides positive facts, there are negative aspects also in such approach.

The more we try to induce universality in our picture by broadening the sample, the more the facts will constitute a body so complex that it will become useless.[29] We can attempt to reduce this tendency by using a higher level of representation, using structures

[25]Mary Douglas, *op. cit.*

[26]Marx's expression for the alienated System of Money.

[27]Herbert Marcuse, *Eros and Civilization*, Random House, N.Y., 1955, pp. 1577, ix.

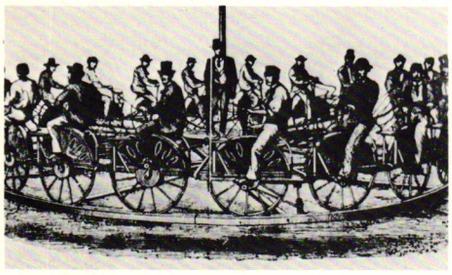
[28]F. Stuart Chapin, *Urban Land Use Planning*, University of Illinois Press, 1965, p. 74.

[29]A similarity of difficulties appears here with attempts to create a mode of language. See Noam Chomsky, *Syntactic Structures*, Monton & Co. Paris, 1956, pp. 16-25.

11

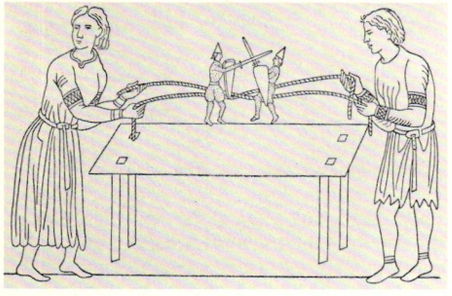
within which facts can occur.[30] But it is the principle of this technique which reduces all to synchrony, which bounds it to be limited. The facts that "have got an irreversible order . . . will escape the analysis".[31] This is the fate of all strictly behavioral and structural models.

12



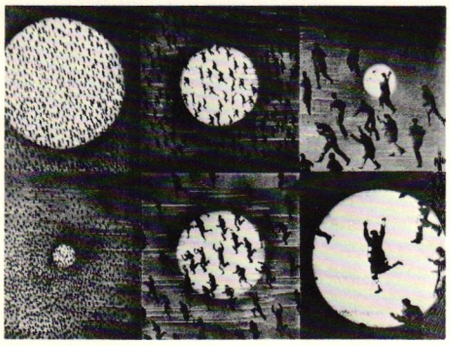
Diachrony and prediction (which is our concern) can be developed through an alternative model; a model that includes normative strategies. A model is needed showing, in strata, the connections to normative levels through alternative means. Those norms and means will constitute the variables of the model. Their selection and arrangement will be subject to a surrounding meta-strategy, affecting both the level of norms of the model and the structure of its levels. It is up to this meta-strategy to proclaim the prohumanity of the model.

13



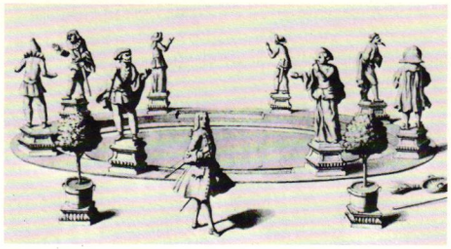
The acceptance of variables which describe economic growth according to existing definitions can be fatal;[32] a submission of humanity to a plan that few demand and nobody understands (**11**). Increase in speed could mean more vicious cycling (**12**). Increase in technological interaction could

14



mean more puppet action (**13**). Increase of the efficiency of the technological infrastructure could mean a strait jacket of oppression and terror (**14**). More suburban protection would mean more insularity and display (**15**). All of which could result in more alienation, more aggression (**16**), more manipulation (**17**).

15



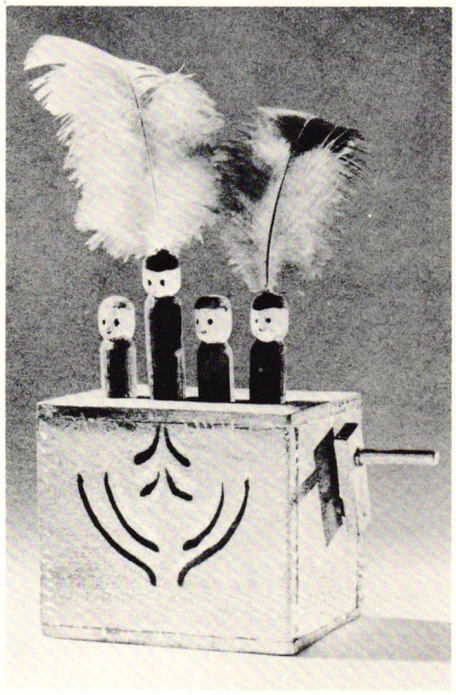
On the other hand, a different strategy is conceivable, the model of which will include variables whose dimensions measure the qualities of interactions, the kinds of human contact,[33] the mixture, the number, the

16

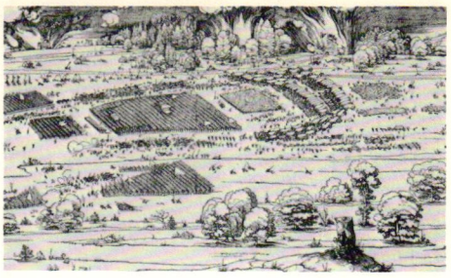
duration frequency under which they occur.[34] The selection and arrangement of those variables will thus structure the choices of interaction.

This probabilistic relationship of people through available niches of interaction and the network of movement looks similar to the arrangement of an army on a terrain in the traditional art of war (a perfect antihuman interaction model (**18**). It was determining the probable outcomes of confrontations through ordering terrain, weapons and groups.

17

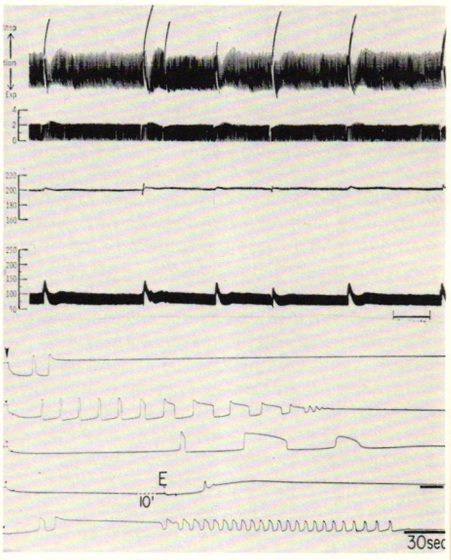


18



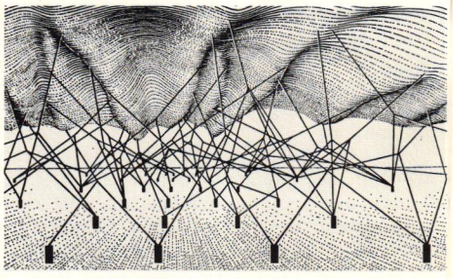
When we measure or order the man-made environment, in terms of such criteria, we impose on the three dimensional visible reality a hypothetical overlay (**19**); "an abstract hyperspace, every coordinate of which corresponds to a relevant variable in

19



the structure"[35] of community.[36] Reversing the process when we want such criteria to be the controlling factors of the man-made environment, this hyperspace becomes the initial structure of the three dimensional unit form, which will grow on it in multi-functional

20



components[37] (**20**), followed later by the third overlay,[38] the pattern of human behavior (**21**).

[30] *Ibid.*

[31] Mary Douglas, *The Meaning of Myth in the Structural Study of Myth and Totemism*, Toristock Publication, London, 1967, p. 67.

[32] E. J. Misham, *The Costs of Economic Growth*, Staples Press, London, 1967.

[33] See S. Chermayeff and C. Alexander, *Community and Privacy*, Doubleday and Co., N.Y., 1963. The importance of the proposal described there lies in trying actually to measure the urban environment in terms of the variable of privacy as a dimension.

[34] Serge Chermayeff, Alexander Tzonis, *Advanced Studies in Urban Environments*, Yale University, New Haven, 1967.

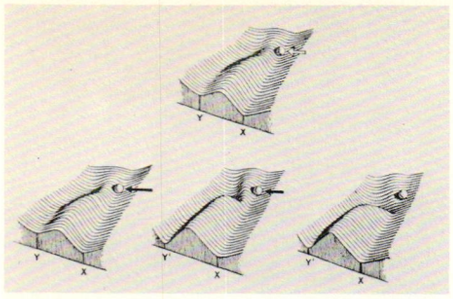
[35] We use here the hypothesis of the ecological model. The choices of human interaction depend on the *Urban Niche*, the "abstractly inhabited hypervolume." See G. Evelyn Hutchinson, *The Ecological Theater and the Evolutionary Play*, Yale Univ. Press, New Haven, 1965, p. 26. We remain very careful, however, in applying superficial analogies in terms of how efficiency is defined.

[36] In this arrangement the variables should not be "minimaxed". One can speculate about an application of games theory where every variable is maximized with the minimum of interference and loss of the others. Within a stratification model this, I think, is possible, always referring the "game" to a "metagame". See Anatol Rapoport, *Escape From Paradox*, "Scientific American", July, 1967.

[37] Each component should be a solution to a multiple set of variables of the initial structure. See Rapoport, *op. cit.*, p. 33.

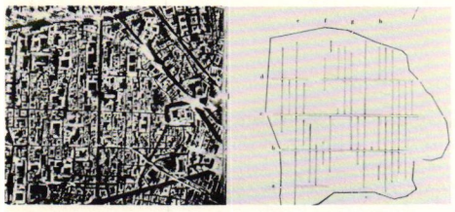
[38] The model of this process resembles the model of biological "histogenesis" as described by C. H. Waddington, *The Strategy of the Genes*, George Allen & Unwin, London, 1967.

21



The three levels are interrelated in a stochastic order the initial structure constituting the only necessary and sufficient control[39] (**22**).

22

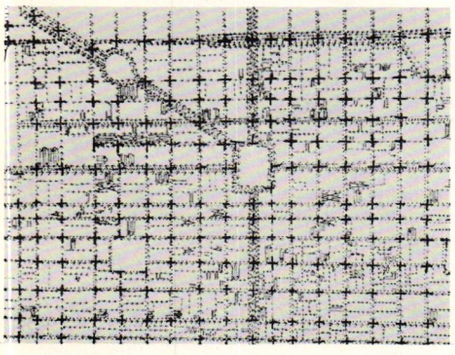


What is proposed here is a kind of microzoning, a matrix of stochastic processes. It is very different from the traditional zoning (a term famous for its crudeness and cruelty):

1. It provides a finer grain in a micro-space structure.

2. A different set of variables through which the process of differentiation will act, not by institution (superficial structuring)[40] but by the dimensions of the qualities of human interaction, or the movement system[41] (**23**).

23



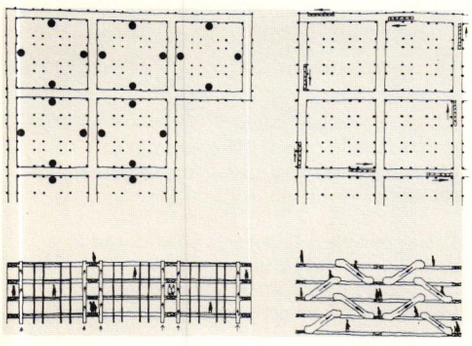
3. An undetermined, probabilistic allocation (**24**), bounding activities in interaction through time and space.

[39]The "small constraints . . . sufficient to produce considerably ordered structures" that Von Foerster mentions. Heinz Von Foerster, *Logical Structure of Environment and its Internal Representation*, "International Design Conference", Aspen, 1962.

[40]Claude Levi-Strauss, "Social Structure" in *Structural Anthropology*, Basic Books, N.Y., 1963.

[41]Louis Kahn's proposal and description of Philadelphia is the first attempt to diagram the urban fabric according to the initial structure of movement. S. Woods' plan for the Berlin Free University is the first consciously built "minimal" (as it was called) structure of movement.

24



The initial urban structure, like the structure of a myth, is an intermediary entity between a statistical aggregate of molecules and the molecular structure itself.[42]

A basic hypothesis underlying this argument (a General Systems hypothesis) is that a structure or organization is an entity of its own which can be abstracted from an object or a model. It can further be injected into another object or environment, thus transforming it. Thus the possibilities of structure transplantation lies in the understanding of the limitations and potentials that the transplanted structure offers. The models of each particular system are characterized by a set of outcomes, permissible interrelationships prescribed by its structure.[43] Bounded by those interrelationships is the degree of its ability to cope with the unfamiliar.[44] This ability constitutes the threshold up to which the model within each system performs.

Abandoning one system in favor of another means that the possible interrelationships that it could offer through its models were overdetermined. Confrontation with a new situation can develop the preference of another kind of system; but in the process of undergoing this change some desirable characteristics of a system can be lost completely from the environment. A quantification of a quality can be simultaneously a reduction of its reality (**25**).

"Myth is an obscure way of writing history,[45] perhaps (**26**)" but simultaneously it gives the liberating and sacramental strength of creative imagination.[46]

When components of the culture of magic are removed from the environment, such as the objects designed according to the System of Visual Order, the environment's redundancy and unreliability is reduced. On the other hand the value of their disappearance should be measured against the resulting reduction of desirable ambiguity and indeterminance in the environment. In an open undefinable universe, the total refusal of randomness in the man-made environment deprives it of certain opportunities to face unexpected alternatives.[47]

To ostracize ruthlessly randomness from our environment (**27**) excludes the possibilities for re-orientation and redefinition.[48] A further argument against the acceptance of a problem-solving system as an organizing principle of the man-made environment is that its optimization tactics serve strategies whose selection is always an act of human

[42]The initial structure is similar to a *myth*. See Claude Levi-Strauss, "The Structural Study of Myth", *op. cit.*

[43]Claude Levi-Strauss, *ibid.* We can extend the statement of Levi-Strauss on myths to all cultural systems. "The purpose" of each "is to provide logical models capable of overcoming contradiction" at any given situation.

[44]P. van Duijn, *The Interaction of Theories and Experiments in Science*, in "Information and Prediction for Science", S. Docks and P. Bernays, ed., Academic Press, N.Y., 1965.

[45]"Unreasonable Gods", *Times Literary Supplement*, July 11, 1968.

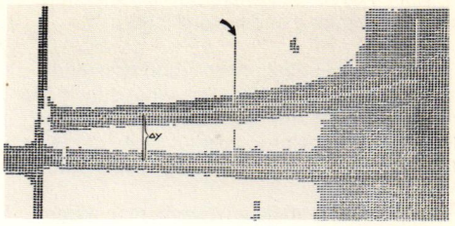
[46]Kathleen Raine, *Defending Ancient Springs*, Oxford Univ. Press, 1968.

[47]For example, Alexander's accepting that the purpose of design is "to fit, to eliminate incongruities directing the environment toward equilibrium. C. Alexander, *Notes on the Synthesis of Form*, Harvard Univ. Press, 1964. Contrary argument in relation to the educational aspects of the environment are in Albert E. Parr, *Toward Cultural Entropy* "Ekistics", No. 144, 1964.

[48]*Ibid.*

repression and submission (**28**), no matter what the variables involved.

25

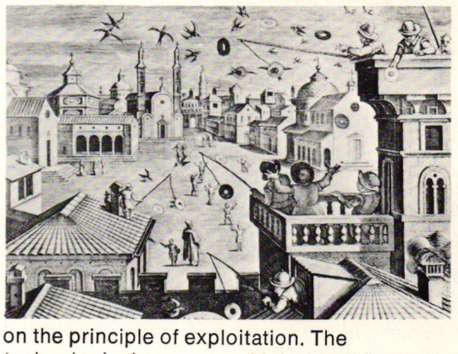


An alternative internal organization for the man-made environment can be proposed whose structure is borrowed from the System of Art. It is a hypothesis of an *internally* (*structurally*) "esthetic environment" similar to Schiller's "esthetic state".[49] The initial structure of this environment, will be similar to the initial structure of a work of Art, their components being interrelated in a similar manner.

26

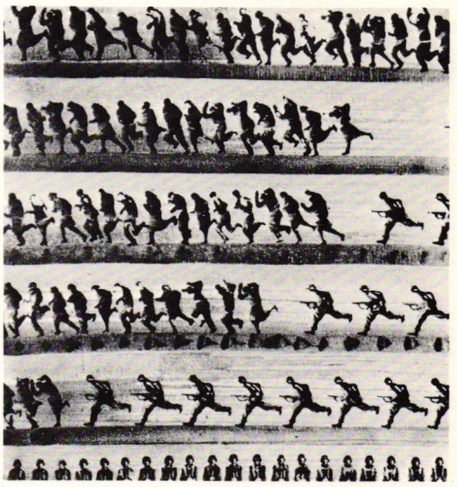
This hypothesis depends on the possibility of a non-repressive society where the inter-human relationships do not have to be based

27



on the principle of exploitation. The technological progress which can make the man-to-man relations of exploitation and oppression obsolete can establish art as the organizing principle in human interrelationships. It can reorganize the interrelationships between the components of the man-made environment as well,

28



dissolving the tyranny of the problem-solving system, the authority of optimization and determination of use and production. "Only

[49]Herbert Marcuse, *Eros and Civilization*, Random House, N.Y., 1955, pp. 157-201. Schiller, *The Aesthetic Letters*, trans. J. Weiss, Little Brown, Boston, 1845.

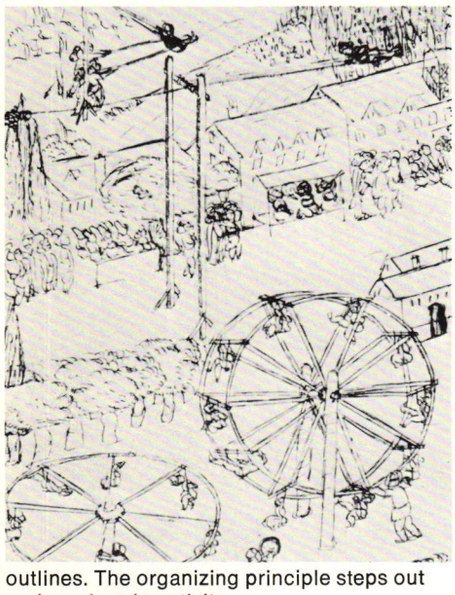
when the constraint of need is replaced by the constraint of superfluity . . . will the human existence be impelled to a free movement which is both end and means"[50] (**29**).

The advance of desirable randomness and freedom in decision will evolve not only in the innovating open matrixes applied in works of art (**30**) but in the organization of the model that structures the man-made environment.

The future man-made environment in a free society will definitely have a form, a new multidimensional form; but this form and this newness will neither be demonstrated in objects that picture it, in models of it, or in works of art. It will be demonstrated in its internal organization, in its use, and in the way this suggests to the participants new human interrelationships.

In this process the disappearance of art from one aspect of the man-made environment is actually its resurrection in another. Its body is destroyed in terms of the discontinuous entities; the objects of art, the aesthetic parcels, statues, facades, entrances, or city

29



outlines. The organizing principle steps out and survives in activity.

The new world will be slow and painful in its emergence, "the spirit of the time, growing slowly and quietly ripe for the new form it is to assume, disintegrates one fragment after another of the structure of the previous world."[51] The new components will first appear elliptic and enigmatic. The old components will disappear slowly and painfully.

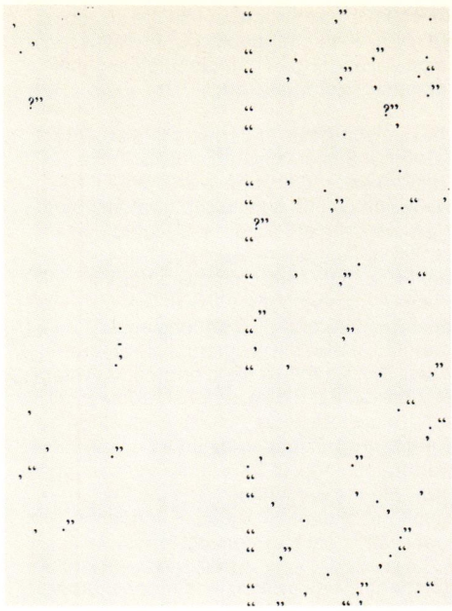
For those who were educated in the good manners of the peaceful and reassuring form of the obsolete Visual Order, of the works of art, their skills will be atrophying every day. A universal picture of the environment will evolve where for the sake of "meaningful form," any "general Zenish sense of why bother" will prevail for some time in the complexity and contradiction of the "no style" style for style's sake. "Like priests who have forgotten the meaning of prayers they chant, we shall go on for quite a long time . . . pretending all the while not to notice that the church is empty and the parishioners gone . . ."[52]

[50]Herbert Marcuse, *ibid.*, citing Schiller, *op. cit.*

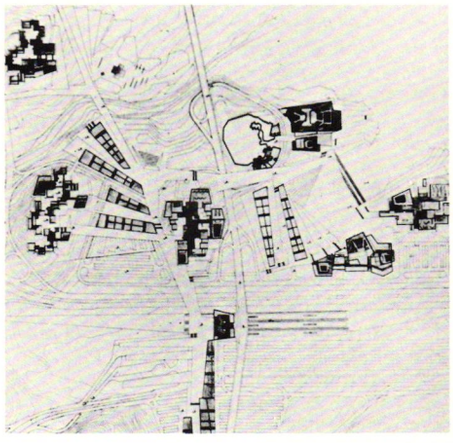
[51]G. W. F. Hegel, *The Phenomenology of Mind*, Harper Torchbooks, Harper & Row, N.Y. (1807), 1967, p. 75.

[52]Gore Vidal, *French Letters, The Theory of the New Novel*, "Encounter", Dec., 1967, p. 23, paraphrased.

30



1



2

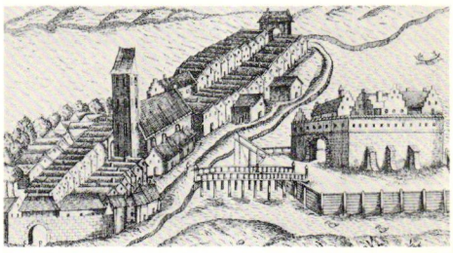
The Espoo Project

Several of the ideas proposed in this project, and several points in this article as well, come from my work with Professor Serge Chermayeff from 1962 (when I first met him as a student) to 1968.

The project was submitted by Donald and Marja Watson with my collaboration to the International Competition for a Town Plan for Espoo, Finland (1967).

Location: Immediately west of Helsinki, 15 miles. Projected population: 300,000 (2000 A.D.)

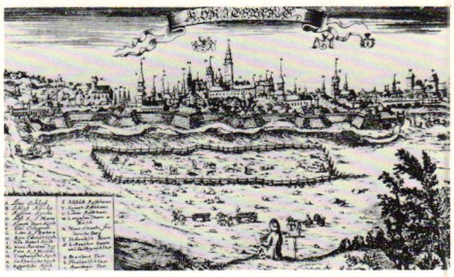
3



The Espoo river valley, crossing the competition area from northeast to southwest, is scenically, topographically and historically important. A railway station and a ring road offer access to the main national routes, projected harbors, the city of Helsinki and the airport. For the details of the competition see: "Arkkitehtuurikilpailuja", Journal Finnish Architecture Competitions, 1967-68. SAFA, Helsinki, Finland.

In the Espoo project only the structure of the *initial level* was proposed. The project did not present any visual form, which seems to be what the jurors were more interested in as they describe the winning project (**1**): "architecture . . . a voluntary expression suggesting undefined stereometric volumes

4



which remind one of the character of Finland's lakes and forests crystal-clear and rocky."

The Espoo New Town was considered as a unit of urban fabric within the multi-unit chain of stops along the mass transit (electric train) network on which Helsinki is growing.

The urban fabric includes all the activities that open choices of direct human contact, and minimise the interference in their relationship (**2**). The sustaining amenities, natural or technological (**3**), are placed

5

outside the urban fabric[1] connected in a network of movement (**4**).

The direction of growth perpendicular to the valley preserves the valley floor as a natural and historical conservation area.

It is connected to the region by:

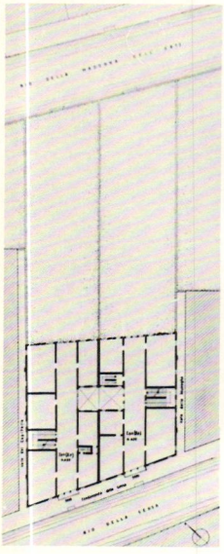
1. Regional public transit train and bus linked directly to the urban transportation system.

6

2. Private vehicles collected at the peripheral parking units or distributed through the peripheral collector road to the service streets.

The internal network of movement consists of:

7



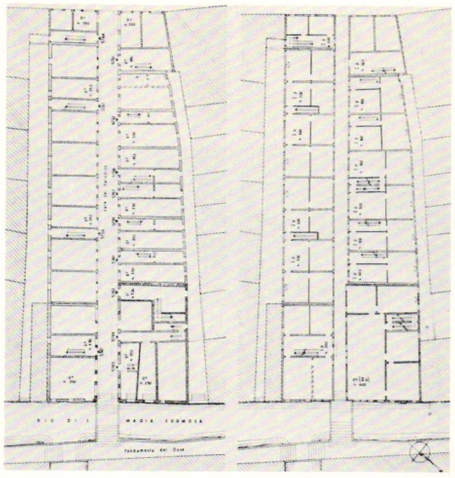
1. "Boulevards" for the pedestrians (**5**) coinciding on a linear series of activities with a horizontal transportation system that functions (like an elevator) push-button safe, free, publicly owned, available 24 hours a day (promised for New York in 1930),[2] stopping every 200 meters. Beginning stages of such a transit system can be accomplished first by buses. The boulevards are connected at every 200 meters[3] by

2. Cross-boulevards and a cross mass transit line that ties all transit lines to the outside parking units. Between the boulevards are:

3. Galleries (**6**) for pedestrians, partly open or controlled climatically connecting the transit stops and the parallel boulevards, and

4. One-way service streets.

8



A dual bipolar access (**7**) is provided for all the components to reduce potential conflicts and assist a high degree of alternative options through environmental differentiation.[4] Each of such differentiated options represents a differentiated quality of human interaction. Dual access is particularly necessary (**8**) since the traditional concept of zoning — i.e. separating — conflicting activities in terms of civic, commercial, etc. is abandoned.

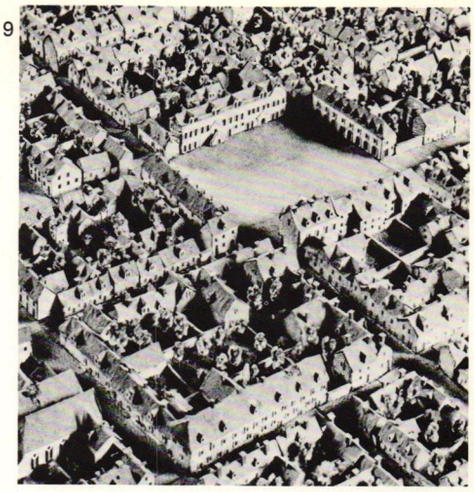
The city hall for example has a dual access even for demonstrators. (Demonstrations of solidarity on the front plaza where the major's balcony probably should be and demonstrations of opposition placed in front of the windows of the bureaucrats and on the slope of the hill. The opposition will thus have opportunity to picnic while they demonstrate.)

The density is uniform through the whole fabric, like an eighteenth century town (**9**). Rarely more than four levels or stories are used unless there are topographical peculiarities. With escalators the use of all levels by the public can be intensified at certain desirable points.

Housing is available everywhere on the side or on the top of other activities, 75% of the units have direct contact with the ground (one, two and three-story dwellings). The density varies between 200-250 people per acre.

Commercial units are available everywhere on the way. The multi-purpose short-term use components (drugstores, kiosks, coffee stands) are near the transit stops, while the uni-purpose long-term components (movie houses, schools, department stores) are between stops.

9

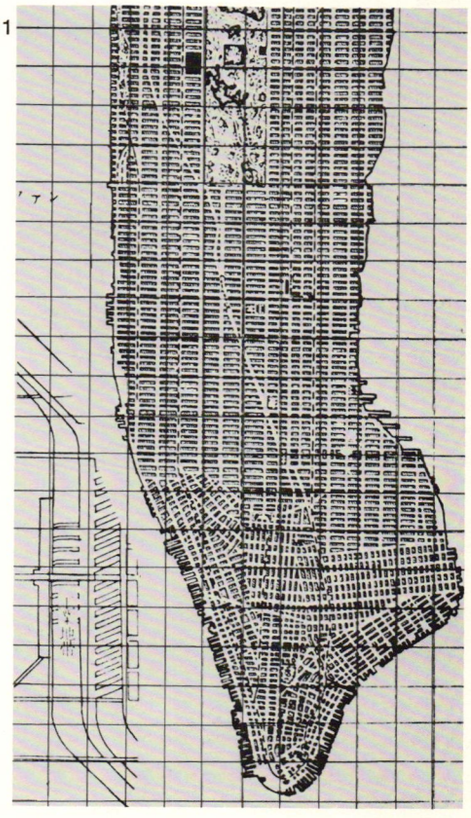


Whenever a major institution is to be located (such as a university), it runs across a galleria perpendicular to the boulevards to increase its public interaction through meeting all the transit lines. The same principle was applied to pieces of nature, conserved and included, the Central Park of Espoo (**10**).

10

The initial structure of Espoo was in several aspects inspired by Manhattan (**11**).

11



[1]See *Search for a New Urbanity*, a pamphlet on work done by the Masters class with Prof. Serge Chermayeff, Yale School of Architecture, 1962.

[2]Thomas Adams, *The Building of the City*, N.Y. Regional Plan of New York and Its Environs, New York, 1931.

[3]See *Search for a New Urbanity*.

[4]*Ibid.*

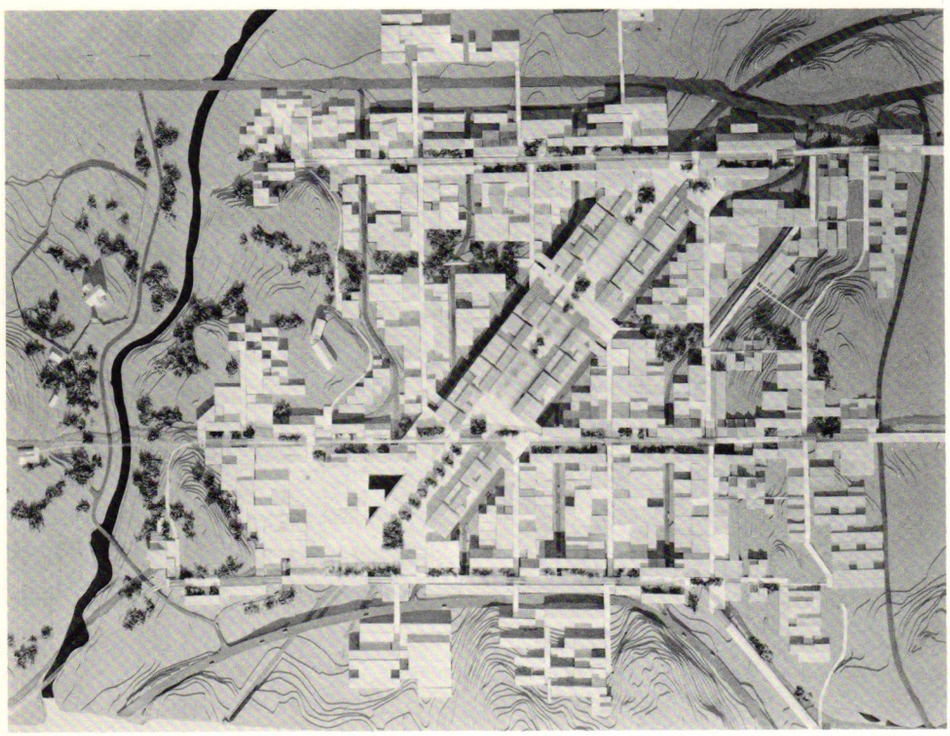
12. Model of project.

13. Regional plan.

14. Town plan, showing circulation system.

15. Town plan, showing activity use.

12



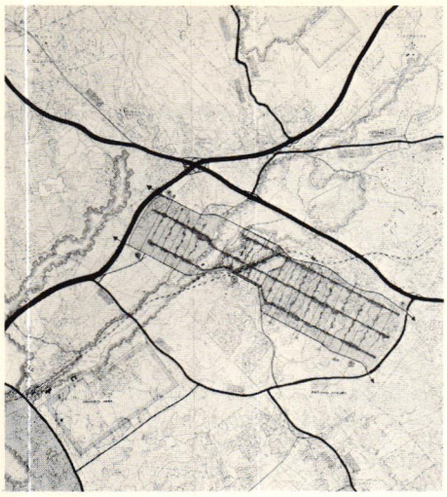
Flows

Pedestrian
Vehicular
Parking
Transit
Shuttle

Containers

Housing
Administration, social institutions
Education
Community places
Commerce, offices, services
Sports, playgrounds
Parking structures
Central industry

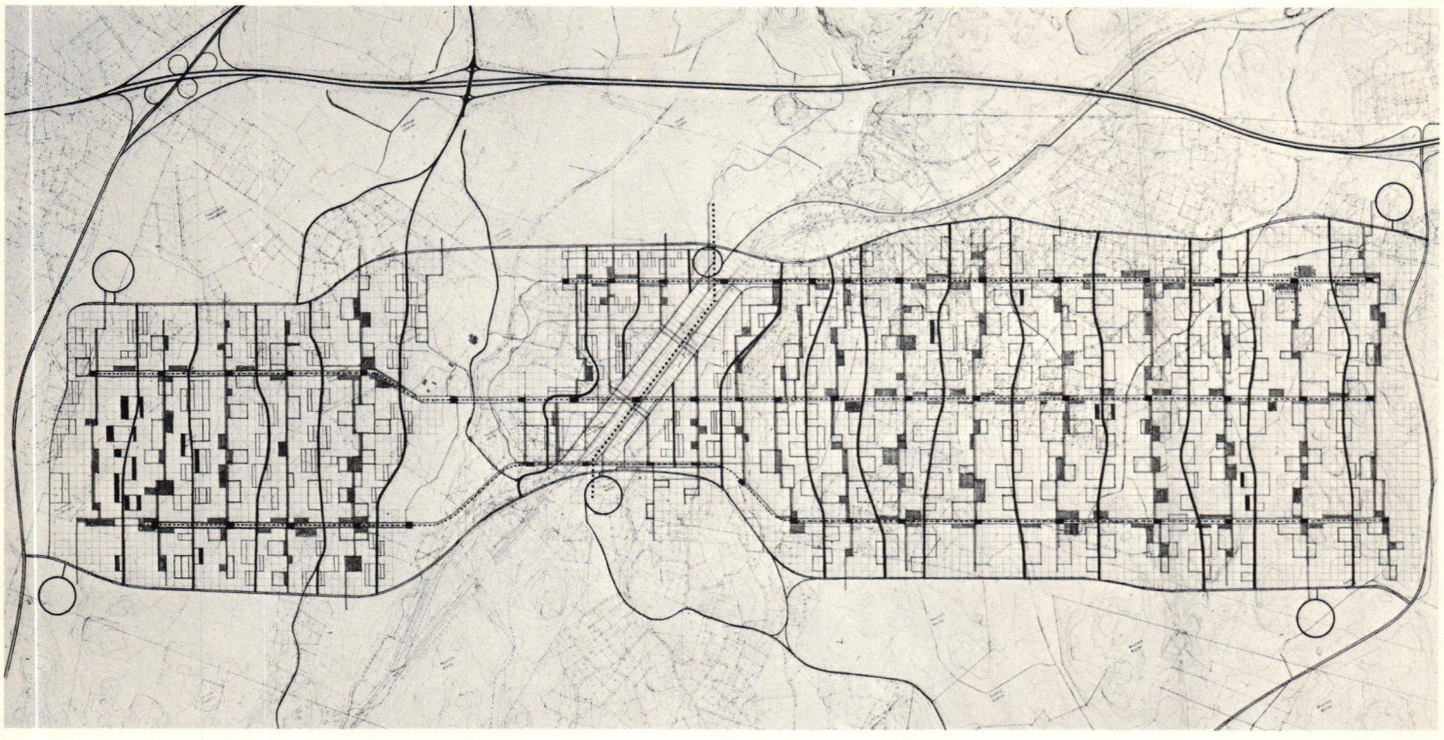
13



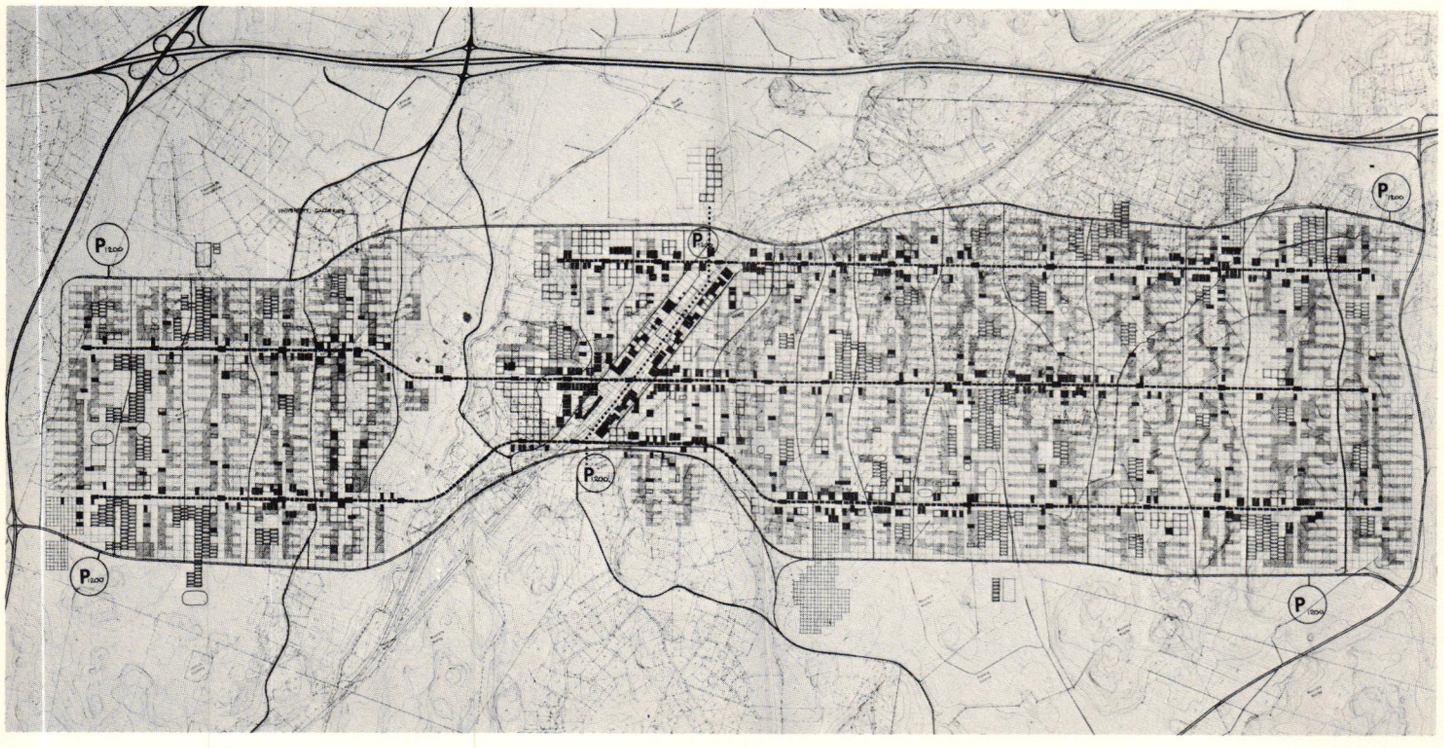
0 30 miles

0 500 feet

14



15

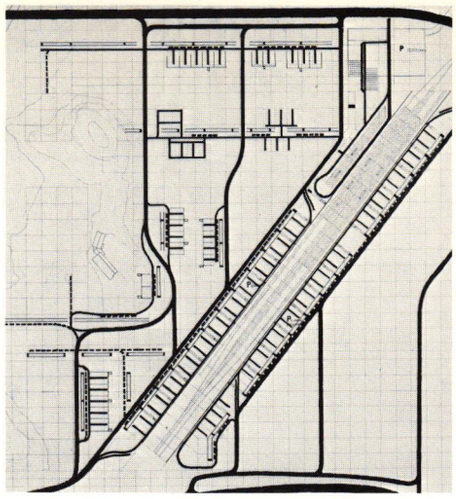


16. Town center, lower level circulation.

17. Town center, ground level circulation.

18. Sections through the town.
Section through Town Hall and railroad platform. Section through pedestrian and mass transit boulevard.

16



1. Pedestrian platform
2. Transportation center
3. Transit stop
4. Taxi stop
5. Commerce
6. Private offices and services
7. Housing
8. Restaurants
9. Free cultural and social events
10. Entertainment
11. Town hall
12. Library
13. Organizations
14. Art museum
15. Theatre
16. Concert hall
17. Hotel
18. Recreation
19. Exhibition concourse

Containers

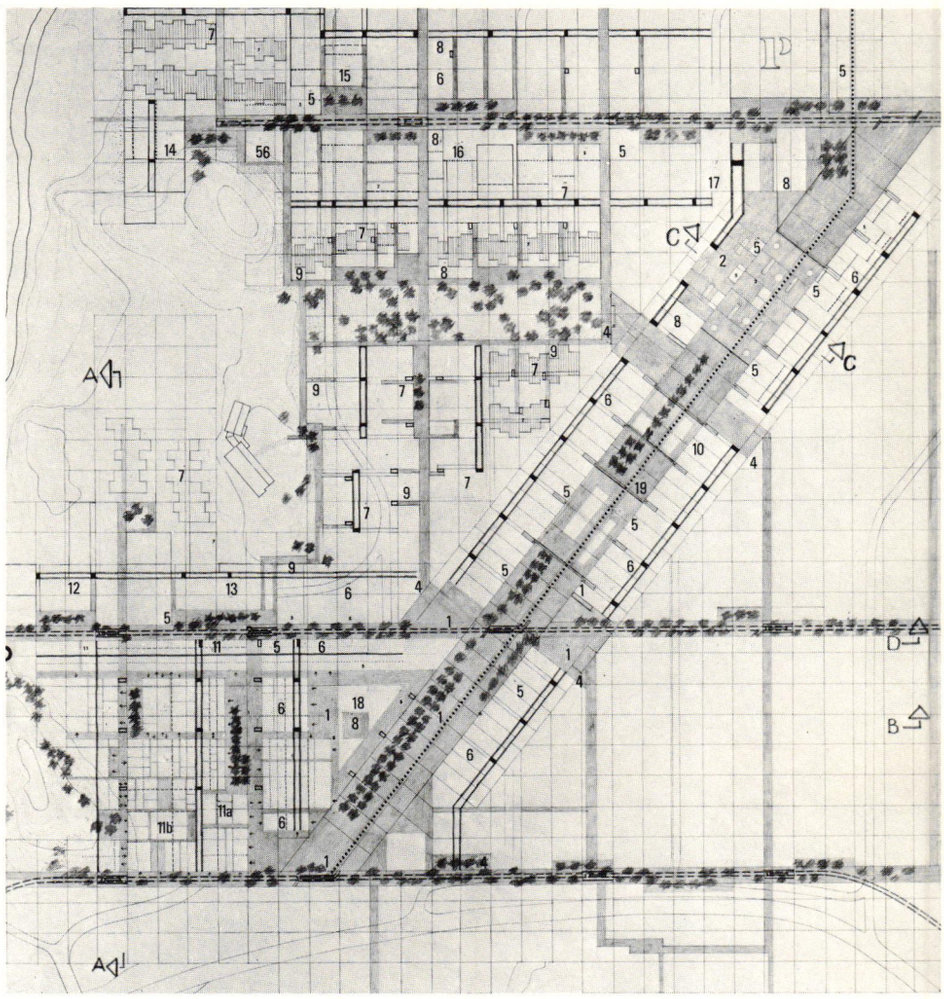
Public realm
Controlled entrance
Private realm

Flows

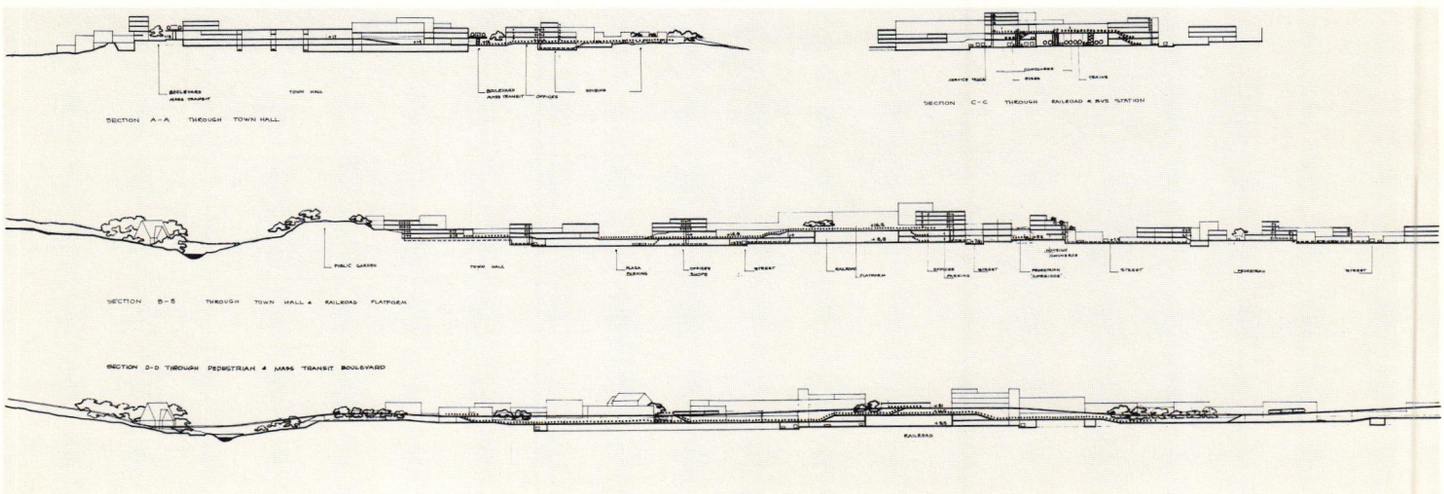
Pedestrian
Vehicular
Parking
Transit
Shuttle

0 150 feet

17



18



Melvin Charney

Experimental Strategies: Notes for Environmental Design

In charge of the program of Graduate Studies at the School of Architecture of the Universite de Montreal where he is an Associate Professor, Mr. Charney is a practicing architect concerned with the design and development of systems for housing and education facilities. He has most recently written "Environmental Conjecture" in Planning for Diversity and Choice *(MIT Press) and is presently engaged in studies for the design of flexible education facilities under a research grant from the Government of Quebec.*

Transplants of hardware at the scale of new technology have been part of the existing landscape for over a half century. Yet montages that displace and exaggerate objects in a landscape are needed to tune design sensibilities to the new scale, and to suggest to the designer to go to the things themselves.

. Birmingham steel mill and workers' houses, 936.

Any environmental artifact is designed in the present for a future use, and even if it were possible to define the present, the uncertainty of the future is implicit in the design process.

1.
Volume V of the working papers of the *Commission on the Year 2000* includes a letter from Eric Erikson to Daniel Bell, chairman of the Commission, in which Erikson explains that rather than speculate on the possible futures that can be seen in trends, as the Commission had proposed, he felt that it may be more important to look at the ideological distortions that obscure our visions in regard to trends, since we must assume that we are actively in the process of helping to make the year 2000 what it will be.[1]

In the act of designing the physical environment with which we surround ourselves it is obvious that we are making the future in part what it will be, and, rather than speculate on design trends, it may be worthwhile to follow Erikson's suggestion and examine attitudes in regard to these trends.

2.
Design depends on the concepts that the designer can use to comprehend and objectify the conditions in which he finds himself and to which he is trying to respond. He assigns concepts to events and to things so as to render these conditions instrumental in his work. Thus, in sequence, current events are ahead of current design, and it is in the nature of design to seek out in the existing environment conditions that bridge the present and the future.

A concept with which the designer objectifies his work is at best an ". . . 'objective fact' only in small part, in larger part it is a survey of possibilities".[2] Rather than suggest futures by describing design scenarios, or depicting visionary projects which tend to be single episodes, an approach can be developed that can suggest the basis of many possible episodes. Emphasis can be put on the perimeters of possibilities – the constraints that structure the physical environment – as well as on the possibilities themselves which can mean different things for different people.

[1]For the text of this letter, see the Volume V of the working papers of the *Commission on the Year 2000 of the American Academy of Arts and Sciences*, privately printed, Brookline, Mass., 1966. This letter was sent in lieu of a memorandum that Erickson was invited to submit on the possible futures that can be seen from trends in the modes of conduct of youth.

[2]Werner Heisenberg wrote in *Dialectica:* "What we establish mathematically is 'objective fact' only in small part, in larger part it is a survey of possibilities"; as quoted by H. Marcuse in *One Dimensional Man,* Beacon Press, Boston, 1964, p. 150.

The emphasis in design on technology and on formal sensibilities can be oriented to favour an operational approach that does not polarize these ideals from each other and from the social reality of the inhabited physical environment as some science or art fiction.

3.
In the visionary designs of the last fifty years, architects experimented in transposing marine and aerospace hardware into physical environment in order to focus attention on the emerging conditions of total dependence on technology. New environmental dependencies were inferred in this way.

Recent projects such as aircraft carrier cities, hovercraft office buildings, and plug-in plastic tenements [3] still borrow lumps of new hardware and dish them out in an architectural context – a context oriented to start with to "The Shape of Things to Come". These anecdotes are delineated in a graphic medium that is commonly used to demonstrate real building conditions. In responding to the media the observer is directed to questions how do we get there from here, as if there was a real "there", and the essential analogic role of these images tends to lose itself in irrelevant details of technical feasibility.

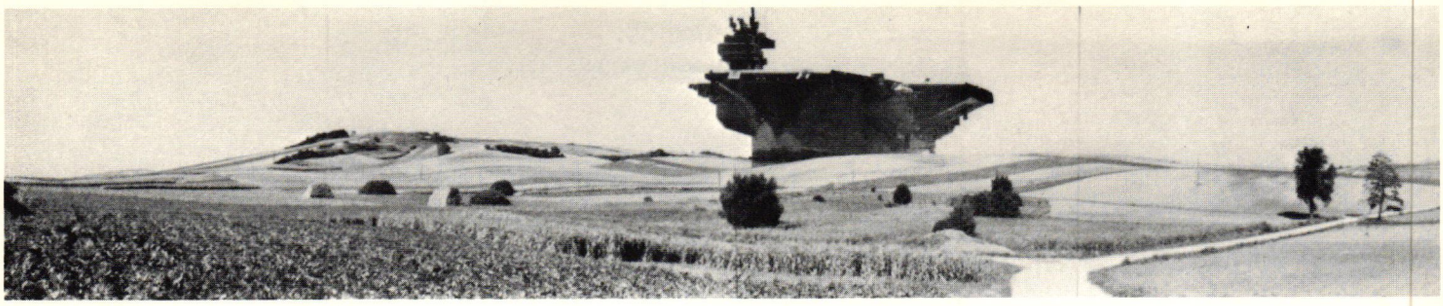
These projects promote new visions while maintaining a traditional frame of reference. They tend to underline dependencies on the past in their use of formal devices – a city, a building, and a tenement, in the above typical examples – in the same manner as Ledoux and Boullée drew upon historic forms.[4] As in the earlier work of the 18th century French "visionaries", realization depends less on technologic innovation in the hardware sense – technically they are immediately feasible – than on the development of the social organization of human resources in the framework of a production system that could respond to the scale of these projects. This can be seen in the influence of the French visionaries on the subsequent federal architecture of the burgeoning industrial states that emerged in the latter half of the 19th and the first half of the 20th century.

Recent visions tell more about the plight of the contemporary designer as a sender and receiver of images of new technology than about the transfer of advanced technology to

[3]The work of Hans Hollein, Peter Cook, and Arthur Quarmby, respectively.

[4]This can well be illustrated by the recent proposals for Toronto, and for Harlem, New York, by Buckminster Fuller.

2



2. Carrier City in the Landscape, *1964, by Hans Hollein. Photomontage.*

the built environment; the environmental logic that is represented by the aerospace and materials technology used in these studies resists this level of design transfer. The success of these projects is found in their demonstrations of a new set of images that are readily absorbed in the current styling of built artifacts. Even though old frameworks are maintained, they are at least experimented with,[5] and the relevance of these studies, as opposed to their success, ultimately lies in the insight they provide about the present.

4.
The expectation of finding art in a fixed design has recently given way to the conception that art can be found in indeterminacy where a final design may or may not be foreseen.

It is no longer easy to see this revelation as intellectually revolutionary. Even though it takes new realities to suggest new possibilities, environmental objects have always been the convenient intermediaries of our surroundings; chronologically, buildings obviously have a future of their own, and conditions of change are at least as evident in the history of the physical environment as conditions that have remained fixed for long periods of time. It is especially difficult to accept vestiges of deterministic attitudes in regard to fragments of the immediate past of Modern Architecture. In the description of the Zonnestraal Sanatorium of 1927-28, by Bijvoet and Duiker, that appeared in a recent issue of *Architectural Design,*[6] it is not the "power that is still visible" in the building despite changes that is the important psychologic fact, but rather it is the changes themselves that measure the "authentic authority" of this building. That a hospital designed in 1927 for TB patients should not have undergone alteration by 1968 is inconceivable; medical science for its part has at least learned to cope with TB. The catalogue of changes that were possible is most encouraging about the building – such as its transformation into a geriatric unit, and the additions to its mechanical systems. As a bit of the present, the details of the original building are intelligible.

Indeterminacy, as a condition of use determined by change, shifts the emphasis in design to the generic service function of built artifacts. Solutions to a given problem tend to be divergent rather than convergent; the designer can no longer accept the fixed value system that protects his position as the singular determining agency of built form. This leads to the further dissolution of the material nature of the concept of a building, and consequently to the further disposition of its service function to technology – such as the translation into design of the replacement cycles of industrially produced bits of the built environment, for example.

5.
While indeterminacy has been recognized in design as an operative condition, in technological planning the principles of a theory of change are being developed.

A number of recent studies on technological planning have established its role as the "basis of a scientific arm of planning".[7] For a clear and enthusiastic review of the state of the art see *Technological Forecasting in Perspective* by Erich Jantsch; among the assumptions and commonly used terms here defined, it should be noted that technological planning refers to the development of intellectual concepts concerned with the active implementation of technology transfer from one level or sector of technology and human activity to another.

Jantsch shows that the distinction between forecasting and planning is somewhat a tautological but necessary articulation of the planning process. The two have an inherent tendency towards integration, which, by the 1970's, may result in the disappearance of forecasting as a distinguishable discipline. He also notes a parallel consequence in the change from "production-oriented" planning to "function-oriented" planning, and the subsequent necessary adoption in planning of high level social goals.

As described by Hazan Ozbekhan,[8] new planning strategies delineate a commitment to the reality of many possible environments (i.e. architectures). In the earlier model of planning (i.e. design), choices were basically concerned with the feasibility of techno-economic alternatives rather than with ends. What we can do has expanded vastly, and what this kind of feasibility tends to define is no longer the issue. As a planning tool, feasibility is redefined as relevancy, as well as expediency.

These developments in planning recognize that technology has become more critical with regard to the human situation than with the scientific, with which it tends to merge. However, the emergence of an emphasis on "goals" in no way forces socio-political issues. Jantsch optimistically speaks of the future integration of fundamental research and the social environment that will serve in formulating guidelines.

The impact of systematic planning on environmental design is all too evident. Not only are the institutions which developed the planning technologies in the first place to have an important role in determining the urban environment, which has already happened,[8] but the development of the planning techniques constitutes a basic elaboration of the design process. If planning can be said to define modes of action, then design is formulated in the midst of the action. Furthermore, the exigencies of large scale industrial production of the built environment tend to merge design with technological planning.

6.
The active implementation of technology is characterized by the development of new attitudes. Jantsch describes the current development as a change from "product-orientation" to "function-orientation". On the most general level, this emerging emphasis can be considered to be a shift from subject to activity; from the primacy of products (buildings) to an identification with the user and with services (the interaction of people with environmental artifacts).

These attitudes generated by recent technology are as critical to the underlying basis of environmental design as the industrial mechanization of the late 19th century was to Modern Architecture.

If several of the evocations that Le Corbusier used in his book, *Vers Une Architecture,* to infer by analogy the emerging sensibilities of an industrial world are now used to infer in a similar way changing sensibilities, then in place of a photograph of the Delage automobile of 1921, "Grand Sport", juxtaposed with a photograph of the Parthenon as some parthenon on wheels, one could substitute a photograph, dated 1927, of the hydraulic press at the Ford plant compacting the metallic carcass of an auto like some parthenon that has outlived its useful tenure (or its advocated uselessness). Instead of an exterior view of a grain elevator, circa 1910, that shows a cluster of silo drums in a neo-hellenic assemblage at the scale of a "Heroic Modern" building, one could substitute the plan and section of this grain elevator which show the silo drums as the distended tubes of a distribution machine that

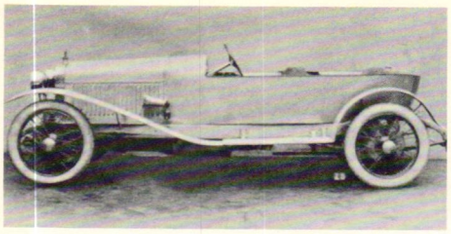
[5]One aspect of this experimentation is described in "Environmental Conjecture", by Melvin Charney, in *Planning for Diversity and Choice,* Stanford Anderson, ed.; M.I.T. Press, Cambridge, 1968.

[6]*Architectural Design;* London, December 1967, p. 552.

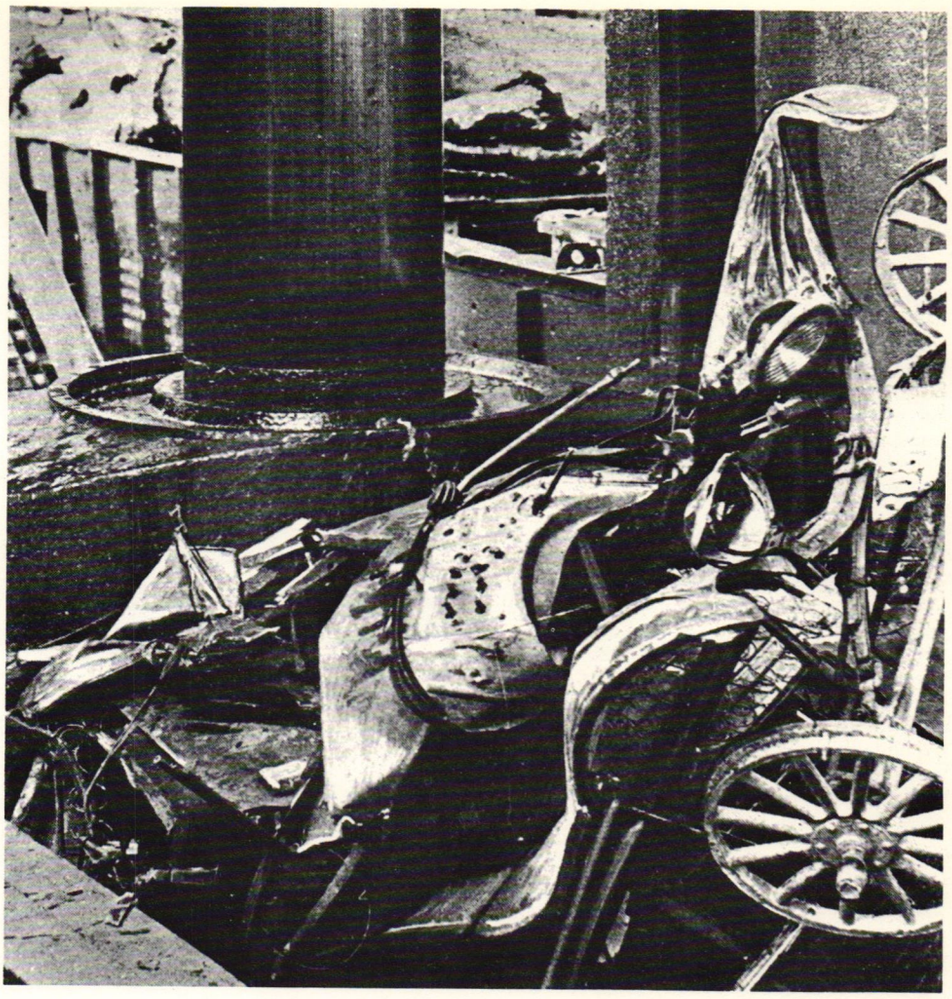
[7]Erich Jantsch, *Technological Forecasting in Perspective,* O.E.C.D., Paris 1967.

[8]Hazan Ozbekhan in "Can Implies Ought"; Anderson, ed., op. cit., p. 208-210.

3



4

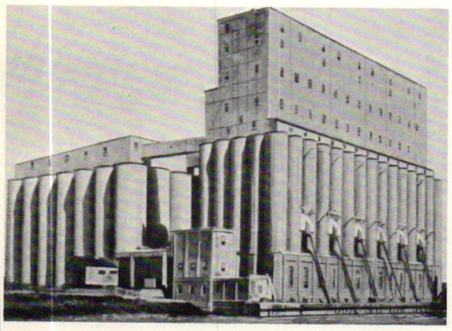


3. Delage "Grand-Sport", 1921.

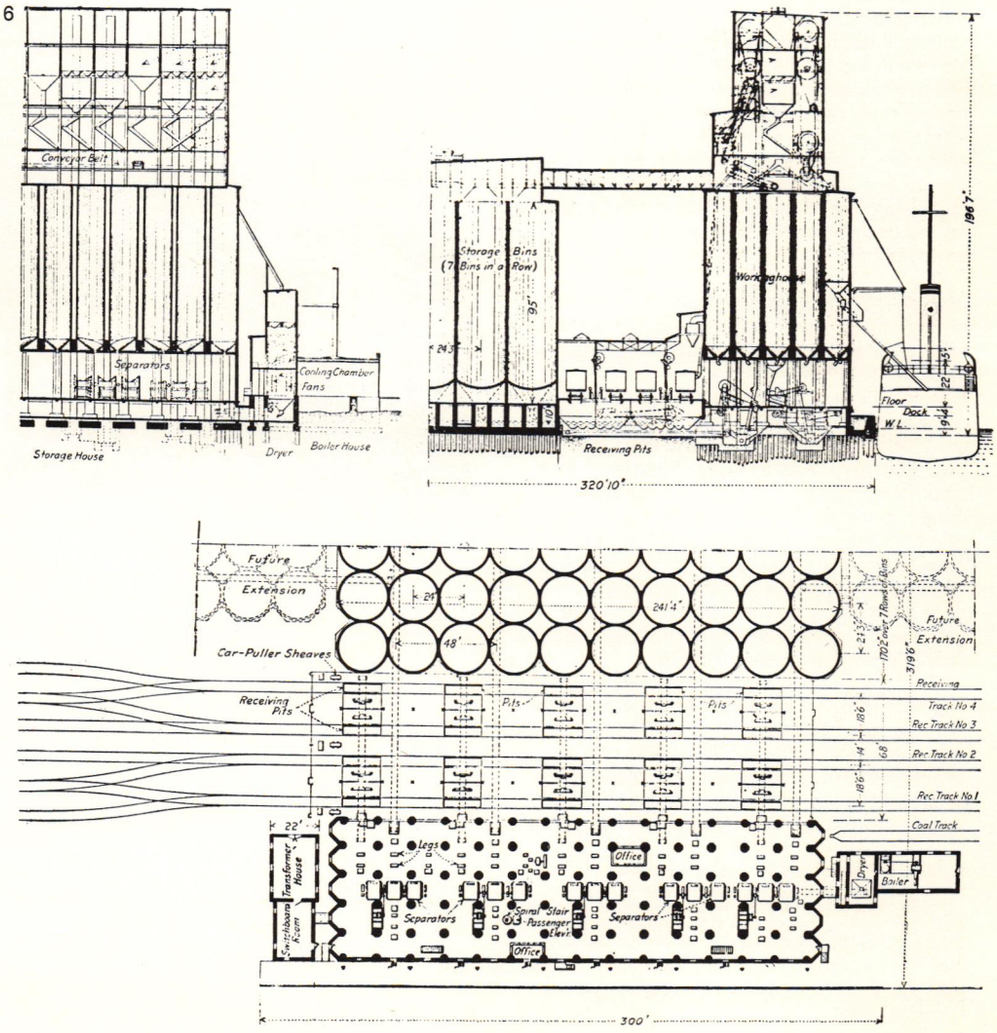
4. A photograph, dated 1927, of a hydraulic press compacting the chassis of a scrapped automobile, attests to the early development of a replacement cycle in the auto industry.

5. "Canadian Grain Stores and Elevators".

6. Plan and transverse sections of the grain elevator illustrated in Vers une Architecture, *that appeared in* Engineering News *of February 23rd, 1911; p. 221. This elevator was completed in December 1910, using reinforced concrete slip-form construction; Fort William, Canada.*



6



was used to move grain to world markets. As part of a transportation system, the measure of capacity of the machine and its finished components are turned to the internal voids, and, as an analogy, the machine can be used to illustrate the recent report on urban transportation prepared by the Stanford Research Institute: "Transportation is a service function . . . it does not exist of and for itself. . . ."[9]

In the first example, the auto industry initiated mass production techniques that were later adopted by other industries, and it was rightly championed by the Moderns. However, comparisons of automobiles to buildings have generally failed. The analogy served in many cases as the basis of a transplant of methods rather than a transfer of technology at the level of appropriate concepts.

Early in its development the industry evolved a replacement demand based on the life expectancy of the machines it produced. This shifted the material value of the artifact to the service that it rendered. The idea of expendable artifacts and inexpendable service offers a device for the ultimate liberation of architecture from the physical constraints of buildings, yet the question of expendability is still generally considered by designers to be a "moral" issue as if it offends their sense of property or undermines the objectives of their profession.

If one is to take Le Corbusier's words in regard to the Delage of 1921, "if the problem of the dwelling and the flat were studies in the same way that a chassis is . . . by industrial production . . . defensible forms would soon appear . . .", and then look at a recent Ford or General Motors product, as was done in *Perspecta 11,* or at an Aston Martin, it is evident that one message for the designer is his role in the style engineering of identifiable bits of mass-produced artifacts. Many other design roles are probable and possible, such as the assemblage of off-the-shelf hardware according to user specifications, development design and systems research, but the role of the "visualizer" of symbols does offer a place for the designer in the industrial environment.

In a recent article on the "state of architecture", Peter Smithson continues the analogy of the automobile and compares the 1920 Bentley to the work of the Constructivist/Sachlichkeit faction with their composed display of machine products, and the 1960 E-type Jaguar with the 900 Lake Shore Drive of Mies as highly integrated and smooth machines ". . . modeled in some universal material . . ."[10] Even though he affirms that architectural design has stood close to the fashionable view of the machine, he begs the question that this position depended on styling, and that the "unique and one-off" 900 Lake Shore Drive is made to *look like* routine catalogue stuff.

The auto industry has also demonstrated that mass production in the form of an assembly-line-computer-hook-up offers some large scale response to the specific needs and desires of users. According to Ford: "The line is now tuned to serve the needs of the buyers

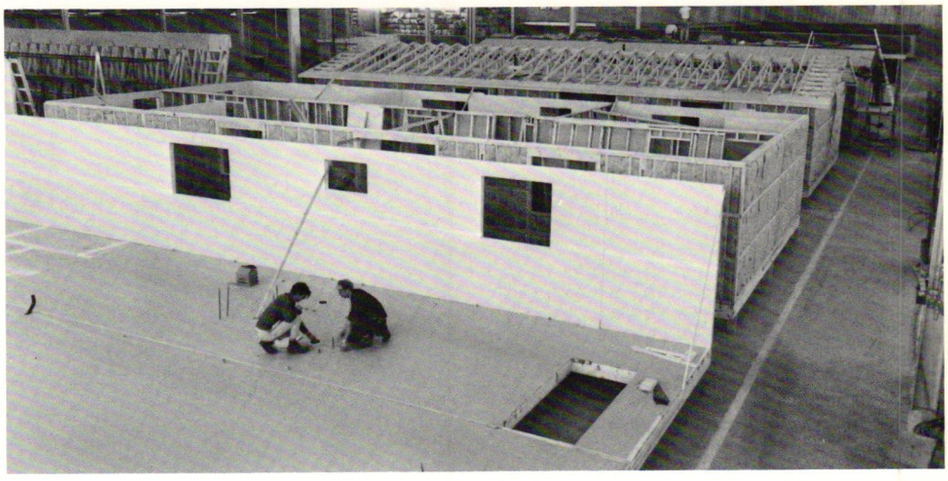
[9]For example, in 1967, the Battelle Memorial Institute research on urban transportation, prefabrication in the building industry, and housing; Aerojet general and General Electric on housing; Stanford Research Institute on Urban Transportation; Systems Design Corporation on Urban systems.

[10]Peter Smithson, "The Rocket", *Architectural Design,* London, July 1965.

7

7. Construction of the Commonwealth Apartments, 900 Lake Shore Drive, by Mies Van der Rohe, June 1957. The envelope of the building was fabricated in large sections of anodized aluminium to save on assembly and joints. These sections however were each made to look like an assembly of catalogue components.

8



9

The production and market styling of factory built homes.

8. One-line assembly jig in the manufacturing of Alcan Universal Homes. Production techniques were borrowed from the mobile home industry; a capacity was developed for 2400 homes per year.

9. A "model" Alcan home on site; one of several available. The sub-division housing "industry" has always been committed to the readymade styling of housing units. Alcan's styling was designed to exploit the existing market. These units are sold through a network of franchised dealers; the selling price of the furnished and equipped package includes lamps and curtains.

who have options and colour preferences. All special data on car make . . . is fitted into a production schedule". According to Ford every car is a "custom job". General Motors claims that it can produce in one year as many variations as its total production run. As a "custom job", this sales gimmick represents superficial assembly modifications. It exploits the vulnerability of the consumer. But it does show that production can be geared to diversity, and that it is not industrial technology that is holding up the development of pluralistic environmental conditions.

7.
Architectural imagery has recently swung out to include in its design repertoire a Main Street vernacular of popular culture in which we are all immersed. The early days of the Modern Movement had a similar populist edge that included a vocabulary of street signs and large store-front display windows. But this earlier idiom was adapted from the main streets of cities, whereas the recent idiom is drawn from the American "main drag" – the strip version of a super Main Street generated by and for the automobile.

Categories in architecture tend to persist, and even though new inclusions introduce new idioms they reinforce basic premises. As architecture, the recent idiom is inclusive in a very selective way that accepts only a very special part of Main Street phenomena.

One of the most inventive exponents of the Main Street approach, Robert Venturi, recently visited Las Vegas, and in the description[11] that followed this visit the "grand tour" mannerisms that are used to examine the formal complexities of the Strip appear as a Pop parody of the "architect" himself – cast in his own words rather than in the plaster of a George Segal assemblage. His commitment was to find architecture. The Strip was turned into the fragments of some hieratic culture and into a system of forms in which there is no place for the user-consumer other than as the ideal spectator – the antithesis of the Main. Las Vegas was isolated and rendered "anonymous" and "commonplace" so as to "gain insights", as was done with industrial buildings earlier this century. A similar description of Las Vegas by Tom Wolfe is inhabited by the creatures of the Strip. Even though Wolfe abuses people and drowns them in their own trivia, at least they are there. He presents the real live designers and fabricators, such as Vaughan Cannon, who are consciously working in the Strip on its own terms. Furthermore, many of these Las Vegas buildings are architect designed. It is not that the names are important in terms of personalities, but for the personification of design sensibilities.

Beyond the frame of reference of a formal idiom, the physical environment of Main Street documents the consumer aesthetic of industrial technology and high styling which is in touch with the daily lives of people. The spin-off from aerospace has had a significant effect from the direct incorporation of surplus, to the use of new materials such as adhesives and plastics, to the application of ideas and images. These "self happenings" are the technologic equivalent of the more well-known and important organizational inventions of the Strip such as shopping centers, state universities, motels, Disneylands, etc.[12]

[11] "Learning from Las Vegas", by Robert Venturi and Denise Scott Brown; *Architectural Forum*, New York, March 1968.

[12] See "The Missing Motel", by Reyner Banham, in *Landscape*, Winter 1965-66.

The cogent use of technology can be illustrated with the classic example from the pantheon of Strip architecture: The Diner. Monel metal and stainless steel kitchen, wood and linen photo-simulated laminated plastic tables, sheet aluminum panels and extruded trim, the linear organization of a short-order cuisine, and the railroad car prototype developed into a lightweight kit-of-industrial-parts that can be seen assembled across America. The Duchess Diner in New Haven is a particularly fine specimen; it stands in contrast to the nearby striated concrete buttresses of the Yale Art and Architecture building which looks as if they were extruded out of the bedrock. If Kienholtz moved the interior of this *Beanery* into the Museum, how soon will someone move the Museum into the Diner?

Development of the Diner prototype.

10. Early Diner; the converted railroad car at the side of the tracks, Oakland, California.

11. Later Diner; Duchess diner, *New Haven, Connecticut.*

10

11

Fabrication techniques in plastics such as vacuum and thermo forming, injection and blow moulding, new colour binders and metal coated vinyl powder formulations make possible the up-to-the-minute styling of the disposable bits of Main Street landscape. Years of research on the effects of ultra-violet radiation on PVC molecules went into these tableaux. In a design sense, the existential nature of these new polymeric materials tends to disappear into the complex fabrication processes, and into the use of the artifacts as media. From "Les Voix du Silence" of the plastic horticulturalists, to the reconstituted natural wood paneling, to the lustrous high-gloss finishes, and the "Corsican Cremo Marble" of laminated plastics, one has an artifactual landscape of instant sensibilities turned on by technology. The buildings of the Street form an extension to this media either as some walk-in multi-

12

media, or as a neutral shell within which things take place.

If one is to follow Hussel and go to the things themselves, or heed what Venturi said, that learning from the existing landscape is a way of being revolutionary for an architect, then the only way out in this "natural" world is through the artificial, through exploitation, and through the subjective relationships between man and his commodities. But Main Street is built on the industrial production of environmental commodities. Similarly, the design translation of the built environment into consumer based industrially manufactured commodities will obviously have to deal with these relationships.

8.
The physical environment can be considered to function as a system of restraints on people, and the emphasis in design on the interaction of people and environmental artifacts comes closer to representing these artifacts correctly than any isolated view of the artifact itself. This confirms the role of these artifacts as cultural devices that can tell us something about ourselves, and the world around us, as well as affirm that truism that dissolves all too quickly in the design process: It is people who give the physical environment its substance.

Any physical environment that someone has used in a personal way, or that has been activated by a group, communicates a degree of specific incidence that anonymous design can only infer and approximate. Both levels of engagement – the anonymous and the specific – have an obvious function. But design interpretations of industrialized building has tended to articulate the anonymous component, whereas technology offers the only real means for the production of a pluralistic and personal environment.

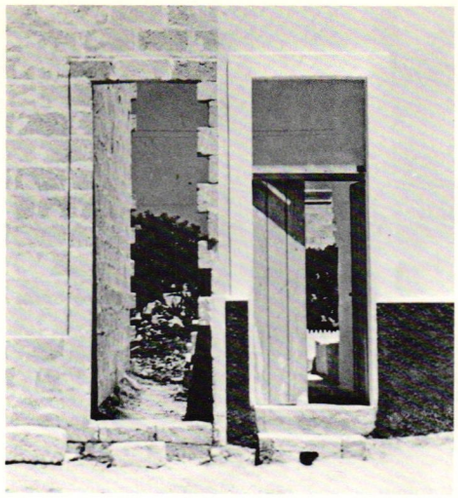
In the development of large scale industrial production, a conflict is readily apparent between the response of production to the growing satisfaction of needs and the imposition of repressive conditions of use. Increased production does mean the standardization of the aspiration levels and use patterns of consumers; those at the receiving end are assumed to become more and more malleable in an escalating series of "trade-off" ratios. From the position of the user-consumer, the question is not whether his constituency is a collective one, but rather how it is controlled. As the constituency of the user should evolve with an emerging user-orientation in industry, so the environmental bits as consumer commodities will be subjected to agencies that can protect the

13

14

12. The Strip with buildings as the walk-in extensions to the graphic media of the signs. From The Sunset Strip (1966), *an endless photographic foldout actually showing every building block and corner on both sides of the Strip, by Ed Ruscha.*

15



13. The gas station "Service Station" as the essence of Strip architecture. Light, graphics, uniformed attendants, and a dispensing machine are integrated in the media of a readily identifiable service into which the "building" as such disappears. In the thin plastic and enamelled metal skin, and the thin detailing of the enclosure, are built-in the possibilities of shedding one wrapping for another; the identification and attention span in the designed look is critical since the product that is dispensed remains essentially unchanged. The copy for the above photograph reads ". . . nothing stays the same any longer than it takes to improve it". The recent clip-on myths range from the above hard-edge packaging, to the stone siding and cedar shingle version of a neo-frontier pony-express station. The periodic updating of the station's look does, in a sense, allow it to maintain a front-edge engagement with on-going sensibilities. To say that these sensibilities are trivial, contrived, and part of the big commercial put-on is to raise similar issues with much of current architectural design.

16

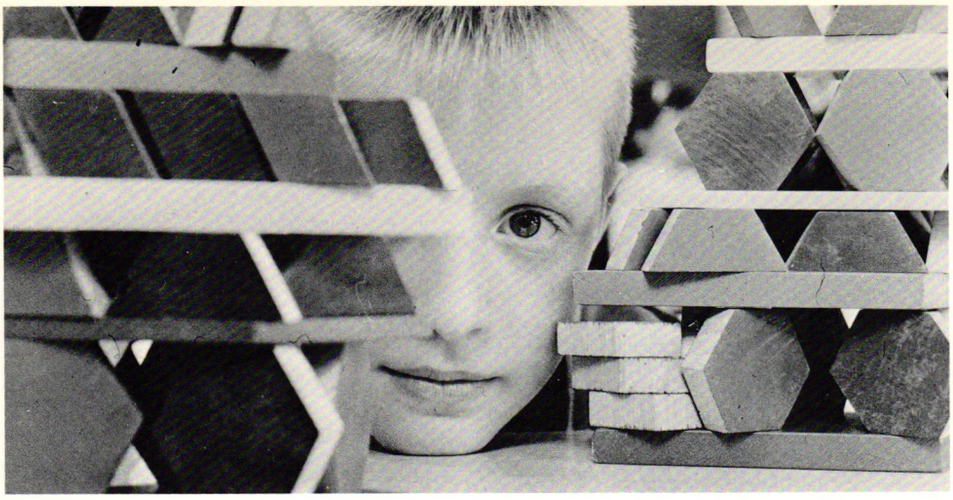
14. The absurd mannerisms of "Architecture" as the packaging of expendable Main Street media. (1965)

17

15. Street of housing in Manduria, Italy (1960). The walls of the street were first built to define the structure of the town. Behind the facades, party walls divide the lots. Within the walls, each tenant family could structure their own home with available resources. Similar indeterminate forms can be traced through the past in the history of architecture.

16. An abandoned car lot in the Congo as an instant bidonville. *A paneled truck was transformed into a bar, and a bus became a meeting hall.*

17. Housing in the abandoned car lot: The goodness of non-fit that does not limit possible utilization of artifacts.



18. The logic blocks of a "Citizen Architects".

user and define his needs. For example, the instruments of productivity may determine the actual utilization of artifacts, but not limit their possible utilization.

The design emphasis on the interaction of people and artifacts frees design from the self-imposed limitations of its commitment to buildings. Techniques such as "advocacy architecture" can mobilize the public in a dialogue with the designer. According to the role of the designer which is based on the rapport between an architect and a client, the anonymous client is given some semblance of his traditional form and content. A "real" client is brought into the studio and to the construction site, and he is asked to define his needs and life styles. This relationship still fixes the position of the designer as the intermediary between a user and his environment, and leaves the question open in regard to the traditional commitment of this working method, and to the participatory mechanisms whereby individual users can, if they wish, also organize their environment.

A possible translation of environmental artifacts into community equipment can be demonstrated in the design of educational facilities.[13] Education is changing from rigid schooling to the active participation of children and students in varying activities, in non-graded programs, and in self-instruction. Observations on a variety of school buildings that use these new methods of instruction show the learning activities transcend the buildings and furniture regardless of their planned use, and that flexibility in these facilities has to do with choice, involvement, and with participation.[14] This tendency can be seen in the current design of school buildings as open packages of space in which the "architecture" is stopped at the macro-shell of the building and the indeterminate interior is left void.

It is in this void where the "school" is really taking place. Here, a platform which a group of children assemble, and under which they do something together unseen by others, or on which they are in a position to be seen and heard by others, can be considered to be a learning device as a doll's house or logic blocks. With this idea for equipment, expendable artifacts intrinsically charged with information, identity, use, selective combination and mobility can be developed for a wide and permissive range of "school" accommodation. In engaging this equipment, the generating source of the design of the specific organization rests with the children and the teachers.[15] The macro-shell of this equipment can be many things, and at an urban scale these "schools" can be located anywhere in response to local requirements ("store-front schools", etc.).

Even though the design of a responsive environment does not depend on complex technology, this equipment may be further developed with electronic media, and extended to the programming of the urban artifacts themselves. In this way, educational facilities can be generated by students, and can generate students. And design sources are tapped at their origin in an ultimate commitment to the basic premises of the role of education in society.

If these recent changes in education are less of a question of some new enlightenment, and more of a response to the needs of technology and social change, it then follows that the pluralistic design of the artifacts tends towards a further liberation of both social and technological possibilities. The physical environment can be geared to set out mechanisms of self-organization not to liquidate authority (form), but to liquidate authoritarian structures (formalism) at a time when the existing methods and orientation of design are clearly inadequate to deal with the transformation of the physical environment.

9.
If the desire for change can be singled out as one of the motivating spirits of Modern Architecture, then not only is change now assumed to be commonplace, but it is also an Establishment issue, and the rhetoric of change tends to obscure the basic transformations which have or have not taken place.

Whether architecture will remain as the design of a few unique and one-off objects posited for the edification of a few ideal spectators, or whether it can further develop into the systematic design of the mass-produced physical matrix of society, all semblance of traditional form has disappeared. The collapse of traditional systems has been the axiom of vanguard architecture during the last fifty years. One difference may now be found in the realization that the transfer of technology does not transform old buildings into new kinds of buildings, but that the very material existence of built artifacts is transformed into service commodities in which the relevant social issues and time scale are critical to design. The form of the built environment is obviously a vehicle for cultural communication, and the difference between "structural" and "non-structural" change has also been recognized, but the context of transactions, whether instructional or metaphorical, has radically altered.

In the search for new design formulations, given this total dissolution of genres, rather than *"Une Architecture Autre"*, another basis for architecture as a conceptual system is emerging.

[13] These remarks are taken from a study published as "Learning Environments — Planning Beyond Flexibility"; *Architecture Canada*, March 1968, by Melvin Charney.

[14] For example, the description of a school by Joseph Featherstone in "Schools for Children"; *The New Republic*, New York, August 19th, 1967.

[15] In this example, the child, as some primitive "natural" being still consciously integrated into his physical surroundings, is not exploited in a romantic sense, but rather used in the social sense of finding design coherence in our alienation from our physical surroundings. We are all dispossessed.

Competition Entry
Canadian Pavilion — Osaka Expo '70

Melvin Charney & Harry Parnass, Architects in collaboration with Janos Baracs & Marcel Pageau, Engineers

Osaka is an industrialized, urbanized region that includes the ancient cities of Nara, Kyoto and Kobe. The region is recognized to be a megalopolis, the emerging form of urban settlement in our contemporary world.

Ancient Heiankyo (Kyoto of today) and Heijokyo (Nara of today) were organized on a square block plan based on a unit called a cho. The ancient Greek city of Miletus, and the old center of New Orleans were organized in a similar way using a square grid. This archetypal urban place making, common to both East and West, is used as the planning system of the pavilion. A square grid, an urban microcosm, sets out the basic service and circulation lines, and into this are placed varied exhibit spaces. As the new life style of megalopolis is creating a new architecture, the pavilion is treated as a multi-level prototype: terraced exhibits, clustered in the air, are lifted above the ground and the ground is returned to use as gardens, rest and activity areas.

The system of circulation controls direction of movement and distinguishes between the circuits of a fast trip through a series of observation platforms; a medium-length visit that affords an over-view of the exhibits from extended platforms; and a slow detailed visit. If a particular exhibit is found interesting, the visitor can change from one kind of trip to another.

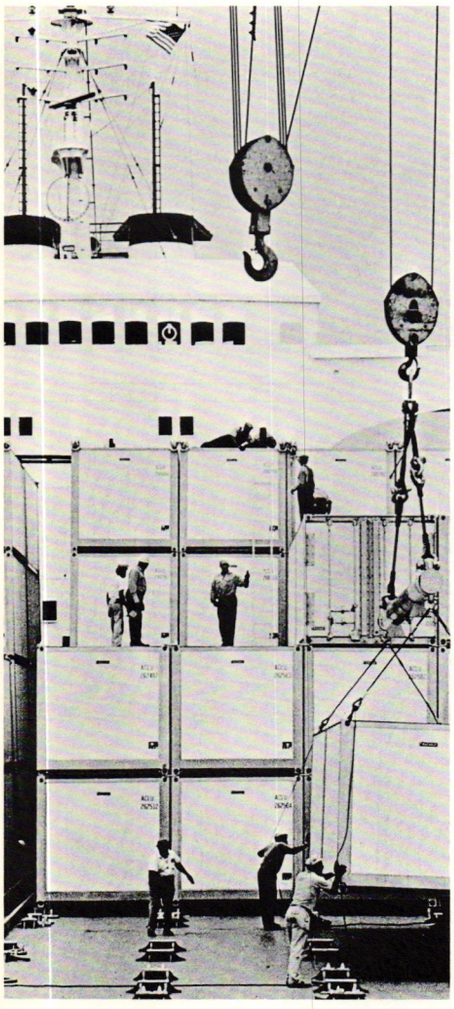
The design vocabulary of the pavilion uses the vocabulary of a construction process: steel masts, booms, cables and stressed-skin plywood panels. The equipment used to erect the building here becomes part of the building. Prefabricated, prewelded steel modules are bolted together on the site and post-tensioned. Booms suspended on cables support the roofs; these booms can be used in the assembly of the building, to place exhibits within it, and to demount it.

The equipment and the process of construction become the pavilion; the cranes used to build the building remain to support exhibit enclosures for the six months of the Expo, and can be used to reassemble the pavilion at several occasions during the show. They are used to install and clip on the exhibits which are designed as fold-out shipping containers (it was a program requirement to have the exhibit entirely fabricated in Canada). At the end of the show the cranes dismantle the exhibits and themselves, resulting in readily marketable construction equipment rather than second-hand building materials, permitting an unusually high salvage value for the pavilion.

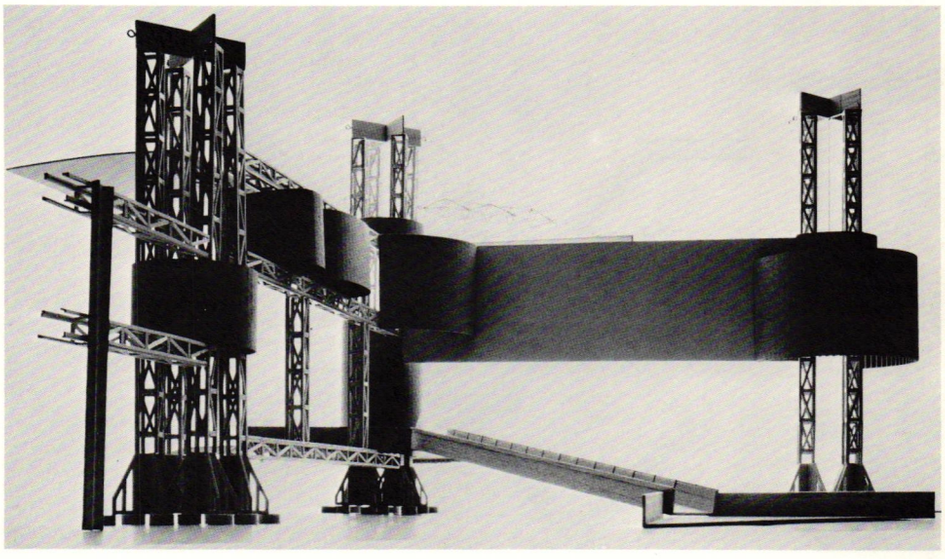
The swinging arms of the cranes, the cables and travelators, and the sight of people being distributed through various parts of this kinetic exhibit machine speak of the direct participation of people in the big show.

P.C.P.

1



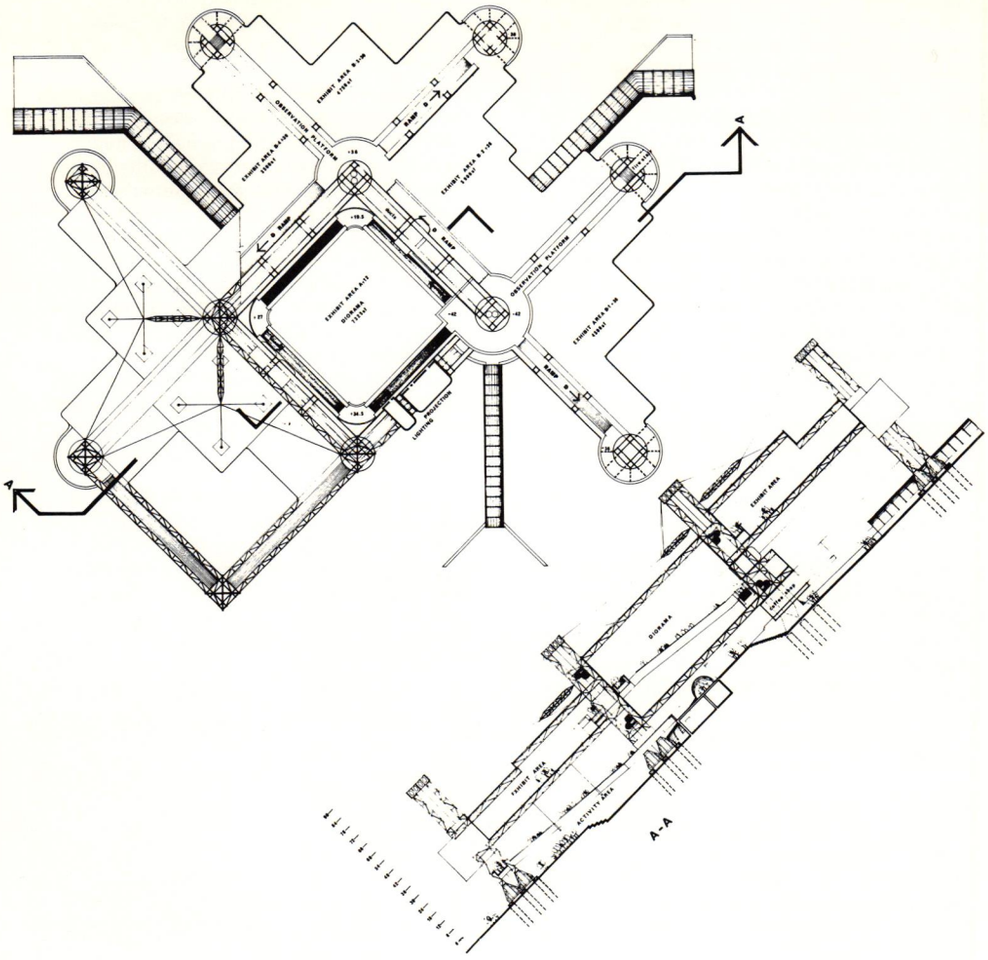
2



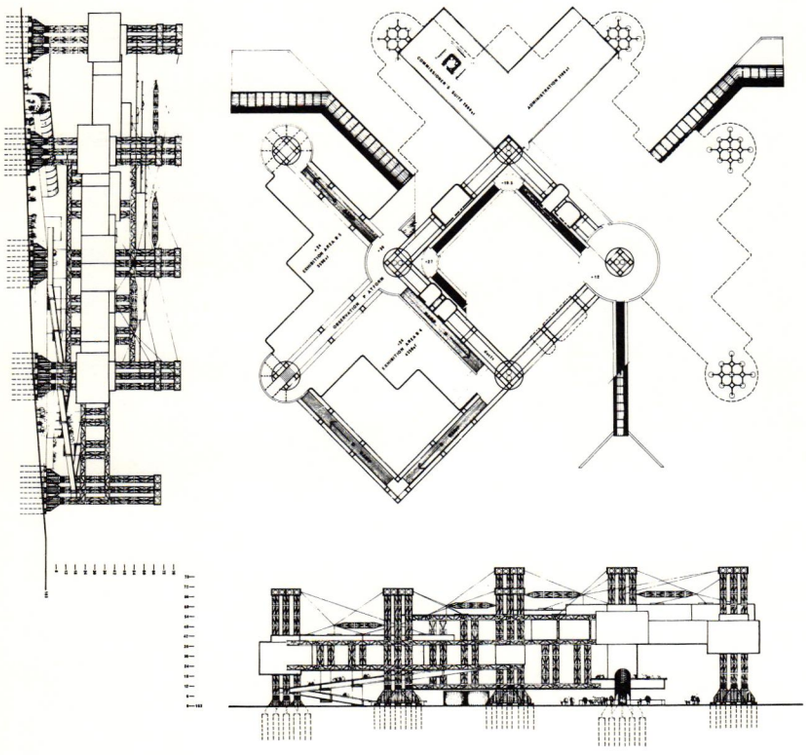
1. Dockside loading of a ship.

2. Model of proposed pavilion shows such features as self-erecting and demounting structure and welded steel modules.

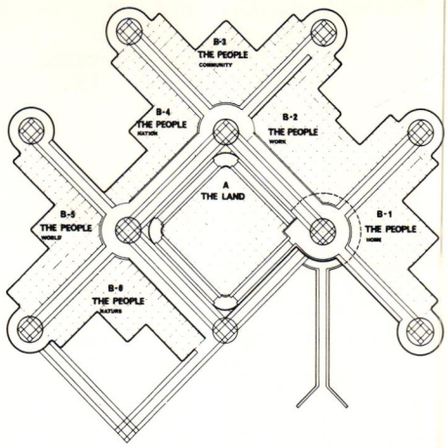
3. Upper level plan and section. Scale is in feet.



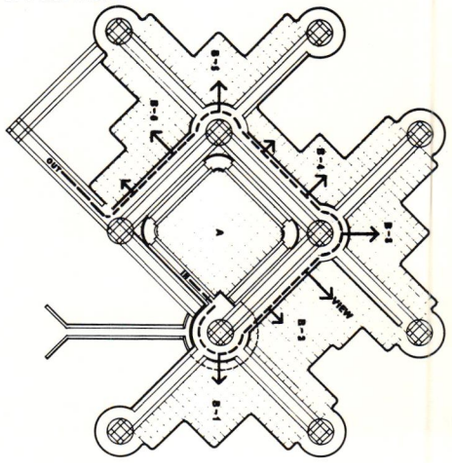
4. Lower level plan and elevations. Scale is in feet.



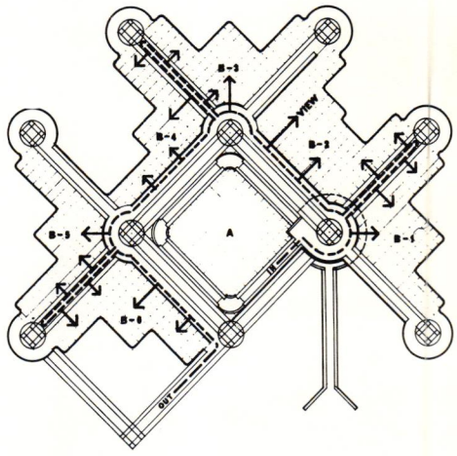
5. Exhibition organization.



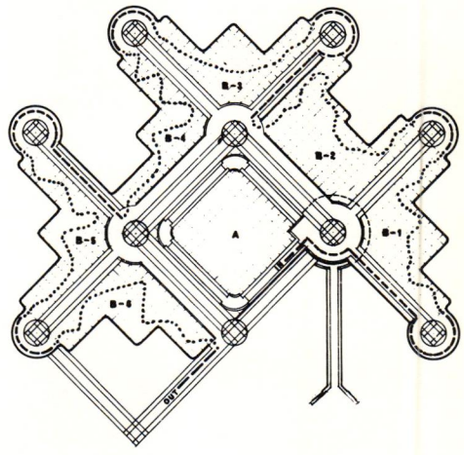
6. Fast visit.



7. Medium length visit.



8. Detailed visit.



Ecole Curé Grenier
Notre-Dame des Laurentides, Quebec

Melvin Charney, Architect
Janos Baracs, Engineer

The idea of "Intermediate Technology", as proposed by the economists E. M. Schumacher, Robert Theobald and others, affirms the need to introduce along with sophisticated levels of technology in regions undergoing change, the potential for the active participation of the people involved. This means the encouragement of conditions predisposed to learning and to the discovery of appropriate values.

The school was based on a design study prepared in the Fall of 1964 for the Ministry of Education as a demonstration of the kind of Kindergarten to Sixth Grade facilities that could emerge from a program that they prepared according to the recommendations of the *Parent Report*.

The traditional six grades of an elementary school were divided into three cycles of approximately 120 children. The age range of the children, an explanation of a varied mix of activities, and the roles of the teachers were given for each cycle. The school facilities common to the three cycles included a hall that could accommodate the whole school, a separate area that could be used by a cycle at a time for specialized activities, as well as the usual required secondary service areas. These facilities were all couched in appropriate multifunctional terms. The cyclic organization of the school, the hierarchic approach to internal spaces, and the desired engagement of children in varied activities offered a program for innovation. However, following this description fixed areas were attributed to fixed groups of children. This conversion of the program into classrooms was not only effected by dated concepts applied to new educational requirements, but also by the general lack of adequate techniques that can be used to translate environmental requirements into buildings.

The aim of this program was to generate change, and the circumstance of its implementation was clearly transitional. The facility that could satisfy the new program had to satisfy several immediate phases as well, and also go beyond the specified program because of the real possibility that change will engender further development. Since innovation was started well back from rigid, formalized classroom teaching the development of more permissive teaching methods could be readily foreseen.

Transitional flexibility is here interpreted not only as the condition of the physical environment of a school that allows for some degree of building conversion, but also as the quality of the environment to generate change and encourage new teaching methods in a time of rapidly changing educational objectives, the intention being to suggest these new methods by the organization of the school, as well as by the possibilities of plan alteration. This suggested a framework related to foreseeable long-term organization of the school, with an infill that could be modified at different stages. The school district itself is in an economically disfavoured area, a region of sprawling villages that are no longer viable farm communities located too far from a nearby urban center to have experienced as yet the influx of suburban affluence. In order to optimize on construction costs, and using an industry that is hardly industrialized, local trades and local conditions had to be accounted for, especially in the details of the building and choice of materials. Because of the low budget, and the fact that this study was restricted to an individual, isolated school, technical innovation or the use of sophisticated, mobile division systems were limited.

In the spirit of *intermediate technology,* the implementation of this school both as a place of learning and as a building became an exercise in "documentary" architecture – "as is" conditions used in a "what could be" situation.

P.C.P.

1

2

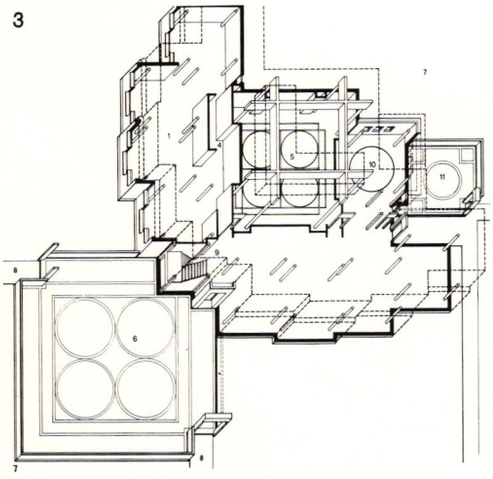
1. Classroom interior.

2. View of school from playground.

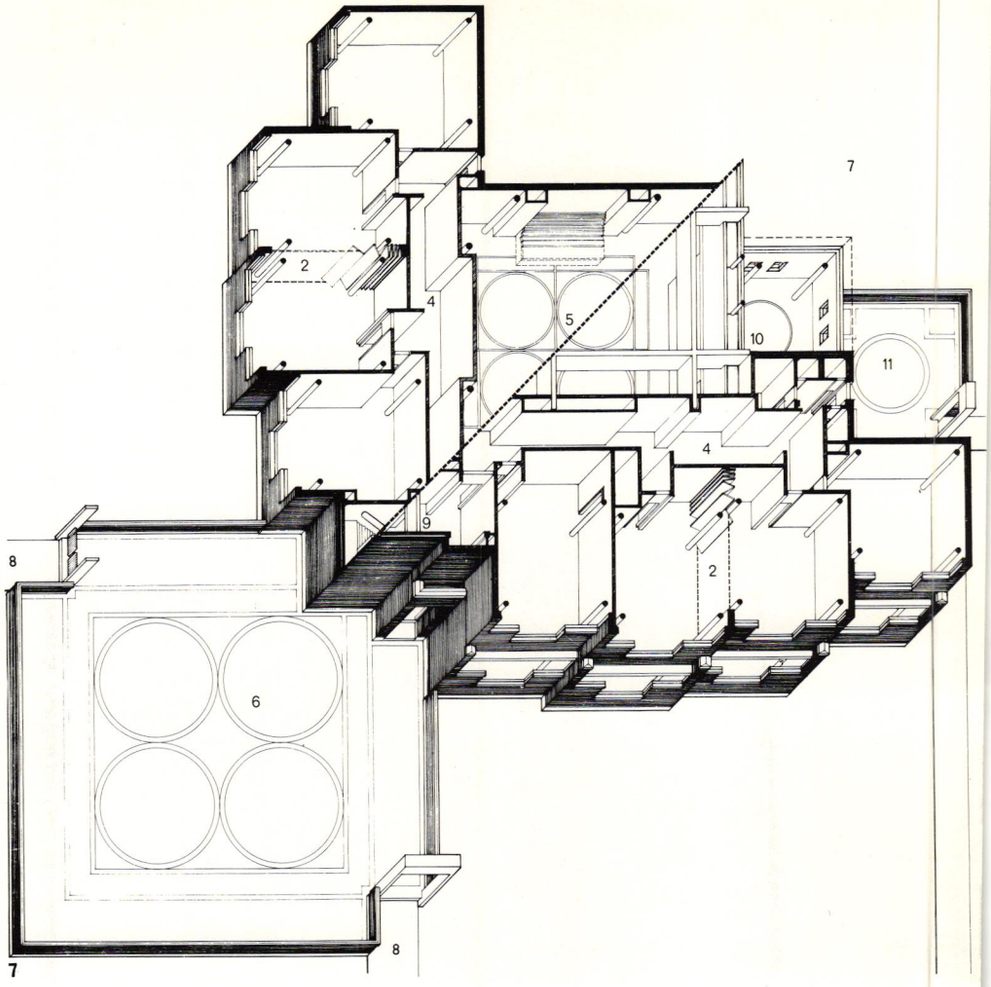
Legend

1. Typical open cycle.
2. Typical divided cycle.
3. Typical classrooms.
4. Coat and storage area within each cycle.
5. Interior hall for the whole school; clerestory, peripheral lighting.
6. Exterior "hall" for the whole school; partially walled-in.
7. Playground.
8. Main access paths.
9. Circulation node.
10. Interior kindergarten.
11. Exterior kindergarten.
12. Multi-use area.
13. Administration.
14. Library.

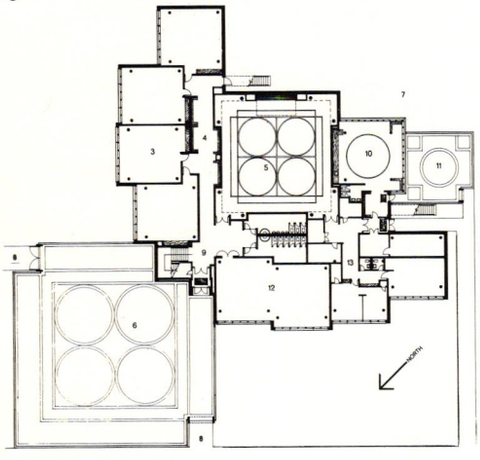
3



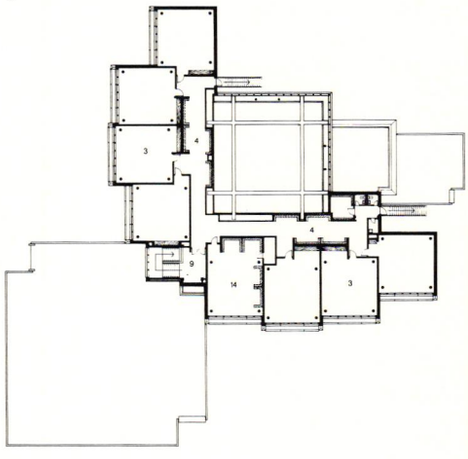
4



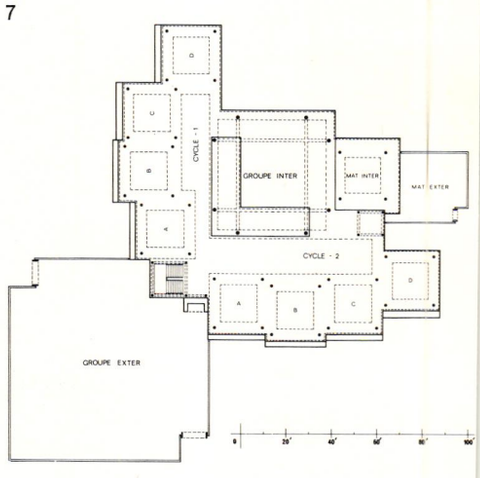
5



6



7



3. Isometric Diagram of Design Intentions:
The school organized into cycles with each cycle accommodating an identifiable group of 120 children in an open, informal, non-graded learning environment. Within each cycle, columns and corners articulate sub-areas for varied group activities.

4. Isometric of Grade and Upper Levels of Proposed School:
School as proposed to the school board with the division of each cycle according to original program requirements. Each cycle is divided into one area for 60 children, and two areas for 30 children. A folding partition is used to divide the cycle into 4 equal "classrooms" as specified by the school board.

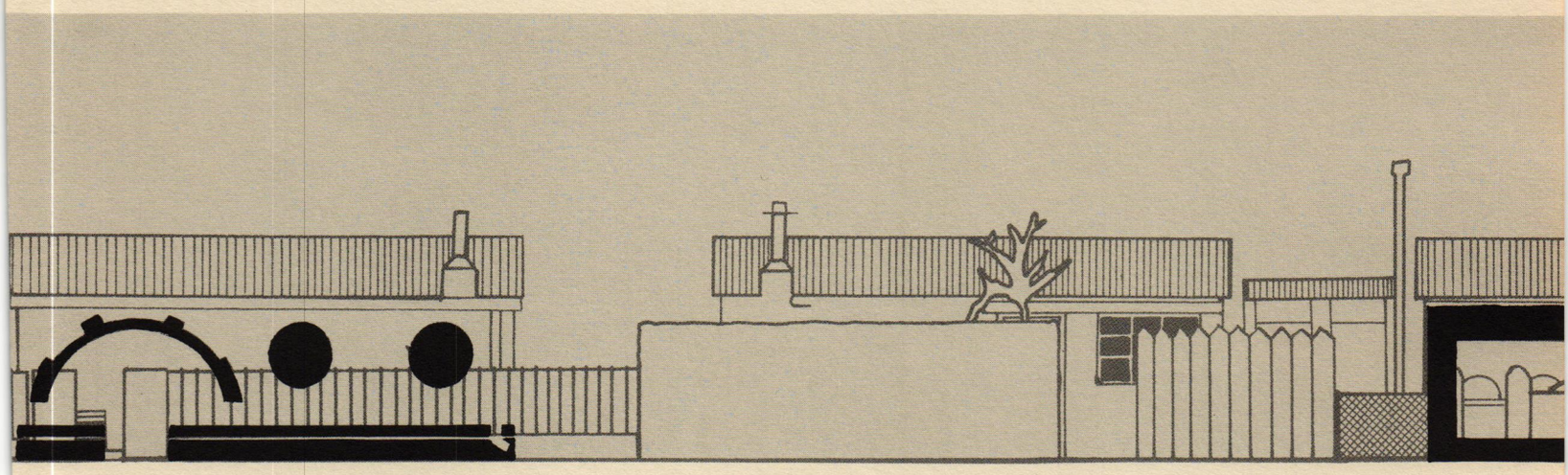
5. Grade Level Plan of School.

6. Upper Level Plan of School.
School plan as built; classrooms clustered in groups of four along a corridor. Each cycle is divided by concrete block walls into distinct classrooms.

7. Plan Diagram of Structure.
Diagram showing the relationship between the configuration of structural columns and beams and the primary spaces of the school. In each cycle, the structure is disengaged from the interior divisions.

Julian Beinart

The Environmental Game and Taking Part



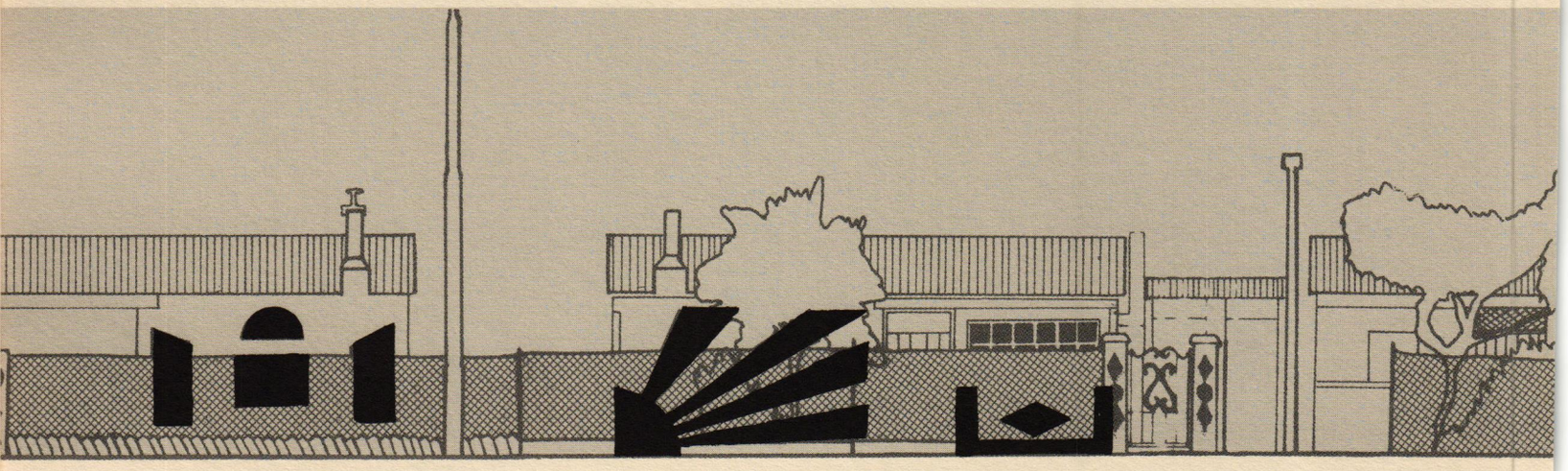
Mr. Beinart is a practicing architect as well as Head of the Department of Urban and Regional Planning and Dean, Faculty of Fine Art and Architecture, at the University of Cape Town, South Africa. He is presently working on two books dealing with the architecture of participation and experimental design teaching in emerging cultural situations.

Drive through a residential suburb : the road is in the public domain designed by professionals; the houses are private, here and there one by an architect, most by spec builders, a few by the owners themselves. Who builds the gardens, plants the trees, chooses the letterboxes, paints the shutters; and who makes the insides to the outsides that are made by the pro's, the pseudo and the non-pro's? This is the house that Jack built. Who is Jack and what part did he build?

Or put another way. Who sponsors physical change in cities and what agencies do they use? Measurement is difficult but by and large, in our kinds of cities, the bigger and more complex the unit the greater the degree of public sponsorship and the more significant the agency of the professional. But always the role of the non-professional is fundamental and pervasive : subtle perhaps in developed communities, more palpable and extrovert in simpler communities.

The drawings and photograph in this article are of modest houses in such a simple community, Western Native Township, for forty years an African ghetto five miles from the centre of Johannesburg. The notes are from observations of the extraordinary way in which this community of fifteen thousand people took part in the making of their surroundings.

A comment on the lessons to be learnt from what simple people do. They are easy to romanticise; they can be taken too literally and they are too simple perhaps to have much meaning for our kinds of cities. But maybe folk art does precede fine art (as the Venturis suggest), and maybe it is important whether Levittowners paint their walls or not. And the urban world of Jane Jacobs isn't the only one. We are building thousands of simple communities all over three quarters of the world and for these people taking part in the environment game isn't a choice between Cape Cod or ranch style : it can be the difference between a house fit to live in or mere shelter. And if you think hard enough about it, it can be the difference between a house or no house at all.



Decoration is a primordial form of participation, sometimes a solution to everyday problems, sometimes rising from an inscrutable substratum of magic, religion and aesthetics. It is a way of achieving identity in faceless surroundings, an ordinary response to dullness. All the houses given to the inhabitants of this township were identical: to accomplish individuality each had to be made different enough to be recognised. Being different can be the way in which you orient outsiders to a particular place amongst two thousand identical places. It can also be a way of expressing personal particularities: wealth, status, territory, faith, even political affiliation. But how unique does each have to be? Study the decorations and you notice how strongly all are related, how each is a special combination chosen from a limited catalogue of elementary shapes. By limiting the degree of your differentness and agreeing (perhaps by copying from them) to the conventions of your neighbours, you are participating in a social process the physical expression of which are the walls of your community. This is the balance between the single and the collective, the frame of reference, the unseen hand.

One way of classifying the decorations is according to the basic shape family from which each has been developed. There is a constant shift from one shape family to another: the circle and rectangle, for instance, overlap to produce a new variety, this new variety in turn joins with another and so the language is built up. Decorations generally exist only as such shapes and colours (plus whatever obscure symbolic meaning they might have) but at times the same shapes are used to make recognisable objects: the razor blade made of a rectangle and three circles, for example, or the tree of life (outside a prayer house) or the lucky horse (outside a gambling saloon).

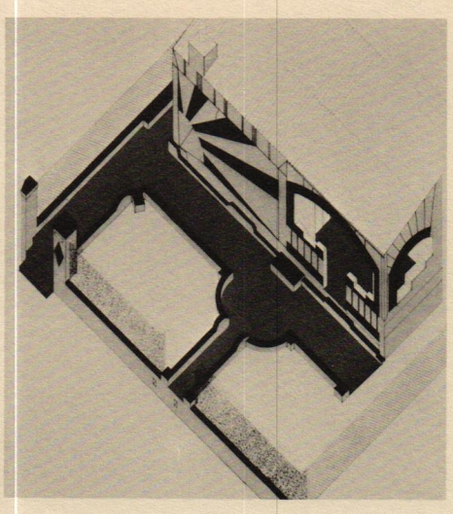
The derivation of these decorations is difficult to determine. There is always the ambiguous possibility that on the one hand they may have to do with an uncertain rural past, on the other with an obvious urban present. A sun is both an ancient heliocentric symbol and what appears on "Sunbeam" floor polish tins and wrought iron suburban gates. But this is what one would have expected from people recently urbanised : the remembering of the things of the past and the copying of the new things of the present. And cities maximise such emulation. One group copies from another and in so doing reshapes the original to suit its own needs. It often completely misinterprets it. One of the WNT decorations is the result of a tenant misreading a photograph which she saw in an architectural magazine which her husband had stolen. She thought the sky part of the picture was the building and what she put on her house was the reverse of what the photograph had intended. But the business of borrowing doesn't seem to end there : we're all borrowing from each other all the time. Her decoration (and those of her neighbours) were recorded in an architectural magazine from which it was copied as a painting for an exhibition house in New York. The process : American architectural magazine → African house → American architectural magazine → American painting.

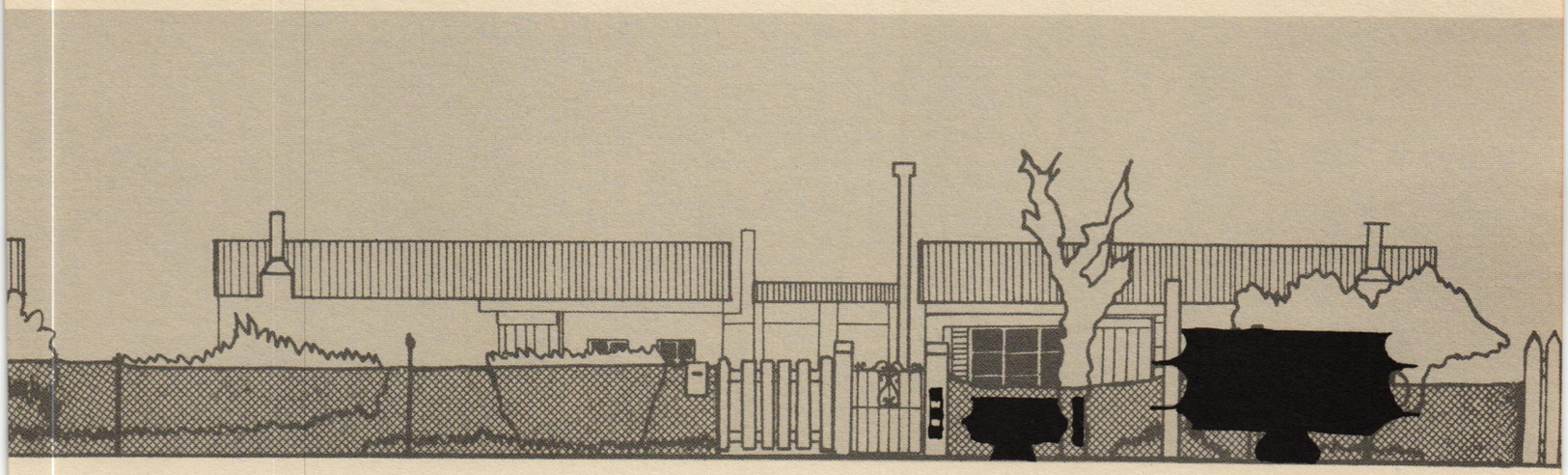
The WNT brand of participation is seldom planned, deliberate or self-conscious. It is a spontaneous act; a gesture born of naiveté which becomes a marvel of sophistication. This is the power of the popular, the double take both unrehearsed and composed, improvised and yet complete. Look at the axonometric projection of house No. 1506 : in one context the semi-circles and 45-degree angles are new floor polish, in another the evocation of Kahnian formulae. Isn't the extention of a facade around corners and onto the floor both something obvious and also what we achieve when we have learned a great deal?

But this is a special form of participation because these were particular people : Africans poised between a tribal past and a future which was soon to absorb them into the culture of the "superior" community into which they were shifting. For the first twenty years of the township's life, houses were decorated with mud and cowdung murals as if they were still tribal huts. It was only when their past had become blurred (but a new way of doing things not yet completely understood) that the second generation produced the plaster and wall paint decorations in these photographs. Moved out of WNT to new townships further out of the city, the same people (or their children) have been reluctant to decorate. Now their energy (like the white man's) is spent inside the house on paintings, furniture, carpets and crucifixes. The effects of participation have moved inside, away from the street, communicating only to those invited in.

There is another situation where the burden is too great for any taking part, where there isn't energy to improve and survival itself is the priority. Here the single effort is heroic, a gesture of absolute defiance and indestructibility, the scribble on the gas chamber wall.

To many WNT was such a slum and yet it wasn't. Seven people in a house of two rooms, incomes of a few dollars a month, and yet





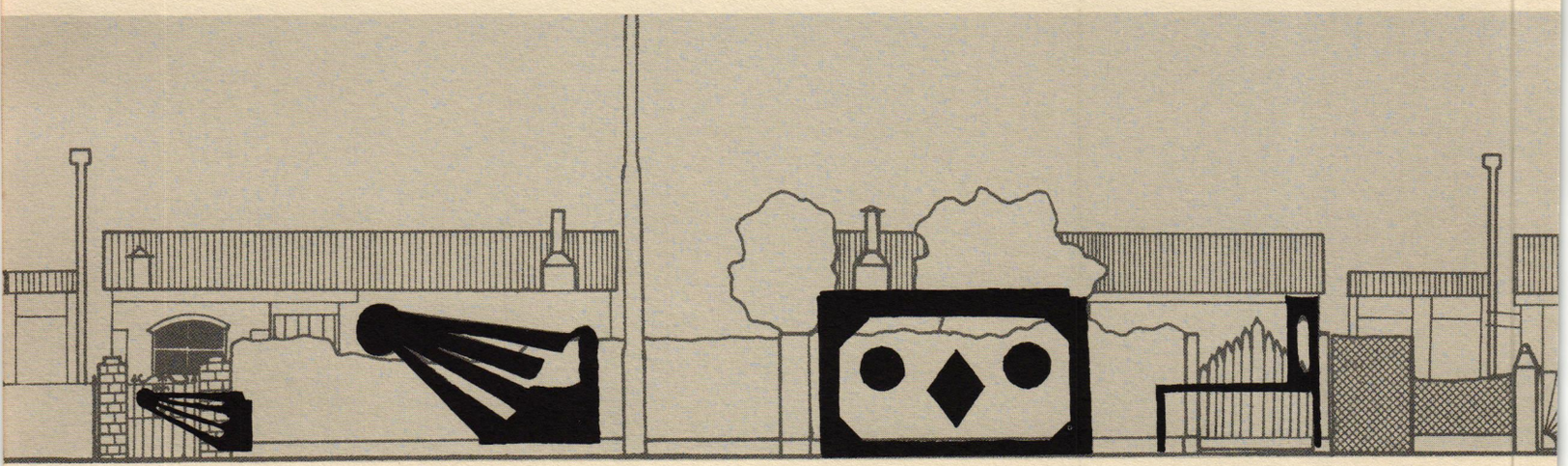
people found resources for participation. The reason was in the place as much as the people. It was close to the centre of the city and where people worked. Spending little time and money on travel meant more leisure time and equipment. It was part of a dense urban fabric with a wide variety of shopping, entertainment and other facilities close by. It was small enough to be walked across. People enjoyed living there and there were enough outside pressures to help them identify their common good and take steps to maintain it. An infrastructure of leaders and pace setters set goals to which others responded. Before there was proper drainage a woman's organisation was formed to prevent dirty water from being thrown into the street. An elected advisory board was powerful enough to get concessions from the city authority so that WNT residents felt themselves a particularly privileged group. They called their place "Thulandisvile" or "OK I heard you" meaning that the city heard them when they asked. The situation bred new leaders who in turn set new standards. The pace-maker who put the first circle on his house was playing the same role as the scoutmaster who organised the first boy scouts or the political leader who called the first meeting of the African National Congress.

In an extraordinary way this kind of participation is both an optimistic assertion in the face of a repressive system and a documentation of the frustration which such a system brings about. When there is no possibility of getting out, when power is exhausted, energies are compressed into the creation of mythology. Then imagination is the only substitute. The decorations on these houses are such fantasies, the personal images of imagined white men's houses in faraway suburbia.

The nature of the object itself determines whether people can or will involve themselves with it. The fact that the houses given to the people were so unfinished : no plaster, no floors, no ceiling, no fences, no gardens, often meant that they *had* to do something to improve the house. And improvement meant the addition of space as well as materials as the house became too small. The original house had an open porch facing the street and the act of enclosing it necessarily involved the tenant in the problem of reorganising the facade. Often his sense of symmetry could only be satisfied by a complete recomposition of the wall.

Other characteristics of the house which affected participation were its size : small enough not to be too daunting and large enough to have impact. The fact that only a small gap (9 feet) was left between houses meant that one tenant could hardly be unaffected by his neighbour's actions and the street becomes less of a series of houses than one continuous facade with a double wall : the wall of the decorations and the wall which demarcates the edge between private and public.

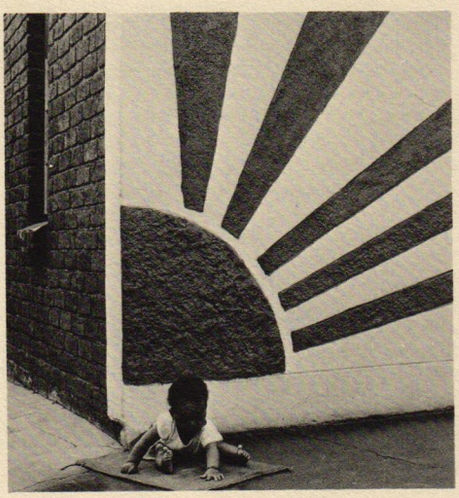
The designer's problem is that of establishing the degree of extension necessary after the object is taken into use. He must be able to realise the capacity of the user to participate in the life cycle of the object and design into the object this participation. Perhaps in most cases all he can do is negative : without knowing what could happen he at least does not prevent anything from happening. But if he is obsessed with the creation of a perfect or ideal artifact he can hardly expect to be pleased when someone changes it. If however his objective is less to produce art than perhaps to stimulate life he may welcome



growth even if it means the destruction of the object. And if people destroy his objects but in so doing learn important lessons it may well be his social task to design objects which are well designed simply because they can be well destroyed.

There is no urban environment without the participation of ordinary people and there is no aspect of urban design less understood. The non-professional has to modify, often destroy, what the professional has created. To make it viable he has to subvert master plans, decompose formalism and complicate dull and simplistic orders. The professional has a one-night-stand affair with the object he makes : the non-professional lives with it, has to make it fit, to cope with it as it decays, to change it as he changes.

There will be urban design only when the professional understands the nature of permissiveness, guidance and process; when here today gone tomorrow is always and the making of place is also the making of taking part.



Frances Piven

Advocacy as a Strategy of Political Management

Dr. Piven has written frequently on the plight of the urban poor in The Nation, The New Republic *and other journals. A consultant to the Ford Foundation, National Welfare Rights Movement, ARCH, OEO, and Mobilization for Youth, she is at present an Assistant Professor at the School of Social Work, Columbia University. This article was written in March, 1968.*

In the last few years the idea of a new kind of professional practice, advocacy for the poor, has taken hold in several professions. The term originates, of course, in the legal profession, and it is there that the new advocacy has thus far been most vigorous. The older legal-defense organizations have begun to take test cases challenging the regulations and practices of agencies serving the poor, and new organizations have sprung up to offer free legal services. Social workers are also active, stationing themselves in slum storefronts to attract a "walk-in" clientele, acting as their advocates by badgering the public agencies for services. And recently planners and architects have begun offering services to the local groups affected by neighborhood redevelopment proposals.

Were the professional proponents of advocacy required to account for this new practice, lawyers would probably trace their inspiration to Jacobus Tenbroeck and Charles Reich, two legal scholars who worked to expose the legal injustices perpetrated on the poor by the agencies of the welfare state. Social workers would see their advocacy as a reaction against the "mental hygiene movement" which had come to dominate social agencies, orienting practitioners toward a psychiatrically based therapy and toward the middle-class clientele who were amenable to that form of therapy. And planners and architects would say that their advocacy reflected the growing unease in their professions at the devastations visited on the uprooted poor by a decade and a half of urban redevelopment.

There are many variants of the advocacy idea, but two elements are essential to it: professional services should be made available to the poor, and these services should be so structured as to assure that professionals are responsive to the interests of the poor. In other words, it is not so much that professionals have been strangers to the slum; rather, it is that those professionals who do work with slum people and slum problems are under hire by — and therefore responsive to — public and private agencies which represent interests other than those of the poor. There is, of course, a dilemma in this ideal, for if professional services are in the end responsive to whoever supports them, where can the poor find the money to pay their advocates? The dilemma, however, has to do with the ideal of advocacy and not with the realities of advocate practice.

No doubt the early volunteer advocates were stirred by the civil-rights movement, and troubled by the growing concentration of black poverty in the cities. But volunteer efforts were scattershot and unimportant. Advocacy has become a popular idea, and may even become a widespread form of professional practice, because opportunities for "advocate" practice have been created by the array of federal programs for the inner city launched during the 60's. First social workers and lawyers were hired by federally funded projects in delinquency, mental health, education, and poverty. And now advocate planning is also likely to become both popular and feasible as a result of funds provided by the model-cities program. In our enthusiasm for the idea, we have tended to see these advocates as independent because they are independent from local government, ignoring the federal dollars which support them and the federal interests they serve.

The new federal programs can be understood as a national Democratic strategy for dealing with political troubles in the cities, troubles which are the result of demographic trends. In the reorganization of the Democratic Party in the New Deal, a coalition was developed which included the big cities and the rural south. In the three decades since, people and wealth have been concentrating in urban areas, shifting the base of Democratic Party resources to the cities. But the cities have not only become more important, they have also changed drastically in composition. Millions of blacks, driven off the land by the mechanization of agriculture, are clustering in the central cores, while middle-class whites have been rapidly leaving for the suburban ring.

The political impact of these population shifts on the traditionally Democratic big cities first became apparent during the 1950's. A rapidly enlarging ghetto population threatened the neighborhood preserves, schools, and jobs of the remaining working-class whites. The resulting tensions between racial groups strained local party coalitions, which were in any case already weakened by the fact of a rapidly changing constituency. In their struggle to retain local control in the face of these weaknesses, mayors were beginning to ignore national Democratic candidates, especially so controversial a candidate as Stevenson. Equally dangerous from the point of view of the national party, the mayors, when forced to adjudicate between hostile groups, were far more responsive to the white constituencies to whom they had traditionally been tied than to the growing numbers of voters in the ghetto. But these ghetto voters were turning out to be very important in national Democratic contests, and very volatile as well.

The new Democratic administration which took office in 1960 was keenly alert to the key role of the black vote and to the party's political troubles in the cities. The Kennedy victory had been made possible by the return of the black vote to the Democratic columns after widespread defections to Eisenhower. Accordingly, Administration analysts began to explore new programs for the cities that would cement the allegiance of the urban black vote to the national party, and also stimulate the local Democratic organizations to be more responsive to the new voters. What followed were a series of federal programs, all directed to the "inner city" and all described as "community development." However worthy the social goals attributed to these programs, and whatever one thinks of their actual social benefits, they also can all be said to have been fitted to the purposes of the Democratic Administration in healing the political troubles in the cities.

Thus, despite the presumably different social problems which these various programs addressed, they were remarkably similar. Under the broad umbrella of "comprehensive community development," each provided a battery of services not unlike the old-time political club. At least as important, each called for some form of resident participation, to be promoted by federal funds under federal guidelines. These stated goals can be understood as efforts to facilitate the integration of the new migrants into the political structure of the city by offering them various forms of patronage — to be distributed by the local "leaders" whom the projects selected and cultivated. To facilitate these purposes, the projects brought a variety of professionals to the ghetto, many of whom were called advocates.

It should not be surprising that the federal strategy often aroused the opposition of local government, for no political reorganization, even that imposed from above, is likely to go forward entirely smoothly. Thus the Youth Development Projects initiated in 1961 under anti-delinquency legislation suffered a startling mortality in executive personnel as a result of local opposition, and in the end only a few of these projects survived. The outraged reactions of mayors and local bureaucrats who felt threatened by federally fomented "maximum participation of the poor" are widely known, as is the strategic withdrawal of the Administration. If the federal government blundered in promoting a poverty strategy that excited so much opposition, the model-cities program appears to be much more tactically designed, for it funnels federal benefits for the ghetto through city government, assuring local politicians a cut of the action.

To describe this broad process is still not to answer the question of whether the poor have benefitted from professional advocacy, or, rather, whether the poor have gained from federal efforts to integrate them into local and national politics. Over-all, it is difficult to dismiss the new services which have resulted. Social workers who pry loose delayed welfare checks, or harass housing inspectors into taking action, are in a small way easing life for the deprived, as are lawyers who prevent an eviction or defend a youngster from harassment by the police. To argue that these small advances have diverted the black poor from making greater demands is to set a dubious possibility against a gain that is real, however limited. Furthermore, any review of history would suggest that small material advances, by raising the expectations of the oppressed, actually spur them to greater demands. (In this sense, the federal strategy for the cities, and especially the poverty program, may have inadvertently contributed to a growing discontent and turbulence in the ghetto.)

But whatever may be said for the tangible accomplishments of social workers and lawyers stationed in the ghettoes, the same cannot be said for planning advocates. Planners do not help individuals, and they offer no direct service or benefits. Rather, they work with groups, and what they offer is their skill in the planning process. The object, planning advocates would say, is to overcome the vast discrepancy in capability between neighborhood groups and the city bureaucracies with which they must contend. But that discrepancy is not easily overcome, and surely not by the lone advocate working with a community discussion group.

Implicit in planning advocacy is the recognition that planning decisions determine who gets what in the city, and so are also *political* decisions. But the inevitable result of involving local groups in elaborate planning procedures is to guide them into a narrowly limited form of political participation for which they are ill equipped. What is set out for the poor is a strategy of political action which, to be effective, requires stable organization, professional staff, and money — precisely those resources which the poor do not have.

Not only are low-income groups handicapped when the planning process is defined as the arena of political participation, but they are diverted from other forms of political action. Ghetto leaders are coaxed off the streets and away from the trouble that they might make there, to be involved in rites and mysteries which are overwhelming and prestigious (absorbing them often even while action for their neighborhood is going forward). They are invited to sit at the conference table, there to puzzle vainly over charts and maps. In effect, those few leaders selected as the local "planning committee" are drawn away from their base in the community and involved in a lengthy educational program, the end product of which, if all goes well, may be a neighborhood plan. But that plan once produced is easily stalled by the city, or negotiated beyond recognition, or accepted only to be undermined in implementation. In the meantime, involvement in the local "planning process" has diverted and confused the community, and surely has not moved it toward effective political mobilization.

Although the language may be new, this kind of advocacy harks back to a long tradition of work with neighborhood councils in the slums, through which local residents were encouraged to "participate" in the elaborations of parliamentary procedure as if that were the path of political influence for the very poor. In the past these forms of participation absorbed slum leadership and rendered them ineffective. And that may well be the chief result of planning advocacy.

For all the talk of their powerlessness, the newly urbanized black poor did prompt federal action for the cities. Their growing voting numbers, and the racial conflicts they provoked, made political trouble for local and national leaders and so exacted some response in new programs for the ghetto. But tied to the limited benefits of these programs are new guidelines for participation, which will work to mute the political force of urban blacks. Ghetto leaders will be absorbed in elaborate procedures which not only disable them but also turn them away from mobilizing the growing black numbers for direct political action, including the disruptive action which has always been the main recourse of the very poor.

In an article in the December 1967 ASPO *Newsletter,* Roger Starr attacked planning advocates for promoting an adversary procedure which, by intensifying conflict between groups in the city, will lead to the defeat of action for the "ultimate city." Indeed, by sharpening conflict, advocacy may even hold the danger of despotism. But advocacy does nothing of the sort. Rather, it allays and deflects conflict by preoccupying newcomers to city politics with procedures which pose little threat to entrenched interests. It is a strategy which thus works to promote political stability in the city, but does little to promote equity.

Last year, Planners for Equal Opportunity, a group devoted to advocacy, accused the American Institute of Planners of negligence and confronted them with a series of resolutions, the chief point of which was that massive federal programs should be directed to aid the poor, and the planning profession should endorse and promote advocacy. The AIP received these resolutions in a spirit of liberality, and the PEO group proclaimed a victory. But the AIP's receptivity cannot be understood as a willingness to recant past "sins" merely out of a new professional concern. Rather, the AIP is showing its readiness to adapt professional cant to new federal strategies, just as in the past it adapted to other federal strategies — which, after all, is what the accusations of negligence were about.

Harry Quintana
and Charles Jones

Black Commune in Focus

Harry J. Quintana was born in San Juan, Puerto Rico and raised on welfare checks in Harlem. He is presently co-founding director of both 2MJQ, a Black Environmentalists' Research Corporation in Washington, D.C. and the Urban Planning Studio of the East Harlem Real Great Society. He is taking a leave of absence from the Department of Architecture & Planning at Howard University to be a candidate for the Masters of Architecture and the Masters of Urban Studies at Yale.

Charles Jones is a member of the Class of 1969, Department of Architecture, Howard University.

According to the design sequence curriculum in the Department of Architecture at Howard University, the two semesters of the fourth year of design are devoted to site planning. In the fall semester the program from one of the three critics for the two semesters requires that the given site be studied for the designing of a maximum number of housing units and the amenities that such housing will generate, i.e., commercial, educational, social, etc. The site was the present 72 acre site of the National Bureau of Standards in the upper Connecticut Avenue section of Northwest Washington. The neighbourhood is white. To the North and West of the site is low density housing. To the South of it is medium density high rise. East of the site across Connecticut Avenue exists mainly high rise office buildings with a commercial center, the dominant and most recent one being Van Ness Center. The program asked that the students consider the fact that the new rapid transit system scheduled for completion by the mid-1970's is intended to have a major stop at Van Ness Center. Presently Van Ness Street is an east-west thoroughfare splitting the site in two almost equal parts. The topography arises in height by 75 feet east to west, such variations being drastically pronounced on the south side of the site.

The critic's students broke either into groups or individuals, whichever was preferable for the students, and the project was a semester long.

Being of colonial mentality, conceding that the white man knew all about planning, we proceeded to follow whitey's rules for planning. We read all the famous books on the topic. Something was wrong, but we couldn't figure it out. Finally we did. The books were written by whites for the designing of White America, and they conceded either all niggers belong in vertical concentration camps called Public Housing Projects, or whites can let them in a little at a time into their sterile sprawling suburbia. We threw away all those stupid racist books and looked out of the window of our studio, located in the Black inner city of Washington, and asked ourselves – what's wrong with our people's environment? The answer is simple – it was not designed for us and for our life style, and we are not in control of it.

The control of the environment is the most crucial need of any people. It is not enough to have a job, a school to attend, a place to shop, a welfare check or food stamps. A people with cultural integrity must be able to control their environment. What good is a job in which you are ill used, misused, abused or under-used? What good is a school in which you are taught nothing about your cultural heritage, taught that you have no valuable heritage, taught that another cultural heritage is the one to accept and lastly taught by persons who think of you as pitiful inferiors and leave the community in a hurry as soon as 3 p.m. comes? What good is it to shop where you are at the

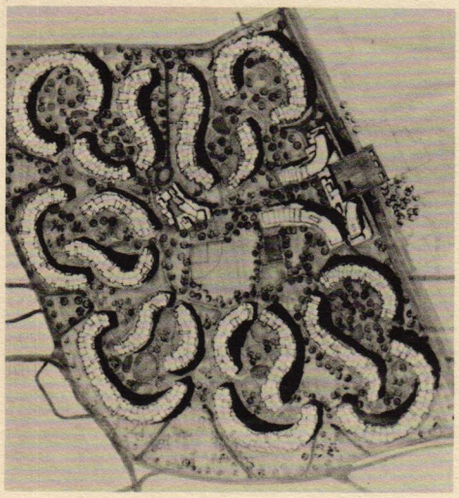
economic mercy of persons who come to exploit you, take the money out of your community and who never invest in your community's economic development?

We don't care if an individual is a racist and we don't feel we have to go out of the way to rid him of racism. All that we want is that when a child gets called a nigger, spick, wetback, or redskin by a racist downtown, he doesn't have to come back to a community in which the institutions call him the same. Unfortunately in our community presently the child gets called that by the school system, the church, the police, the merchants, the television, the everything, including the architecture.

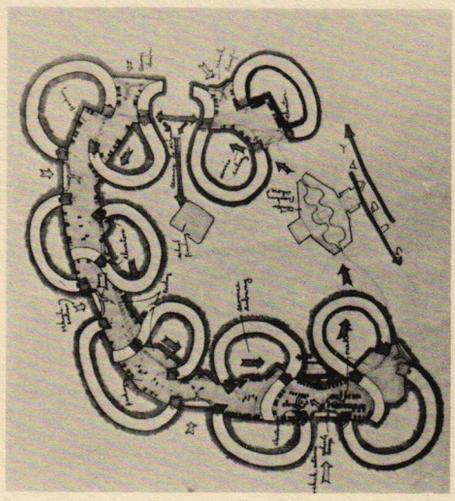
Second question we asked: Who has a housing problem in this country? – the poor. The middle class doesn't have a real housing problem – they just have prejudices. Since this site is in an urban setting – who are the urban poor? – the Black people, most of whom are recent arrivals from rural areas. What is their social structure like? The basic unit is the extended family unit. The essence of our design lies in the fact that we consider communal living as the basic ingredient in our concept. Communities in Africa, have always been communal in essence. Communal communities cannot be analysed according to present planning procedures and standards. Their density is dynamic, not static. Their spatial needs have four dimensions: depth, breadth, height, and time. Our basic living units are able to expand and contract according to the way a family expands and contracts. Black people don't send their elders to live in some "old people's home". First of all, it's not in their nature to do something as inhuman as that and, secondly, they don't have the money to do it like white people do. Families are so located that a family unit with the highest possibility of contraction can be situated adjacent to a family unit with equal possibility of expansion; since dwelling units mainly expand and contract according to the bedroom units required and possibly toilets.

One D.U. may no longer have a need for a bedroom. The adjacent D.U. may have a need for another bedroom. Thus the bedroom is sealed off from the former unit and a new opening makes it accessible to the latter unit. Internally you can begin to visualize the variations of space. For a time the normal access to your apartment was up four floors, turn left and walk for a number of yards until you got there. Now things would change – you go up two flights, turn left, walk to another elevator, go up two floors, turn left and there you are. Your space changes as your need changes. Who knows – you might run into a very interesting person by being on the second floor, or a sweet thing in need of friendship. The interaction of the sharing of spaces, experience and experiencing different spatial sequences lead to the kind of communal sharing that our original ancestors experienced in their tribal setting.

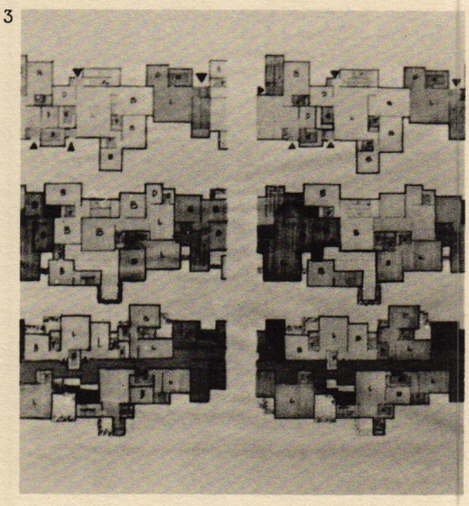
1



2



3



1. Site plan.

2. Service diagram.

3. Multi-use units.

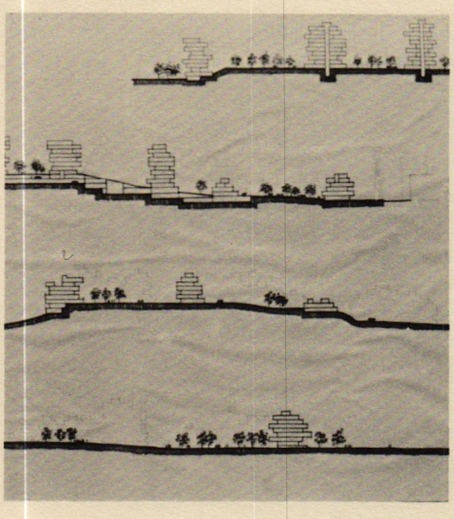
4. Section through site.

5. Model of project.

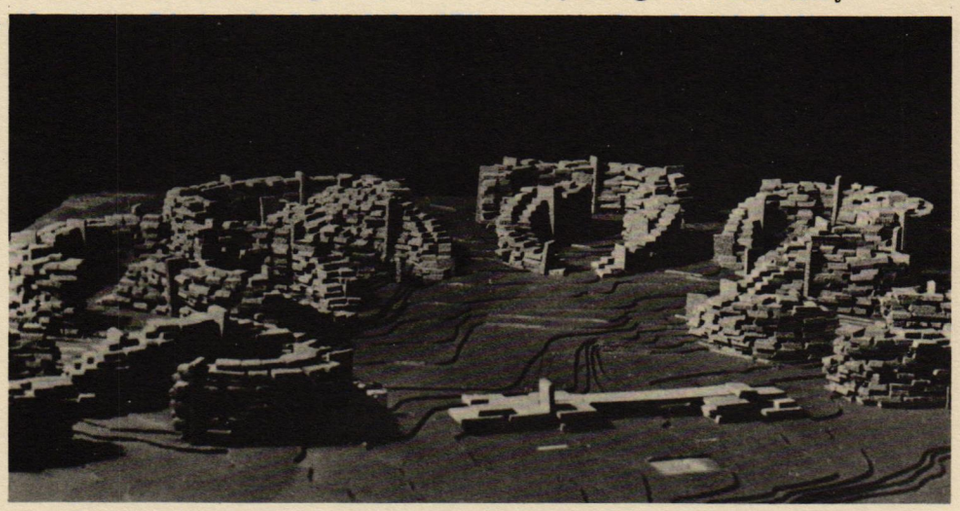
Four kitchens facing an internal commons is what mothers need in order to function in the kitchen and allow their brood to play with neighbour's brood, specifically for those children who bear watching. At the same time, she may leave them out of sight with ease of mind if she knows that three other women are watching the children.

The buildings themselves form enclosure patterns which tend to give large spatial logic to the argument of communalism embracing all

4



5



members of the community. We attempted to maintain a pattern of density which would change from low at the lowest levels to very high at the extreme top. This will not necessarily be the pattern of density all the time. This is why the land use map we had to make is one of the worst aspects of the graphics hangup of planners. Some of them can't see beyond their drawings. Our problem is in depicting a dynamic land use graphically which we solved verbally, not graphically.

This leads us to examine the state of planning graphics. Today, the typical gradients of yellow for residential, blue for institutional, red for commercial and so forth, is something we feel is irrelevant. For instance, we were asked – where were the churches? Churches are everywhere and anywhere the people wish to have them. Blacks have had store-front churches all through their history. This doesn't mean that they couldn't necessarily have a common type building for their churches. It simply meant that when a minister had a message he could deliver it anywhere he could set up shop. In an urban setting, it was a store front.

The buildings don't have the beautiful architectural aesthetics of the modern architecture we are forced to accept in school. Aesthetics is not something that could only be manifested by some esoteric architect. Aesthetics comes out of the life style of a culture created by everyone. Before the white man came to Africa, there was no art. They did everything as best they could. With the white man came art, artists, art museums, art critics and all those terrible examples of a culture which tries to analyse or control life instead of just simply living life. Which, I think, is the fundamental difference between the white race and the dark races. We Blacks simply live life and don't try to master it or explain it.

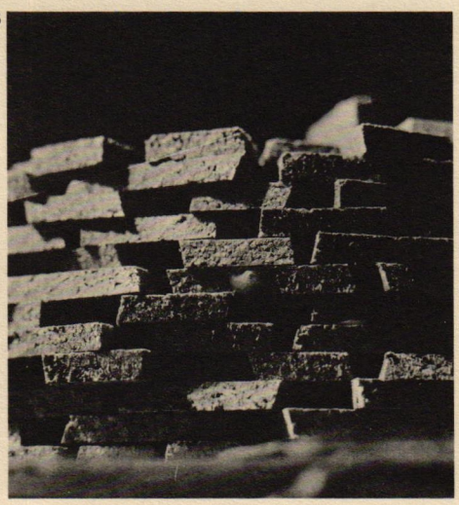
The building can be built of reinforced concrete. One thing that Black People have is a labor force. The Community would build the buildings themselves. Thus the land and the structures would be owned by the community. In Africa no one man in the village owned the land, everyone owned the land. The land could be acquired under the present Urban Renewal legislation even at a minus written down so that Black People could have money to develop it.

All parking is underground since urban land is too precious to be turned over to the automobile. That means that all the land is available for sole human use.

Emergency vehicles are the only ones allowed on the land. Not even police cruisers would patrol the land since Black People are capable of policing their own neighbourhood. The school has no parking for any teachers. They would live there, if they intend to teach there.

The common educational problem in our community is the average student has to react to a set of educational stimulants completely in contrast to each other. From 9 a.m. to 3 p.m. he is under a middle-class philosophy;

6



from 3 p.m. to 12 midnight he is under the influence of the BLOCK, and from midnight till morning he has to be party to family conflicts; a family who is kept constantly oppressed by the system.

The project begins by assuming 10,000 inhabitants which may decrease or increase from time to time. There are no designated play areas. You play or recreate in the area where you feel it and when you feel it. There are water holes in every compound. Water holes replace community centers as the central spot where everyone gathers to meet and socialize and outwardly emanate with their social life. In America the sculptured fountain or the bourgeousie community center has replaced the water hole. In this water hole people will swim, lounge around the shore, stroll or do anything which one feels around water. Water is the basis of all life. Black people like to dance to express themselves. They are a warm, humanistic, sensuous race, filled with the natural joy of life.

It is common practice for the faculty at Howard University to invite guest critics (mostly whites) to come in and help judge the fourth year problems since the problems deal mainly with urban development. These guest critics really come to see how these little monkeys perform. Since the faculty felt fit to invite all these irrelevant people to watch us perform, we decided to invite a person who we felt would be more relevant to the judging of whether or not we had designed a true urban community in light of the realities of present urban America. All the Uncle Toms in the faculty and the racist whites were shaken when Stokeley Carmichael sat among them. Before appearing on the jury, Stokeley had expressed apprehension at being asked to give critical comment at an architectural jury. The point that we told Stokeley is that in order to discuss or be able to judge urban planning efforts all you have to know how to do, is to be relevant to the communities' needs. We explained that urban planning is nothing but urban politics. Stokeley was able to fit right into our general trend of thought once we had made our presentation. The point that we made to the whole jury is that first of all Black People have been fooled to think that only people with high-falutin degrees from Ivy League Schools can do planning. As far as Blacks are concerned those are the people that are the cause of their present planning dilemma.

Secondly, if we really examined planners and architects for what they are, which is essentially environmentalists, then we can say what has always been our contention, i.e., that anyone is an environmentalist and can be critical of the environment.

Just briefly we wish to mention a few authors and their books that have influenced our thinking: Malcolm X, Marshall McLuhan, Robert Venturi and his book "Complexity and Contradiction in Architecture", and Robert Ardrey's books "African Genesis" and "The Territorial Imperative".

7

6. Detail of disposition of dwelling units.

7. Stokeley Carmichael, left, at the jury.

Richard Hatch

Planning for Change
Towards Neighborhood Design and Urban Politics in the Public Schools

As founding Director of ARCH, the Architects' Renewal Committee in Harlem, Mr. Hatch was involved in early efforts at advocate planning. Presently principal of his own firm, he is also a Visiting Lecturer in City Planning at Yale.

All lovely architecture was designed for cities in cloudless air; . . . cities built that men might live happily in them . . . But our cities [are] cities in which the streets are not the avenues for the passing and procession of happy people, but the drains for the discharge of a tormented mob, in which the only object in reaching any spot is to be transferred to another; in which existence becomes mere transition, and every creature is only one atom in a drift of human dust and current of interchanging particles, circulating here by tunnels underground, and there by tubes in the air, for a city, or cities, such as this no architecture is possible — nay, no desire of it is possible to their inhabitants.

John Ruskin, Lecture to the Royal Institute of British Architects, 1865.

This is the age, even more than his own, that Ruskin prophetically described in 1865. One hundred years later in the United States nearly seventy per cent of our population lives in or near such cities. Four million urban families occupy "dwellings of such disrepair as to violate decent housing standards," according to the President's recent housing message. One quarter of our urban population lives in poverty; the rest lives in fear. Our neighborhoods are marked by a paucity of open space, staggering unemployment rates, inadequate schools, squalor, increasing crime and a pervasive sense of individual powerlessness.

In 1831, Alexis de Tocqueville found American townships in New England "so constituted as to excite the warmest of human affections." We must return the cities to their people — and eliminate poverty and white racism. In so doing, we may create a desire for architecture where none now exists.

During the past few years the government has created a vast array of benefit programs designed to ameliorate the present critical situation. With the exception of the most sophisticated, city residents now look upon these programs with either open skepticism or fear. Communities, ignored in the initial planning, have learned to build effective organizations to resist outside-directed efforts. It is becoming apparent that planning, urban renewal and social-service activities cannot be carried out at the scale necessary to rebuild our cities without the effective participation of a knowledgeable citizenry. Without the active support of those who most desperately need assistance, the level of public renewal and welfare efforts will remain unequal to the task — and the task is nothing less than the creation of a humane environment from the chaos of our cities.

The scale and intensity of the violent outbursts in many cities in the summer of 1967 leaves no doubt that the minority poor have lost faith in the willingness of white America to deal purposefully with the issues of race and poverty. The very institutions which have sustained the poor have come under sharp attack alongside the slumlord and the exploitative merchant. The urban school, the traditional vehicle for socialization and advancement is now accused of fostering "genocide" and has become the focus of the ghetto community's anger born of frustration and discrimination.

Planning and programming for community development require social and technical skills which are not now taught in our schools. Yet such knowledge is increasingly important to adult performance in an urban world. A school curriculum which deals directly with the development issues central to our urban neighborhoods can go a long way toward reestablishing the relevance of the school in the community. The practice of these skills is also important to the child for it requires the careful analysis of social indicators, the understanding of rights and responsibilities and the process of government and because it requires the child to evaluate alternate future states and to determine how they may be achieved.

Developing the planning curriculum

In the summer of 1965, during my tenure as Executive Director of the Architects' Renewal Committee in Harlem (ARCH), a group of graduate students were hired to prepare reports on the history and condition of the Harlem area and its inhabitants. ARCH had been created some months earlier to provide free professional services to organizations of the poor in Harlem which were attempting to deal with the complexities and dangers of urban renewal and federal housing programs. Community education was a major thrust of our work and the summer's program produced widely circulated manuals on tenant action, welfare action, housing program procedures and similar matters of urgent concern in the ghetto.

In the course of their work the students unearthed a good deal of graphic material which, it occurred to me, would make a fascinating social studies unit in the public schools. With the half-hearted support of the Board of Education, I developed and taught a brief course on the past and future of Harlem in two seventh grade classrooms. The classroom discussion ranged from the first Negro real estate agent's success to Malcolm X's vision to the design of African cities to strategies in dealing with slumlords. After Christmas vacation, when the experiment ended, 60 out of 62 of the students signed a petition to continue. When the principal insisted that the children return to their study of New York State history instead, they started appearing in our office on Lenox Avenue to watch us at the drawing board or to listen as we discussed our planning work. The excitement the program had generated convinced me that the idea was worth pursuing.

During the spring of 1966, with the strong support of the Center for Urban Education, New York's Title IV Regional Laboratory, and its Director, Sociologist Robert Dentler, a refined program was developed and arrangements made with the Board of

Education for installation in nine ghetto schools. Curriculum planning began with the assumption that the satisfactions of the middle-class professional derives in large part from his ability to comprehend and manipulate his environment, to demand a response from our semi-monolithic contemporary institutions and to determine the course of his own life, and that the apathy of the poor reflects a *real* inability to understand and cope with a social and political framework of power which consciously excludes them and denigrates their cultural patterns. No mobility, no learning, and no long-term gratification is possible to the child who sees his entire immediate society powerless to affect the decline of his community and the style and scale of our political institutions make direct participation increasingly difficult.

Clearly, very specific social and technical skills are required in order to play an effective role in the present decision-making processes. With these things in mind, we set out to develop a curriculum in the social sciences which would, by making children expert in their own environment, knowledgeable of the neighborhood power structure and familiar with the men and processes of government, strengthen their self-images and prepare them for active political roles as adults. To do this, a curriculum must be realistic – it must deal directly with the conflict in our society and must support the chid in his first engagements with it. It must involve him in evaluating the role of the groups and agencies competing for power in his milieu and direct his attention to *critical* struggles from which he can derive a functional understanding of political power.

Staff assigned to the project developed detailed information on the history of Harlem, Bedford-Stuyvesant and Mott Haven and made contact with the numerous local citizen groups with which the children and teachers would be working on projects in their neighborhoods. A student handbook was also produced. Called *Planning for Change*, it contained survey forms for the investigation of neighborhood housing and services, information on public agency responsibilities and case studies of successful community action projects.

In my mind the course was intended to achieve five objectives:

1. an awareness that the environment is the creation of man, is the result of decisions which can be located and understood, and can be changed by individual and group action.

2. to enable the student to see himself as an actor, rather than a passive recipient in education and life, and a participant in community process.

3. to open new areas of choice by making students aware of both practical and utopian alternatives.

4. to make school relevant to life in the community, hence increasing the child's willingness to learn.

5. to increase the knowledge and sensitivity of teachers to the special problems and strengths of minority group children.

Action was and is the key. Teachers were encouraged to let children take the lead in determining what should be studied within the neighborhood and what should be done about it. Teachers were encouraged to adopt the posture of good community organizers: not to do things which students could do, but to help the students do things for themselves. Recorded comments from participating teachers are revealing:

Well, I think it has vastly improved the student-teacher relationship in my classroom, for two reasons: the students are pleased to see my participation, they know much more than I do; they also like my vulnerability. I can't be a steady, impenetrable institution in the class when we set goals together and cooperate.

At the beginning of the year when I said to the kids that we may eventually become involved in solving some problems, they went down the list of problems that they felt were worthy of being solved – air pollution, the war in Vietnam, general poverty in the country. When I said, "what about here – what about something in the school that should be changed?" They said, "you can't change the school; how can we do anything about the school?" It was so close that it loomed so large, that they were willing to take on the whole world. They've reviewed this thought and they have now reached the realistic point: "Maybe we can begin to attack here"; In effect, we can start; we can follow it for years; we can become aware and involved now – but we're going to start with something close – not in the clouds.

Another teacher who has my class happened to mention that she was having trouble getting her apartment painted; she was having problems with her landlord. This was immediately seized upon by my class and they came up with very concrete proposals. They brought in the book, You and Your Landlord, *and told her that she could demand certain things. They really gave her the steps to follow.*

There are all sorts of names for our community – a community within a community within a community. The students named all the possibilities, except one. They didn't say "This is part of Harlem." To me this was very obviously and clearly left out; so the next question was "Would you say you lived in Harlem?" which was followed by "Is Harlem a place? Is Harlem an idea? What is Harlem like?" A lot of the kids' own prejudices, feelings and ideas toward Harlem really started coming out in my class. With that one question posed in a variety of different ways, we discussed it for 2 or 3 weeks.

Students' comments are even *more* interesting:

Right now, we divided the class into 3 committees [housing, consumer problems and welfare]. I'm on the housing committee. We're interviewing people from rent-controlled buildings. There are lots of different violations in the old houses. We're going to hand out the [Rent and Rehabilitation Administration] form, AI, to help them lower their rents.

If you don't have a group you can't do nothing in the community, because people aren't interested. Well, I think that the people are *interested, but you know, they just say "let the other fellow do it." And everybody keeps on saying, "let the other fellow do it." And nothing gets done. They're waiting for one person to make the first move. And I think that if a person just gets up enough courage – one person or a couple of people in the neighborhood – they keep on talking about it and go around to the other people. Then they could get a group to get something done.*

Well, I think the City or the State, they should plant some trees and try at least to fix it up. Clean up the place and try to clean up the bums that hang around here [a park]. If people wouldn't pressure, the City or State wouldn't do nothing. Well, they should form groups and sign petitions and say "what type of park is this?" It's supposed to be a beautiful city, like on post cards – all fancied up.

Although the children in the program were only twelve and thirteen years old, they were able to accomplish a great deal. Brooklyn students organized their parents and neighborhood into permanent block associations and wrote and distributed their own English-Spanish handbook called *Tenant Power.* Two enterprising students in Upper Harlem became and remain full-fledged members of the official, local planning board. Other Harlem students undertook a consumer education program involving extensive price surveys and newsletters. Still others, working with volunteer landscape architects, architects and planners, produced proposals for neighborhood housing and recreation facilities. At least one – a small park – appears about to be realized.

Building on the experience of the eighth grade program, we have just completed a more extensive curriculum designed for the fourth and fifth grades throughout the city. The ages of the children using the new material dictates a more restricted action orientation. We have greatly expanded the time given to the study of utopian solutions to our urban problems, drawing heavily on Le Corbusier, Frank Lloyd Wright and the Goodmans' *Communitas.* Greater attention is also given to ethnic, racial and neighborhood history. But the idea of action remains. The report of one teacher tells why:

After going out on several surveys, comparing neighborhoods and housing one of the students said to me, "You know, a man looked at me and said 'you're too young to be doing this.' " And the student said, "but we're doing it and we're learning something. The realization that I'm here and I don't have to hide from it, I can do something with it, and in it, and to it – make it better for myself and others."

Pat Goeters

The Patrician Hangup

Formerly a privately practicing architect, Pat Goeters has been involved in various projects directly concerned with architecture and planning work such as the Chicago Committee on Urban Opportunity, the L.K.L.P. Community Action Agency (Whitesburg, Kentucky) and the Newark Area Planning Association. He has taught architecture at the University of Houston, Notre Dame, Rice, Kentucky, and is currently Associate Professor with joint appointment in Architecture and City Planning at Yale. This article was written in February, 1968.

I Am, in a Sense, an Architect

My education has had two major components. One part the teacher and I shared, in that both of us admitted to and understood it; which concentration and mutual excitement or other factors accelerated. For example when the teacher and I took up our positions in a classroom and he said he was going to teach me about structural design, and I took (in part) an attitude that I was going to learn structural design, there was probably some exchange of information (education) about structural design. In ordinary language: I learned some structural design. It would really be more accurate to say that what he *taught* was *his* version of structural design, and what I *learned* was *my* version of structural design. This component might be referred to as the *substantive* part of the educational transaction.

But my concern here is for another component. This part might be called brainwashing but a less emotional and more clinical name might be the *habituative* part of education.

In the classic classroom, with the students lined up in columns and rows, and the teacher in front making profound incantations, in addition to the substance of the lecture the student "learns" an attitude toward authority. He probably also learns the importance of getting to the front of the room if he wants to be heard. In many schools today the subject of study is subordinated to the discipline associated with sitting quietly, listening to, and otherwise respecting authority. Well, if Edwardian Authoritarianism is your bag, good luck!

While most professional[1] discussion is aimed at the substantive part of education perhaps the greatest impact on the student is in the area of habituating experience. Thinking back to courses in Greek and Roman history I remember little of the *what* I learned, but the *how* is indelible; and today I question the value of having learned to sit in columns and rows. There should be open examination of the habituative as well as the substantive parts of education, not because it's more important but because it's been so long ignored.

While the Bauhaus approach to architectural education was quite different from the Beaux Arts approach in the substantive component, in the habituative component they were often the same. In this paper I am concerned about habituation in the relation between architect and client. Most architectural schools in this country have professional programs varying in length from four to six years. During that period it is usual to have students take at least four years of design studio. These courses are not only the most frequent but are usually taken for large amounts of credit hours with tacit understanding by the whole faculty that these design studios are dominantly important. There are manifold differences in the style, content, name and other attributes of these studios, but these elements tend to be constant: work is done in the *studio* format, policed by a *critic* and evaluated by a *jury*.

Studio: The studio usually has to do with the design[2] of some object, building, environment (spatial, social, auditory, whatever). The studio is usually limited to architectural students working alone at drafting tables. They are either given or work up for themselves a paper document, usually called a program, which purports to represent what a client might want in a building.

Critic: The studio is conducted by one or more critics. Given some starting instructions, the student begins working at something he thinks appropriate, and shortly the critic (an architect) arrives at his elbow, and (if he is an enlightened sort of critic) first asks what the student is about, and then proceeds to counsel the student on what he should be doing instead.

Jury: The jury is also subject to great local variation, but is typical on several counts. It is usually dominated by architects who give short examination of a project put before them, verbally evaluate the project in front of the students, and often grade the student's work.

At this point what you have is the ingredients of a first class *patrician* attitude. This studio-critic-jury syndrome *tends* to habituate the student toward:

isolated and proprietary decision-making

decisions based on cult-values: values shared among architects, often almost exclusively

treatment of client which alternates between numerical data orientation and evasive competition.

[1] I find "professional" a pejorative term, indicating a self-protective clannishness rather than a valuable skill or talent.

[2] Some would argue that the word "design" is obsolete; that "problem-solving" or some other term is a better description of what this central activity should be. I couldn't care less.

In terms of habituation the student "learns" that the substance of the studio is the most important thing about architecture. This is reinforced by the emphasis given it in the architectural press but begins with the proportion of his educational time it consumes. Not only is it given top priority, but *how* it is done becomes habit. The student learns to work without direct contact with the client or user and to have his work criticized and judged without recourse, by arbitrary standards (not presented as arbitrary).

My belief is that all judgments are arbitrary in that they are expressions of value sets that are not universal or eternal but expressions of personal or group habituation. Therefore I place little value on professional consensus, particularly since the easiest thing to get consensus on is the unexamined habituative part of our behavior.

The substitute given the student for the architect-client relationship is the printed program at one end and the critic/jury at the other.[3] The impression left is that the most important things to the client can be easily verbalized, quantified and are not in conflict with the architect's interests. On the other hand the often hostile confrontation with jury or critic tends to develop in the student strategies of communication which are largely calculating, defensive, evasive, self-protective and low risk. (They are especially low risk esthetically.)

Most educated laymen have greater range of imagination about architecture than most architects. The architect's range is often more limited in direct proportion to the length and quality of his education. Because architectural esthetic habituation is a process of consolidation rather than opening up new enquiries, the more and better education the more limited or narrow his art is likely to be. Fritz Steele has spoken of "architects, whose training always seems to push in the direction of thinking for one's self, a self-image of individuality, even though many architectural schools, while expounding these values, seem to produce a strong push to conformity."[4]

A good amount of energy since school has been spent peeling off, like the leaves of an artichoke, the habits I picked up *during* my substantive educational experience. As Robert E. Lee Prewitt said in *From Here to Eternity,* "If a man don't do his own way he ain't nothin'!" Professional indoctrination tends to keep me from going my own way. Well, some cats just swing like that.

The student is not given the opportunity to treat design as an open issue. Design is usually done and presented in an atmosphere charged with competition, suspicion, hostility. Even when the teacher and the student try to be open the system conspires against them. I am not a determinist. I do not believe that habits you build up over time *determine* the way you behave, but they do establish a momentum which requires energy to bend or modify. Further, when these habits are ritualized (when experience is consistent, shared, long term and unquestioned), that momentum is greater and less bendable.

It has been remarked that the half-life of professional education is five years; for the substantive part of architecture this may be true, but the life of the habituative part tends toward infinity.

[3]See "Interpersonal Aspects of the Architect-Client Relationship", F.I. Steele, *Progressive Architecture,* March 1968, for an outline of the professional and his client.

[4]*Ibid.*

It is not surprising from this perspective to watch a redevelopment or planning official review data on a neighborhood, arrive at a decision as to what is best for that group, and then plot carefully to have his plan of action implemented in spite of opposition by either the administration or the neighborhood.

One constant in a decade of being involved with architectural education is the anomie of the new student at the seeming arbitrariness of critic or jury judgments about architecture. Another constant is the same student at the end of his educational experience defending vehemently the same mystic arbitrariness that at first so puzzled him. But I sense a new kind of movement beginning, most strong among those who believe in the civil rights movement and are moved to hate the Viet Nam war. For many the self-protecting clan of professional superiority reflected in the "Establishment" of architectural education is now identified as monstrous.

While the Patrician Is Up Tight . . .

There have been profound changes in the physical aspect of our cities, but more importantly in the attitudes of the citizens who both inhabit and respond to these changes. While cities are burning, the teaching of both architecture and city planning has remained relatively monolithic. The amount and quality of educational anachronism in these fields is of tragic dimensions.

In times of crisis, the Patrician freezes; grasping the status quo firmly and hanging on for dear life. At a time when change is most needed it is hardest to come by.

The following is presented not as *the* answer to this challenge but as an example of one alternative approach to teaching in the twilight area between Architecture and City Planning. I am not suggesting it as a model to be copied, but am calling for experimental approaches at least as dissimilar from the conventional studio format. I am in this paper concerned with the impacted parts of the architect-client relationship and have chosen a client group that the professional has largely ignored anyway. I describe hereinafter an alternate habituative approach to the client-professional relationship built in the classic studio. In our studio teacher and students relate to each other as equals, work in teams, represent many disciplines, get out of the studio, meet their client face to face and there is no critic or jury.

The Newark Advocate Team at Yale in the last year has included students from architecture, law, city planning, urban studies, administrative science, public health, political science, and economics. It is a studio/seminar offered jointly by the Architecture and City Planning Departments. In its first semester it was instrumental in preparing and filing administrative complaints with HUD and HEW in Washington and the Department of Community Affairs of the State of New Jersey. The complaint was made in behalf of a number of residents of a 150 acre area, which had a 1960 population of about 20,000 people. The area was at that time scheduled for demolition and future development as the site for a new Medical School (the New Jersey College of Medicine and Dentistry). This project is still active and while I do not intend to deal at length with the substantive issues I will mention some of the arguments made in the complaint.

Our criticism was directed at two characteristics: the reasonableness of the hospital's site and program, and the inability of the Newark Housing Authority (NHA) to rehouse the people that they would displace. Briefly, we felt that a reasonable site would be about 17 acres; that the Medical School Hospital intended to serve the region at the expense of the immediate community; that there was no viable program for medical service, employment or training for the immediate community. Our work later included the beginning of the preparation of alternate plans for the area.

Junius Williams, a Newark resident and a law student from Yale, started, in a store-front adjacent to the site, the Newark Area Planning Association (NAPA) which has been responsible for organizing the community around the issues involved and creating the basis for citizen direction of an alternate planning process. We have served as a technical resource for NAPA and its attorneys, the NAACP Legal Defense and Educational Fund, Inc. (the Inc. Fund).

It should be emphasized for later discussions that we responded to the requests of Williams and NAPA and did not initiate the criticism of the NJCMD program.

The Newark Advocate Team represented a response as professionals to the social upheaval resulting from Urban Renewal projects in low income black neighborhoods. The most distinctive features were that it was run as a team, was interdisciplinary and performed an advocate function.

Ok Team, Don't Get All Bent Out of Shape

We posit, given our experience, that the team approach relative to other forms of organization tends to be (1) fast, (2) innovative or creative, (3) more committed to each other and the task.

There is no *sine qua non* of a good group, but different inputs will affect how well one works. I will discuss inputs relating to: operational style of the team; voluntary association; size of team; kind of members; feelings of members about the general goals of the team; ability of the group to establish a mutually comfortable level of risk-taking; style of leadership.

Team Style

The team had a research and development (R & D) style. The R & D approach begins with a fuzzy idea of its objective and among its first tasks are the definitions of tasks. One apparent problem in this heuristic approach is early symptoms of *anomie* in many of those for whom this is a new method. This appears to be the opposite face of being creative. Lack of structure, amorphousness may be related to innovation, however, when such situations are forced, while participants may behave creatively, those who are not by personality or training "officially" creative tend to feel anxiety about their actions. Some tend to freeze, to respond negatively and critically to lack of order, to discredit sessions that are "non-substantive," and adopt a "wait-and-see" attitude.

Voluntary

Another boundary of this experiment is that the studio is elective. Requiring a student to take a studio like this might set up a whole complex of conflicts relating to commitment that could become the substance of the studio. You cannot defend group activities in the abstract. It is a kind of self-justifying commitment. Someone comes into the group because of some sympathy for part of its goals, one then must choose to work; work

increases commitment and commitment increases work in a kind of ongoing reinforcement. It is not magic, in a mechanical way the group work and thought are finally almost inseparable from each participant's ideas and contribution. If each member tends to support the team with a high degree of commitment, it is, after all, largely his own thoughts and effort he is defending, not universal ideas.

Size

Some schools have the luxury of small student-to-faculty ratios. It would be presumptious not to acknowledge this. While it is not within my experience to say that there is an optimum size for a group there are apparent structural factors. In a small group of 5 or so the role of the teacher is less obvious and everyone can more or less be a person first and an architect, lawyer, teacher, etc. second. In groups of about 14 there seems a strong tendency for cliques to be formed along discipline lines, the group formation time tends to be drawn out. In the larger group it seems to take about a half a semester of meeting twice a week just for the group to establish a self-confidence level which would allow it to work freely.

Members

Early reading[5] and experiences with groups had reinforced my own patrician impression that "good" people made "good" groups. I was initially led to select people for groups I worked with on the basis of their "suitability" for group experience. As I began to take larger "risks" in selecting members I found that group experience was a learning experience, among other things, in group experience. So over time my selection criteria have been reduced to taking those who (1) exhibit a willingness to participate and "gamble" (as discussed below) and (2) show no signs of needing some intensive form of therapy. I also feel, as the variegated list of disciplines above indicates, that given a mixture of disciplines no particular one is necessary and people who are willing and motivated make better participants than someone chosen because of his field of study.

Goals and Risks

We have found that some students respond favorably to the group goals if they are originally presented as experimental. With this background many are able to enter a high risk kind of project. It is impossible to overemphasize the anxiety that students begin to feel when all the familiar signs or clues for success are absent. The shared notion of experimenting is an excellent antidote to the personal and professional "identity crisis" connected with R & D student teams, because what is unfamiliar can then be perceived as part of the experiment. The group is likely to be less conservative, more willing to take a chance when there is a shared sense that they are experimenting. This is also related to an esprit de corps, a feeling that they and their work are somehow special. This might be conceived of as profiting from the Hawthorne experiment.[6]

[5] *Synectics*, William J.J. Gordon, Harper & Brothers, New York, 1961.

[6] The name comes from the Western Electric Company's Hawthorne Works in Chicago. In the 1920's the plant was the scene of an intensive series of experiments designed to determine what effect various changes in working conditions would have on the performance of female workers. Some of the experiments, for example, involved changes in lighting. It soon became evident that the significant thing was not whether the worker had more or less light but merely that she was the subject of attention. Any changes that involved her, and even actions that she only thought were changes, were likely to improve her performance. See "Teacher Expectations for the Disadvantaged", Rosenthal and Jacobson, *Scientific American*, April, 1968.

Leadership

Relative to leadership, two style descriptions have been advanced by other observers: *non-directive* and *non-authoritarian* leadership. Both are alternatives to the authoritarian "front-of-the-classroom" style of teaching or leadership. In either model, each participant is in a sense a leader and is jointly responsible for the success and the failure of the project. Goals, tasks, ideas, successes become team goals, tasks, ideas and successes. This can be extremely frustrating for those used to the traditional classroom experience wherein a professor plays God and the students vie for the role of First Archangel. It is also tough for a professor who is not sure enough of himself to let students "dump on him." In peer groups this leadership style might be called non-directive. But where there is one professor among a group of students who takes on the obligation of providing the group with some structure as a part of the experience, in that sense he may be "directive." In this case "non-authoritative" is perhaps a more explicit description than "non-directive." This implies that a professor may suggest a direction without insisting that it be followed.

The kind of directive actions for a teacher are largely at the beginning, with planned withdrawal. The teacher sets ground rules, such as: keeping discussions open, leaving some issues unresolved, encouraging reticent members to express their viewpoints, encouraging contradictory viewpoints without seeming to be mindless, trying to relate seemingly contradictory ideas of several students, being careful initially to respect the source of ideas within the group (later that becomes less of an issue.)

Some of the problems that arise here are: students are generally used to (and some seem to want) authoritarian teaching. This is compounded by the fact that they are used to "prepared" courses. Perhaps the first reaction of some students to apparent lack of preparation (related to being open) compounded by the teacher deferring to a student considered less than bright, is to suspect the teacher's qualifications. The second phase of this suspicion may be that "he (the teacher) must be up to something." I don't believe that either of these two sentiments ever disappear entirely. However, once the group has established a tentative self-confidence level, the need for the "prepared" and "knowledgeable" teacher diminishes. As the group begins to make decisions (some members have characterized these groups as an exercise in non-decision making) the teacher advocates for keeping issues open, and tolerating and even provoking the expression of conflict.

It has been demonstrated that in survival situations, groups which tolerate a high degree of expressed conflict tend to make the best decisions (those giving the greatest chance of survival).[7] It can further be argued that decisions made by groups as opposed to individuals making decisions for groups tend to be better decisions. Once a group has gotten over its initial hesitation regarding authority and self-esteem, decisions can be hammered out quickly; quickly that is, relative to complexity of viewpoints represented.

Chris Argyris[8] has said of university education that: "The university has typically assumed that learning (1) is for the individual, (2) occurs when it is given, (3) is tested by contrived examinations of the knowledge acquired, (4) need not be relevant to any immediate problem, (5) should be designed and controlled by the educator to define the problems, develop ways to *solve* them and define the criteria for evaluation who passes and who does not."

Given this kind of educational precept, in the habituative sense the student learns to make decisions *alone* in a hostile environment. Argyris also presents an alternative model that seems to describe our own goals. He speaks of an educational approach that: "(1) focuses on individuals in team systems and (2) it occurs where the problem is located, (3) is learned by the use of actual problems, and (4) is tested by the effectiveness of the actual results, and (5) is controlled by those participating in the problem (aided by the educator as a consultant)."

Interdisciplinaries Mean You Can Do Your Own Thing

Our studio is interdisciplinary. In a conceptual way, and in some technical ways, urban problems are not the province of a single university or professional discipline. The degree of inter-student learning is higher among students (or professionals) of different background and training. There is the excitement of new ideas, new intellectual challenges, fresh insight into problems which one discipline is not equipped to meet.

The other side of this initial attraction to the style and ideas characteristic of another discipline is the initial tendency of the student to freeze. For example the conflicting styles of the law student and the architectural student: It was observed in the group that the law students tended to focus conversation quickly, tried to arrive at a consensus (forced if necessary) as to what the issues were, arrive at a decision (forced or not) and adjourn. The architect students tended to "throw out" ideas for the group to discuss, speculate, construct verbal models or analogies, "worry" the issue. At first these two styles were antagonistic. Each wanted the group to do his thing. The architects felt they were being stifled or that their ideas were being ignored or suppressed. The lawyers felt that the conversations were aimless and non-substantive and their time was being wasted with irrelevancies.

The observer of the group, in one of the few instances of group confrontation with "process" observations pointed out these style traits. The first reaction was entrenchment. One law student (pointing his finger like a prosecuting attorney) attempted to close the discussion quickly with an articulate argument that lawyers did not stifle discussion. One architect then responded by saying he intended to "throw out" a few ideas. The situation became ludicrous with each group emphasizing more and more the characteristics which had been attributed it; finally it became a kind of grand shared joke.[9] After that session these two styles became more or less a background part of the group culture. When ideas seemed needed, the architects were looked to, when the meeting needed focusing, the lawyers took over. It should be emphasized that this kind of stereotyping is of limited value. The lawyers in fact contributed fresh ideas and the

[7] Torrance, "Function of Expressed Disagreement in Small Group Processes" from *Some Theories of Organization*, Rubenstein and Haberstroh, Richard D. Irwin Inc., 1960.

[8] Chris Argyris "Interpersonal Barriers to Decision Making," *Harvard Business Review*, March-April, 1966.

[9] There is inestimable value in the team-shared joke; it is an expression of team spirit on the one hand and a simultaneous builder of team spirit on the other.

architects stifled a discussion or two. Generally a group will work better as a team if the members are able to be people first and, when mutually useful, professionals.

The task needs to be one susceptible to an interdisciplinary approach. However, notwithstanding the earlier statement that most city problems are by nature interdisciplinary, students tend, at first, to see only that part of the problem that relates to their own training. There is a tendency for the law students to meet separately to discuss the "legal" aspects of the problem. It takes joint efforts to keep the problems in front of everyone and not let it get compartmented quickly into professional pieces. The size of the group is relevant here. Given one architect, one lawyer, etc. this is less likely to happen. This is another place for "directive" action. The faculty participant can encourage breaking the group into mixed sub groups.

Some of the conflicts arising from the student versions of advocate interdisciplinary teams as described above are a function of playing the following competing roles:

Being Experts
They are trying to perform a real world service in a profession they are actually just learning, trying to use skills they are not sure of.

Being Students
At the beginning they tend to have the self-image of the White Knight which is deadly. I think the White part dies more easily than the Knight part. They need to realize that they are learning from the experience. That their *client* is paying them by teaching them. This competes with the often preconceived notion that they are righting the wrongs of the world and/or educating the benighted. It is hard to treat their client with normal consumer dignity when they see themselves this way. This to my mind is the insipient state of the "caretaker" attitude we discuss with relation to Davidoff's ideas on advocacy.

First Group Experience
Many, particularly architects and lawyers, have not progressed beyond the "parallel play" stage in their professional work habits. They are not used to working together, sharing decision-making, making public their uncertainties, their preconceptions and (often most traumatic) their lack of expertise." There is a good match here in that as they, as a group, become more skeptical of "expertise" they can share what is often the lay community's skepticism (or contempt) for this skill.

Real World
For many, the kinds of tasks and time schedules involved in the quasi-contractual relationship are unfamiliar. Some work that needs doing they see as literally beneath their dignity. They find it hard to meet an "office" kind of deadline which is not a "reasonable" length by academic standards.

The Patrician Hangup and the Partisan Bag
Paul Davidoff[10] is probably most responsible for the current use of the term "advocate" in relation to the planning and design professions. The concept of advocacy is currently a controversial idea in many fields, city planning, medical care, and others. The term is originally a legal one which implies representation of a client group against another group (as the general public or state). There are many who feel you cannot take the advocate concept without taking the adversary proceeding[11] (i.e., two parties in conflict, a legal system, judge, jury, etc.). I am content to use the word metaphorically, recognizing that there are groups which need special representation by whatever mechanism is available. I have written elsewhere about professional advocacy[12] and will not try to build a case for it here. But I would like to make one special distinction between the model suggested by Davidoff in "Advocacy and Pluralism" and our approach.

His concept seems to us to be in the "white caretaker" tradition. He is relentlessly objective, dispassionate, uninvolved, detached from the "clients" he advocates for. He seems to share the traditional patrician attitude that "we know what's best for you." He suggests that a group of intellectuals with no other interest than the common good, no other passion than good will, no other commitment than objectivity can ride herd on government agencies, performing a kind of unfranchised gad-fly function.

The currency of this kind of position indicates to me that even 'in extremis' the patrician dies hard. The idea you can advocate for people based on what you suppose they need is a direct habituative product of a professional education in which there were no clients.[13]

If lack of face to face contact with the client is one side of the problem, the other side is to reconcile short term commitment of students and long term problems of community residents. We choose to work with organizations in the community. The day is gone when students can exorcise their consciences by wandering around low income areas, hoping to be relevant in an interpersonal way in the three-week period between Thanksgiving and the ski season. However, most organizations tend to be middle class and conservative. It is difficult to find a radical group that both needs and will accept the help of white college students, although in Newark we have.

But I have always lived in a black and white world. In my world the gray is the enemy. As Kai Erikson pointed out in *The Wayward Puritans*[14] the gray cats need the black and white to define them, they have a vested interest in keeping someone on both sides of them. While the gray may need you they will vilify you for being radical, extremist, or whatever.

But we chose to be partisans. Even without the conflict-resolving mechanism of a system of jurisprudence we feel that we can properly act as a "hired gun" for a specific client group. One could describe our actions in the Newark project as a kind of educational guerrilla activity.

This partisan group may be involved as we are in Newark, in preparing an alternate plan; or it may be involved, as we were previously, in a kind of "prevent defense," using the levers of public opinion through the press, administrative review by government agencies, or legal process through the courts to stop a proposed program. Whether or not advocacy is viable at a professional level it offers students a way of dealing with an audience the professional has cut himself off from. But this is not easy. You run head-on against racism, black and white, the traditional ineffectuality of the Academic, of the planner, of the architect. It is a path of frustration. You run the risk of being despised by the community people as being a dilettante or inept and being despised by the academic community as being irresponsible.[15]

An Absurd Reasoning
The following words of Camus suggest a provocative context within which to judge architecture: "If I ask myself how to judge that this question is more urgent than that, I reply that one judges by the actions it entails. I have never seen anyone die for the ontological argument. Galileo, who held a scientific truth of great importance, abjured it with the greatest ease as soon as it endangered his life. In a certain sense, he did right. That truth was not worth the stake. Whether the earth or the sun revolves around the other is a matter of profound indifference. To tell the truth, it is a futile question."[16]

Recently in a predominantly professional meeting we were discussing the pros and cons of "alternate" planning. A young, black militant who had been working as a neighborhood organizer spoke up. As he talked it became more and more apparent that while to the professionals "alternate" meant something in contrast to the city's "master plan," to the black youth it meant an "alternate" to street warfare.

As I have said elsewhere, "Today there are two kinds of alienation; the existential alienation of the sensitive and the functional alienation of the poor; especially the black poor."[17] Camus has said that this is the "age of dialogue," perhaps to Chris Argyris this is the age of matrix organization: to Stokeley Carmichael this is the age of black power. The Newark project perhaps suggests a communion in these apparently disparate views. If we, as professionals, can help build a meaningful alternate to the massive eruptions of urban warfare that have begun perhaps it includes groups working outside of the existing structure, as intellectual partisans, supporting black leadership in their fight at the fringes of our system; changing by external force, more rapidly, what hasn't or couldn't be changed from within.

But, if you expect to be patted on the back for doing this, forget it!

Postscript: My first reaction in rereading what is written above (after 2 month) is to say it's all obsolete and then rewrite it. But the real point is it is obsolete and if I rewrote it the new version would be obsolete two month from now. Instead I will add a disclaimer: The need is for a climate wherein change and experimentation are encouraged. The real villains are inflexibility and institutionalism. We tried something that was meaningful for us at that time. It should *not* be emulated or repeated. You should not swap system A for system B, but do your best to destroy systems the instant they become recognizable.

[10] Paul Davidoff, "Advocacy and Pluralism in Planning", *Journal of the American Institute of Planners*, November, 1965.

[11] Roger Starr, "Advocators or Planners?", *A.S.P.O. Newsletter*, December, 1967.

[12] "The Social Myth and Advocacy" in *Design for Conflict*, Pat Goeters, unpublished, School of Art and Architecture Library, Yale University.

[13] See "Reflections on Advocacy Planning" by Lisa R. Peattie, *Journal of the American Institute of Planners*, March, 1968, for another view of advocacy somewhat less patrician but still having client problems.

[14] *The Wayward Puritan*, K.T. Erikson, John Wiley & Sons, 1966.

[15] See "Black Architects for Black Communities" by Mann, Mitchell, Jayson and Quintana, *Liberator*, February, 1968, for a repudiation of the role of the white professional, which tells it how it is.

[16] *The Myth of Sisyphus*, Albert Camus, paperback, Vintage Books, New York, 1955.

[17] "Toward an Existential Architecture", Pat Goeters, *Criterion*, January, 1967.

A third year studio project given in the fall of 1967 by Robert Venturi, Bruce Adams and Denise Scott Brown.

Mass Communication on the People Freeway
or Piranesi Is Too Easy

Robert Venturi is well known for his book Complexity and Contradiction in Architecture *and articles in various architectural journals. While maintaining an office in Philadelphia, he is at present Davenport Visiting Professor at Yale.*

Bruce Adams is a practicing architect in New Haven and an Associate Professor of Architectural Design at Yale.

Denise Scott Brown has taught city planning and architecture at the University of Pennsylvania, Berkeley and UCLA. She is a partner in the firm Venturi & Rauch and a frequent contributor to the planning and architectural press. She is also Mrs. Venturi.

An introduction to the problem and extracts from the work program are here presented by two of the critics. This is followed by a description by two of the students of the class research work and their own group project.

The critics and students wish to thank the Urban Design Group of the New York City Planning Commission for much help and advice in the execution of this project.

The third-year architectural design problem at Yale grew out of one from the year before which was the analysis and design of a Commercial Strip. That problem emphasized the nature of communication and interaction over big, open spaces at high speeds along the highway. This problem attempted a similar study at pedestrian scale within the spaces of an existing New York subway station complex, emphasizing communication over circulation. Another source was our continuing belief that the everyday landscape is worthy of analysis, that its despised clutter is not so much chaotic as dynamic: we did not set out to neaten public images nor to reform public taste. This belief was reinforced by comparing the new and renovated subways designed by architects with the existing New York subway. In Montreal the new stations are designed each by a different Modern architect in his individual manner with an effect not unlike the eclectic variations of the Moscow stations but without their peculiar vitality. In Boston the old stations have acquired new graphics and very bright lighting. "The subway stations in the Nation's Capitol," to quote a well-known critic, "will not be cluttered by commercialism or advertising . . . [not even by] well-designed flower stands . . . The dignity of the architecture will not be marred by any commercial intrusion." To quote the architect: "We are designing this subway for the . . . enjoyment of the public. People will surely welcome the fact that here, for a change, we won't exploit them as a captive audience." Coffered vaults "flooded by warm light from concealed sources" and penetrated by Piranesian bridges will dramatize the architectural spaces.

I think the value of our architectural study came from not trying to make architecture. The architect has limited control in the first place over the shapes of subway spaces which are constrained by the street above, the basements of buildings and the underground utilities. But he can work with lighting and the words and symbols of advertising as well as with assemblages of conventional subway elements such as gum machines. Underground, the usual way of lighting the interiors of civic buildings does not work. Defining white-ish walls and architectural details in the low, residual spaces of the underground by flooding them with reflected light promotes neither spaciousness nor – ironically – cheer. But colored lights from visible sources – commercial kiosks and interior-lighted advertisements – set against architectural space with dark absorbent surfaces, obscure the limits of the space and therefore expand them. Recessed spots in the ceiling, like those in dark, low, roadside restaurants, illuminate the people and promote safety. The advertising panels enrich this environment in another dimension: they provide grateful respite from the boredom of waiting. The three communication systems of the subway – for direction, safety and persuasion – are differentiated as in the "chaotic" Commercial Strip, by accommodation to the human, selective viewing process which allows one to pick out "B.M.T." from "Ladies" and "Buy Soap." Dark surfaces in the subway obscure dirt and the changing advertising signs insure maintenance as well as variety.

This studio was planned and the program written by Denise Scott Brown. It was based on studio methods used in urban design and city planning, and it suggests an innovation in architectural education. Everywhere traditional architectural education is being questioned. At a time when the value of studio is being debated and schools are considering its abandonment in favor of more efficient and information-giving course work, we proposed not a less-involving but a more-involving studio. However, it was a different type from the normal architectural studio because of its strong research base and its emphasis on group work and the careful preparation required to make these happen. The information-giving function was augmented to approach that of a good course, but at the same time, the synthesizing value, the "learning-by-doing" value, of a good studio – which gives the studio its intensity – was maintained in the belief that this is an educational good which professional education cannot do without.

Robert Venturi

Program Extracts:
Introduction and First Phase

Denise Scott Brown

1

Critics

Robert Venturi
Bruce Adams
Denise Scott Brown
Gregory Matviak: Assistant

Class

Architecture:

Simeon Bruner
James Caldwell
James Gage
David Hoeffner
Manfred Ibel
David Lessig
Ali Ramazani
Herbert Short
Robert Swenson
Paul Thompson
Lawrence White

Graphic Design:

Vincent Carra
Mario Cruz
Aaron Marcus
Bruce Michel
Ingo Scharrenbroich
Martha Wagner

Project Group

Vincent Carra
James Gage
Manfred Ibel
David Lessig
Bruce Michel
Ali Ramazani
Herbert Short
Martha Wagner

This studio is dedicated to the idea that life is too complex for a one-medium approach to architecture. To the fast moving driver the most important view from the road is the road sign. He reads a sign rather than trust his sense of direction. To the moving mass on the rush hour freeway or the New York subway – the big-game ball park stadium, the Expo, the movie house – communication becomes a very special problem involving functional use (ease of getting about), transmission of social and cultural messages (advertising, civic notices) and saving of life (emergency exits, safety from mugging, fire warnings). These engender a geometry of their own based on sightlines, perception and reaction time. For example, what space is needed for a thousand people to make a decision? Where and at what height must signs be placed to be read by a thousand people? Is this affected by the nature and importance of the sign? What kinds of information can and should be transmitted by signs and what other means are there?

Modern architecture has shied away from symbolism of form as an expression of or reinforcement of content. But in any city three types of formal symbolism can be found: physiognomic – symbolism of the surfaces of the city which show from the street (the hamburger shaped hamburger stand, the "monumental" piazza); locational – the "corner store", living "across the tracks", the capitol on high ground; and heraldic – barbers' poles, billboards, traffic signs.

The subway stations at 34th Street on Sixth Avenue – the complex junction of three underground lines in Manhattan – provide the problem par excellence of orientation in the maze. Our problem may also be seen as a study of relations between the prototypical and the unique, the public and the private, the individual and the mass. Also as a set of systems – movement, service, communication, lighting etc. We shall ask you to consider new functions for the underground, particularly communication functions, and new ways of satisfying old functions such as shelter, waiting, and selling. Problems innate to the system will arise such as the conflict between the civic importance of the underground and its narrow, low restricted space. What is a low monumental space? How can movie, T.V., slide projection, be used as part of the communication system?

We are not treating this as a problem in circulation planning but as a problem in communications. We are not suggesting innovations in all systems (this is a "branch" not a "root" problem), only in some. Givens from existing phenomena will be our means of narrowing and also our strength. We will deal with spaces we can go and examine, not just dream up. We will be as interested in the existing subway as in architects' projects for new stations. We hope to learn by looking (non-judgementally at first) at what is there.

Finally, people, including the poorest, illiterate, foreign and deviant, are brutalized in the underground. Air conditioning and more cars could help enormously, but they aren't enough. Studies show the poor's boundaries of city knowledge are poignantly restricted. The subway should help them to broaden these boundaries, not intimidate them. The subway is an enormous convenience; it could also be a welcoming civic offering, informing New Yorkers and visitors about the New York culture; and hence, as much as any other big shared experience, act as an acculturating, educating and civilising medium.

Suggested Studio Output
The presentation of an architectural problem which is underground mazes will involve new graphics for non-architectural systems.

The Movement System
We are concerned here with the movement of people, not trains. We want whatever data you can find on volume, speed and flow: (1) their fluctuations, over 24 hours, one week, seasonally, (2) their averages, (3) maxima and peaks, (4) design volumes. Compare standards for subway design with the figures you have found for the existing (use equivalent figures from other systems where information is lacking). Differentiate between types of movement, directed and searching, service-oriented and train-oriented, peak and off-peak. Are there other types? What are the problems of the movement system?

Required: maps diagramming different lines of movement from street to train and train to train. Flow maps showing volume at different times, "desire line" maps. Maps, charts, and tables of existing movement characteristics and desirable standards; written discussion of questions asked above; slides and films.

The Services System
Telephone booths, news-stands, shoeshine, locker storage, snack bars, barber shops, toilets, stocking counters, souvenir stands. These are all to be found in the underground in a variety of shapes and sizes, from the single kiosk to the department store and large hotel. What is the organization of this system? What is private, what public, and how do they relate? What is the scale of ownership of the concession stores?

Make a schedule of all these servicing elements by type, size, ownership and location (and any other characteristics that seem pertinent). Include small diagrams of prototypical elements in the schedule. To do this, refer to similar schedules by Cedric Price, Brian Richards and the Archigram Group, for trailer houses, pods and capsules in recent editions of *Architectural Design* and other sources, and also to the work of Ezra Ehrenkrantz and the English systems architects.

Make a map or a series of maps showing location of servicing elements in the overall subway, and typical groupings of typical elements, match scales with the movement systems maps. How does the location of service facilities relate to the movement pattern? Make suggestions for new elements or new groupings of elements especially those involving the communication function, and consider systems which allow for growth.

What are the problems with the system as it now is?

Use slides or film where necessary.

The Communications System
What are all the means, physiognomic, locational and heraldic by which messages are given by the subway system? What are the different types of messages given? Make a schedule of each of these by type, size and location (and any other pertinent characteristic), include diagrams in the schedule.

What are the problems with the present system of communication?

What suggestions do you have for improvement?

What new and different types of message could be communicated by the underground (see Dyckman on the city as education) and what new means could be used including electronic and cinematographic? Make suggestions for new forms of communication and new types of facility for the underground. What do you propose for the illiterate or foreign user?

Make maps to match those of the movement and service systems groups illustrating the subway as a communication system and as a perceived sequence of messages.

The Lighting and Ventilation Systems
Describe in general the operation of the ventilation system and illustrate with cross sections. Map the positions of vents and inlets.

Make a schedule of different types of lighting in the subway described by type, power, location and any other characteristics; include diagrams. Using a light meter take spot surveys and produce a light and shade map of the subway; match the scales of the other systems maps; show on this major unique lighting fixtures or sources and indicate the repeated elements on a portion of the map. Use a camera to illustrate the different light character of different portions of the system.

What are the problems of the lighting system, especially as regards visibility of signs and safety? Can you suggest any new possibilities or new uses for lighting? Are there any prospects for natural lighting at points in the system? What should be the character of light at different points in the movement system?

User Behavior
This study is to discover the qualitative nature of user behavior which is not indicated in the statistics on volume flow or facility use, and also to discover problems in the system.

Behavior characteristics: Kahn in "Plan for Midtown Philadelphia" developed several categories of movement type on city streets, "go", "stop-go" etc. Can you discern differences of movement type by location, or time of day, or for other reasons in the subway? Find ways to map this behavior. Can you set up similar categories for the other activities in the subway connected with the service system and the communication system?

"Time Lapse" survey: choose 4-6 points within the system — an entrance, and intersection, a "point of ambiguity", an unambiguous point, service area, others, and make a photographic survey of user behavior there at regular intervals over 24 hours.

Decision points: choose several points where a decision must be made in the movement system, including at least one where there is a problem involved in reaching a decision (e.g. poor signing, poor visibility). Record user behavior at these points. What do you conclude regarding the relation between movement flow and communication? What, architecturally, is a "decision space"?

Make a map of problem points within the subway; make a map of opportunity points within the subway.

Graphic Techniques
The traditional architectural graphic techniques are inadequate for the representation of many urban phenomena particularly those to do with movement or change with time in space. Our problem is filled with movement patterns fluxes and flows which are hard to represent graphically, but also there are the small repeated objects, signs, lighting fittings, turnstiles whose orderly patterns of location we are hoping to investigate. Another problem in graphics is the differentiation of physical elements by type; public or private, service-oriented or movement-oriented etc. Finally, there is the problem of depicting these phenomena as percepts i.e., as seen by the user.

Experiment with techniques for showing in plan and section all the elements which are to be shown in this research. Place particular stress on solving the graphics problems listed in the first paragraph above. The Nolli maps of Rome look surprisingly like our base map reduced to scale. Could his technique be used to represent public and private in the subway system?

It is intended that these experiments in graphics be available to the systems researchers as they start to present their material. You are asked too, to take over the graphics coordination task for the class: obtain sufficient base maps for everyone, expedite the decisions on sheet sizes and on title format.

Materials, Sections and Working Model
Make a schedule of materials used in the underground system by type, use, location. Comment on success or failure of the material for its purpose. Show photographically or by detailing those portions of the movement furniture which receive the hardest wear.

Using the drawn sections available to the class and a process of "eyeing in" on the site, produce a series of cross sections through the subway sufficient to give the basic vertical characteristics of the system. From these cross sections produce a longitudinal section through the system and a working model.

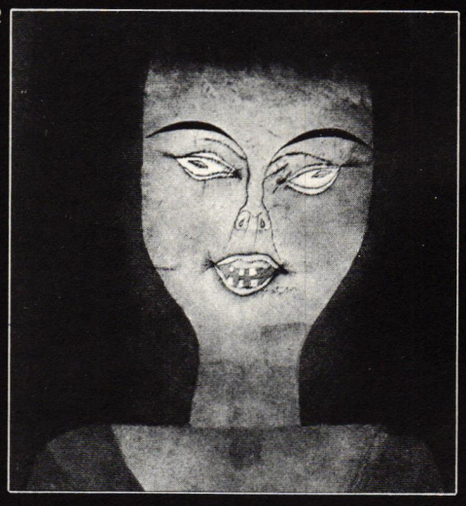
Image
See Strauss, Wolfe, Ruscha, Lynch, or your own favorite for the urban image. Using mixed media, slide, film, collage, music; and sources, historical, modern, popular, high and primitive; and casting a glance now and then over the shoulder of the following topic, produce a set of evocative images of what the subway is and might be, for consideration during the design phase. Don't merely show moving crowds; physical and formal analogies — catacombs, freeways, commercial strips, opera houses — are important too.

Big, Low Spaces
Grand Central Station and the Baths of Caracalla could be 80 feet high. The big low civic space is a recent problem brought about by urban densities and the costs of air-conditioning.

Identify such spaces in our system. What should be our approach to them? Find analogies, successful and unsuccessful, in Place Ville Marie, the catacombs, Las Vegas casinos, Piranesi, New York Port Authority Building, cathedral crypts, Madison Square Garden, the new Pennsylvania Station and other sources.

Produce a set of images for the big low space.

2



The station is a network of underground passages, a place of transitions, of flowing crowds, of movement and change, a place without the defined spaces of traditional architecture. Objects and people glow in dark space.

The Project

Herbert Short and Manfred Ibel

Subway dirt is a stubborn mixture of steel dust, cast iron, and carbon dosed with a coating of oil on each particle and bound together with human hair. In the summertime, the system also has to contend with an added burden of sand that falls off people coming home from New York's beaches. The dirt is too heavy to be swept out with the changing air as would be the case with ordinary dirt and dust. It is insidious, drifting like fine sand into every crevice, and it clings tenaciously to whatever it touches. The oil polymerizes, soon making any layer of dirt an impermeable and virtually impregnable coating. It is electrically conductive, thereby adding to the problems of the power and lighting systems, but a thermal insulator, thereby defeating the heating and cooling systems.

1. Research

Although the world was in existence before any given designer lifted his pencil, he usually acts as though what he works out on his drawing board is the only reality. He is interested in what he can show the world about how it should be organized, when he should be interested in having the world show him why it has the character it does. Therefore the studio began with study of existing conditions in New York Herald Square and a search for analogies in architecture, nature, unconscious experience, and painting.

Description

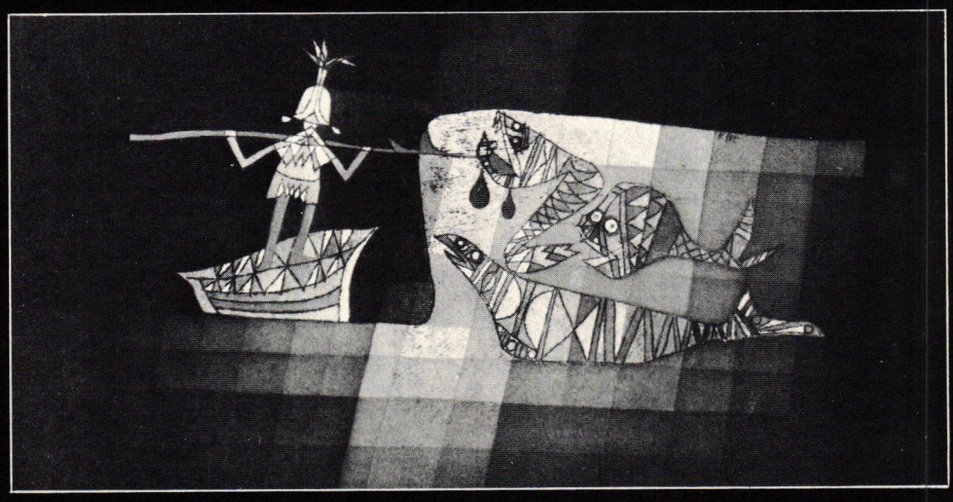
The Herald Square subway station (34th St. and 6th Ave.) is a network of underground passages, a place of transitions, of flowing crowds, of movement and change, a place without the defined spaces of traditional architecture. It is a maze with no general plan, incomprehensible in its organization, laid out through a mechanical and arbitrary calculus of rights-of-way, property lines, utilities, excavation costs, etc.

The Herald Square Station is the three-level intersection of three underground lines, two subways and rapid transit from Newark. The station is 4 blocks long with underground connections to Penn Station, Times Square, three department stores, a hotel, and two dozen entrances from the street. The uppermost level is divided into three toll zones, a platform for trains to Newark, and a circuitous route for free passage through the station. The lowest level is the platform for the IND 6th Ave. line. Diagonally between the upper and lower levels squeezes the BMT Broadway line, displacing them by its bulk and warping the spaces of the other levels into Eisenstein forms. At the north end of the station a Piranesian set of ramps and escalators connects mezzanine to lower platform. At the south end the IND toll zone occurs at the intermediate level and connects to the mezzanine above by a half dozen different stairways tucked in niches around the periphery of a vast open space. Ceiling heights in this four block long station vary from ten feet to less than seven and a half feet through large areas. The mezzanines are not bounded spaces but forests of columns which appear to extend without limit. All structure is exposed and devoid of order; the column grid is largely random.

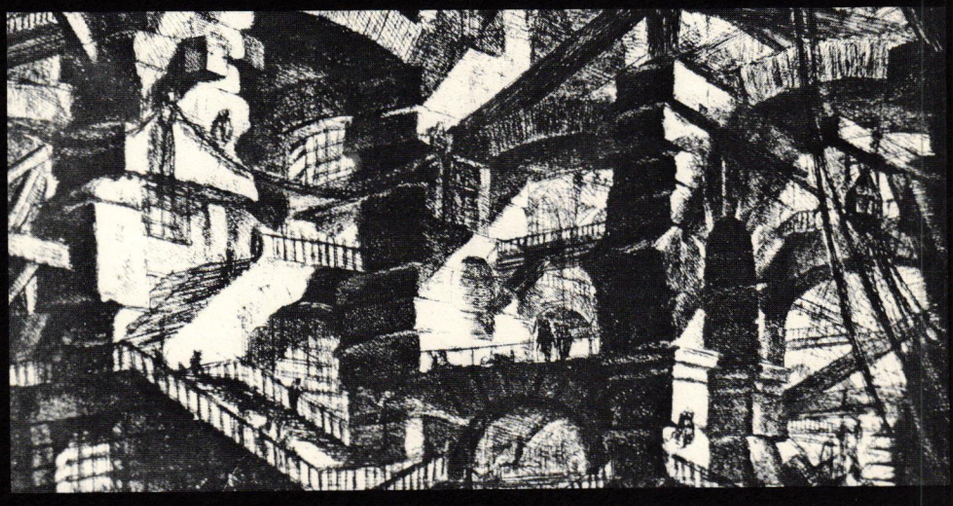
Existing Conditions

We were biased toward understanding the present situation. Non-judgmental study, observations, counts were made, interpreted, summarized, extrapolated and presented by individuals and small groups. We worked with

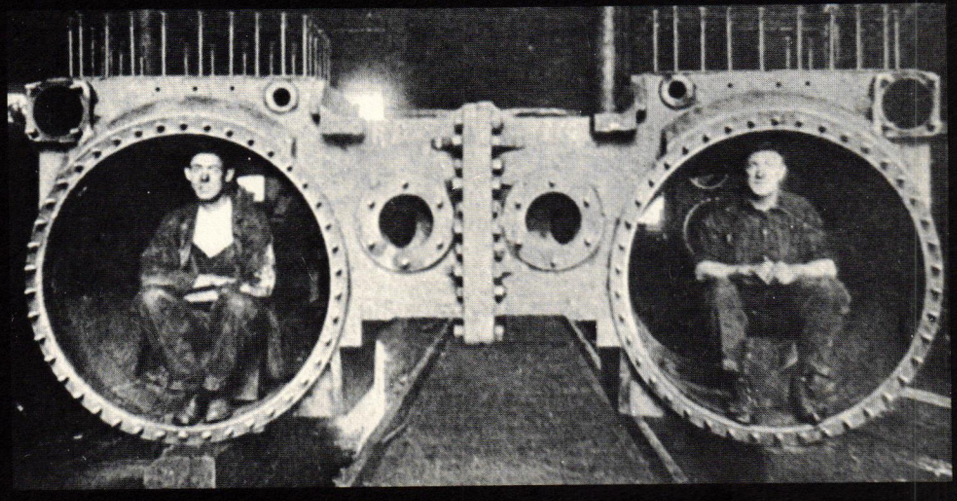
3



4



5



systems: movement system; services system; communications system; lighting system; patterns of user behavior.

Movement System: Volume. Peak hour counts were made at critical points and flows (thousands of people/hour) analyzed for street to train, train to street, and train to train transfer. Data were obtained for total station population varying through the year, broken into shoppers, commuters, and others. Visual quality of all entrances and exits was plotted and analyzed in relation to flow.

Services System: Analysis by type of commercial service (personal, food, soft goods, transit-related), scale of installation, business volume related to density and type of flow for mezzanines and platforms. Patterns of organization plotted and counts taken.

Communications System: All visual communications (transit and commercial) were plotted by type, size, and location. Transit signage was analyzed for inconsistency, redundancy, variations in wording, placement, typography, etc. Location of signage was studied in relation to patterns of movement.

Lighting System: A schedule of lighting types and a shade map for the mezzanine level were produced. Standards of brightness and lighting character were proposed for platforms, mezzanine, stairs, entrances, and other typical locations.

User Behavior: Desire lines were mapped. Decision points in movement patterns were analyzed for confused organization, poor signage, poor spatial definition of alternate routes. Movement was analyzed by speed, intensity, type (directed vs. searching).

Image

We looked at other underground systems: London and Paris (for their orientation systems), Milan (for use of materials), Montreal's cultivated new Metro, the Harry Weese plans for Washington, D.C., the design handbooks prepared for the Boston renovations. The designs were, we felt, sanitary, but monotonous and emotionally uninvolving. Their criteria: make it work; insure security through uniform, high level of light; keep it hygienic. In articles about subway renovations the "before" pictures were often a more exact and exciting description of underground space than the "after". Adding light, painting ceilings white, and increasing police supervision were not, we felt, changes based on real understanding of the special problem of transit underground. Elementary human events are constant — we wanted to open our eyes to human nature, to observe and understand behavior in an underground station. Underground space touches on strong undercurrents in man. The first habitable and religious spaces were underground. We found images of the underground in fairy tales, myths, sagas, in Lascaux and Altamira, the animal gods and goddesses of the Egyptian pyramids, the black mass in the early Christian underground church, the catacombs, the magic thread leading through the Minoan labyrinth. We walked and crawled through escape tunnels of prisons and secret passages of monasteries, through railroad tunnels and mines, with Verne to the center of the earth, finding everywhere the underground spaces of man. Also in the work of artists. Paul Klee, the painter of underground space, images of the subconscious, colors and forces floating and resolving in black space. Bosch, Baumeister, Tobey, Moore.

2. Design

***Behavior is not pure;* therefore, go beyond the *finished* design.**

Invert monumental architecture; residual space rather than monumental space. Individual elements come forward, bounding surfaces recede. Elements are common and everyday as well as specially designed. Objects and people glow in dark space rather than white space lighting objects. Clarity and structure only within magic glitter and randomness.

Accept given conditions: low ceilings, sloped walls and floors, complex unsystematic circulation. Be expedient; make minimal structural change.

Let the eye work, not sleep. Action, not monotony. Expression rather than repression. The subway should permit response and participation; people are not just the passive crowd.

Orientation: in movement sequences complex by necessity. Use multiple media: color, material, shape — recognizable consistency where it counts. Repetition and intensity of messages keyed to movement, dense at decision points and also reassuring along the way. Increase contrast, exploit existing differences from place to place: orientation through recollection of unique places within the maze — the aquarium passage, the music passage, the passage with ceiling ads, etc. Choices correspond to true alternatives: reduce passage widths to requirements of flow; simplify circulation to Orange line (former BMT) by closing one set of stairs from mezzanine and adding direct transfer between the two platforms; free passageways from hard-edged and obstructive elements and give them the curvilinear shape of flow, shallow niches providing shelter from the moving stream.

Communication: employ overlap and redundancy in the underground maze of lights and colors. The repeated sign and symbol in conjunction with uniqueness of material and color. Transit information can compete with commercial ads: expand commercial and civic advertising. Ads are unpredictable, change with time and fashion, provide unexpected continuities to other places. Fight monotony. Exhibits by interested institutions — the aquarium by the Brooklyn Marine Institute, etc. Programmed projections on platform walls.

Safety: through continuous presence of other people. Compressed circulation ways designed for peak flow overseen by commercial and service booths. People watch people. (Supplementary closed-circuit television monitors for late-hour minimum flow.) Increase safety by expanding the freeway: new attractions underground; new Macy's entrance brought to center of station; larger, more recognizable entry kiosk; new Sam Goody's outlet; hold your prom in the subway. Underground climate can act as a magnet; caves are warm in the winter.

Self-expression: If advertising and other media of our society are aggressive, give everybody a chance to respond. Make posters and other wall surfaces accessible for human messages. Free graffiti. The scribbling and messages in the underground are the real truth, the wish for eternity, repressed desires, love and sex, hatred, sadness, happiness.

Maintenance: The subway cannot be kept immaculate (as in pictures of the Moscow underground or photos taken of transit systems right after renovations are completed). Concentrate maintenance on particular surfaces and elements: signs, maps, white tile exit walls. Translucent signs and dark surfaces do not show dirt. Walls with continuous bands of advertising will be renewed periodically when ripped or saturated with graffiti. Transit and rest room furniture are designed for mechanical cleaning.

Schedule of Elements

Streets: the passageways of the underground maze, the linear connections between exchange points, where destinations are either ahead or behind. Simplify the network for greater compactness and variety. Throw away space if necessary. Commercial booths reduce vast areas to bounded streets. Streets are the place of the non-transit facilities; each street is unique.

Junctions: the places where directions of movement overlap. choices are made. Junctions contain transit furniture and written instructions. Concentric organization; major flow in outer circle, special flow (tokens, system information) in inner circles. Lockers, telephones, street maps at exits from junction. Information is provided for the next leg of the journey.

Platform: design for the mass of moving people on the levels above, for the waiting mass on the platform. Concentrate all vending machines on platform. Every column a servant column. Mount machines low to permit vision along platform. A system of projectors and screens on the dark station walls provides moving images for the waiting man. Projectors rented by advertisers, civic groups, politicians, etc. Special shows to be commissioned by transit authority.

Niches: provide refuge, safety, and shelter from movement and flow. Toilets, telephone booths, walk-in shops, curvilinear walls.

Chapel: a unique place to go — where there are modern gods and new ways of worshipping.

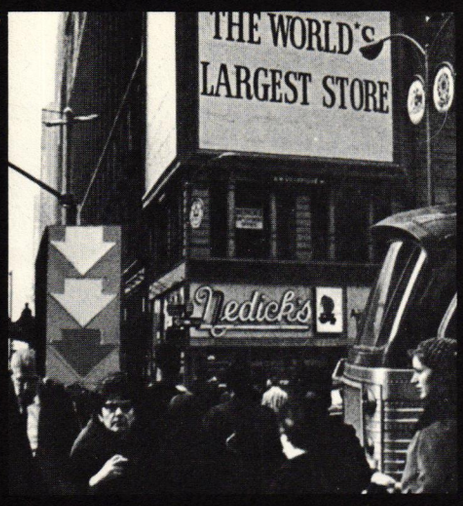
Capsules: enclosed spaces floating in the stream of movement. Round, on rollers. The stream of people will push them around until they find their place of rest.

Magic:
Transformation: barber and beauty shops, mirrors
Sound: Audio shops
Smell: Flower shops, cosmetics, food
Splendor: Jewelry shop, art book stores
Dreams: Display, advertising, card shops
Play: Turnstiles, escalators, automats, vending machines
Water: The aquarium, aquarium bar

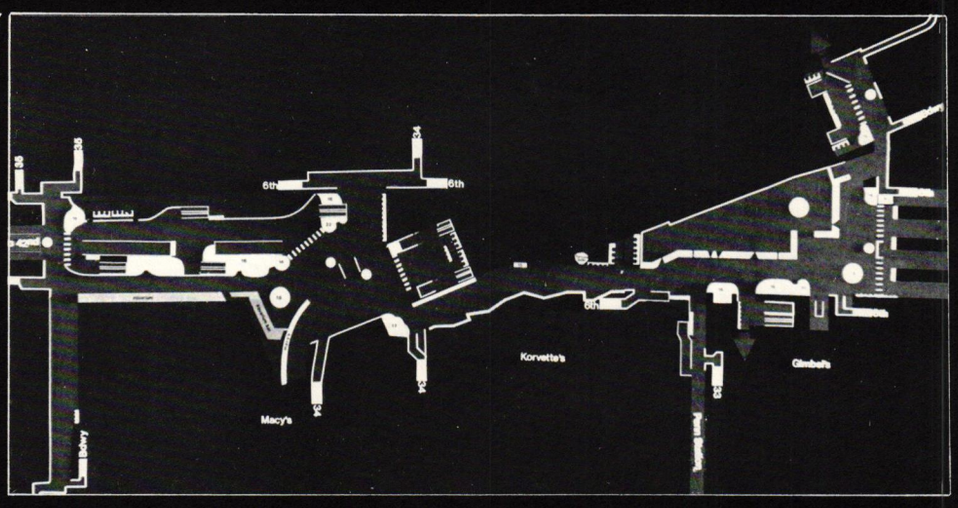
Nourishment: food shops, coffee and fountain service, newspaper stands, magazines, bookstores

Unique Elements: The aquarium – underground is underwater — flashing fish floating in darkness. The Music World Sam Goody Audio Spectacular — music is heard around corners, up distant passages. Macy's entrance brought to center of the freeway – sequential flashing lights pulling you in.

6



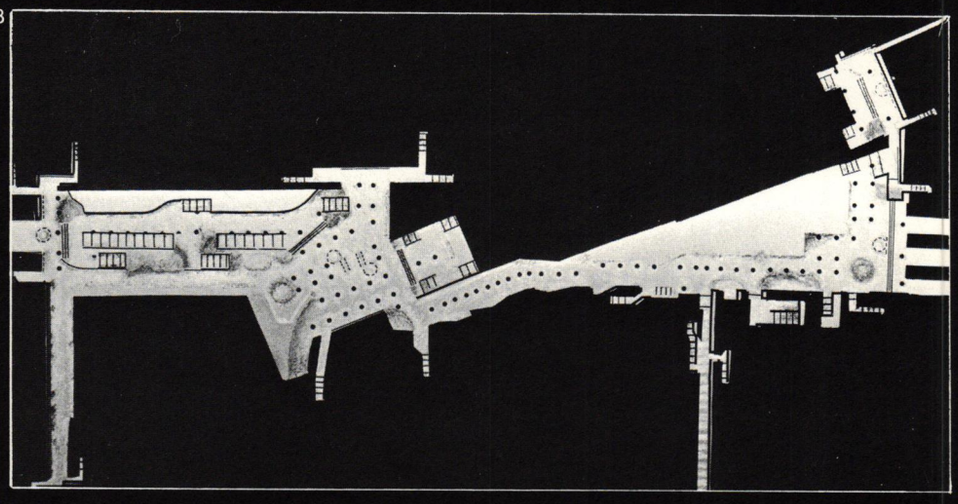
7



Color Coding and Schedule of Locations of Use

Aluminum:	Transit	Turnstiles, token booths, maps, directional signs, entry kiosk.
Orange:	Orange line (former BMT)	Arrow on kiosk, guiding threads, light over turnstiles,
Green:	Green line (former IND)	walls and ceilings of stairs to platform,
Violet:	Violet line (former PATH)	signs on stairs and platforms, markings on train cars, station signs at platform.
Yellow:	Warning	Handrails (stairs and escalators), platform edge, first and last risers.
White:	Exit	Street and exit signs, walls at stairs and passages to street.

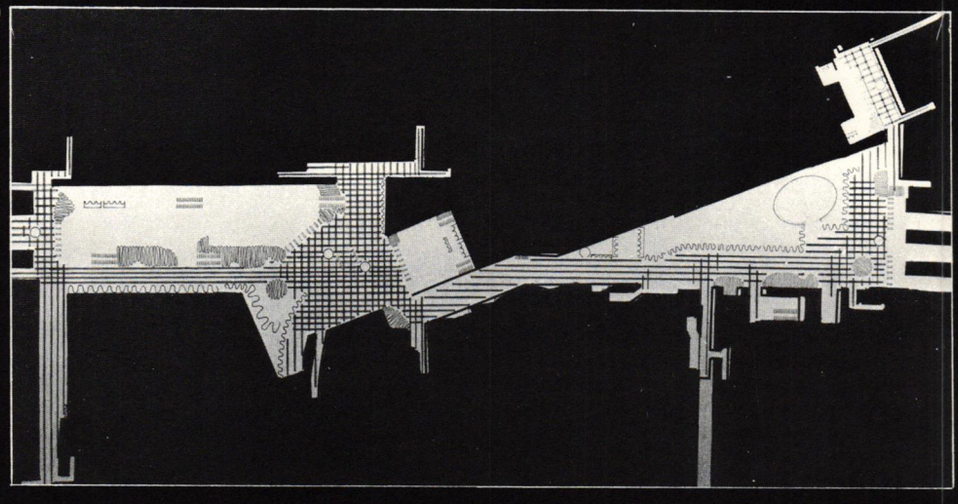
8



Materials

Brushed aluminum:	Transit furniture
White tile:	Exit walls
Molded plastic:	Rest room furniture
Concrete:	Floors
Grey epoxy paint:	Walls and ceilings
Rubber wheels:	On trains (for noise control)
Acoustic fuzz:	Platform ceilings
Paper, plastic, unspecified kinds of metal, etc.	Everywhere else

9



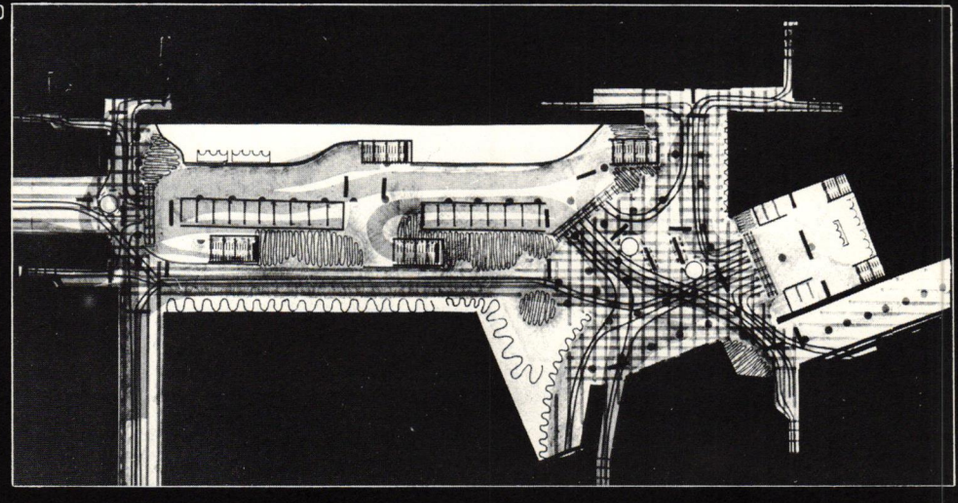
Lighting System

Objects radiate light, space is dark. *Nowhere is structure lit,* except for the white walls at exits to the street.

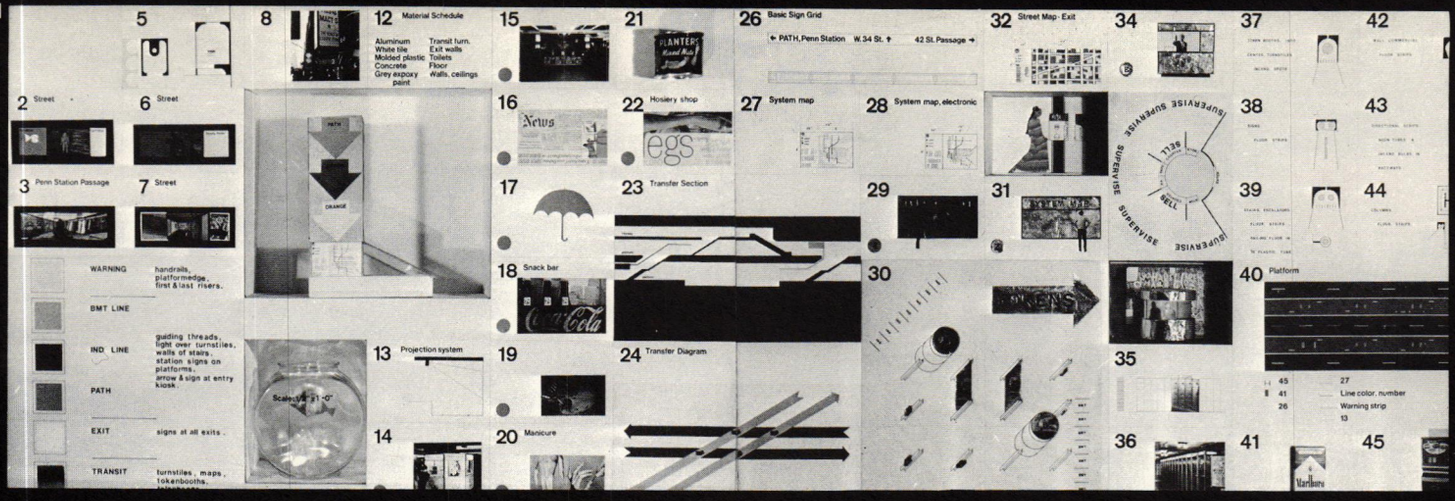
Commercial: Booths and niches provide light for the freeway — stipulated minimum levels to be maintained 24 hours per day, with electric power subsidized by the transit authority. Wall and ceiling ads reflect colored light — fluorescent tubes in four foot modules with colored plastic jackets fit the module of the paper signs. The signs are pasted to cement-asbestos panels installed free of the existing structure in four foot segments along curvilinear trajectories.

Columns: Lights at tops of columns shine down only, the ceiling is dark, floor (reflection factor for concrete = 30-40%) reflects some light. People move in direct light, heads and shoulders near the light are brightest, heads alternately lit and in silhouette. Fixtures use two foot long fluorescent tubes in clear

10



11



6. A composite photo showing a proposed entrance kiosk.

7-10. Proposed system plans show the flow pattern for peak traffic, the disposition of services inserted into the existing spaces, the location of light sources, and a diagramatic indication of the interplay between areas of "magic", play, junctions of high traffic flow, and niches of slower movement.

Base plan: layout of transit furniture, commercial facilities, wall ads, toilets, telephones, entrances and exits, utility spaces, making residuals which are the public passages.

Lighting plan: lighting fixtures and shade map.

Analytic plan: identifying elements by kind:

- street
- junction
- capsule
- niches
- chapel
- magic
- nourishment
- play

Composite plan of all systems.

11. A composite board detailing the multiple individual elements and local decisions which were superimposed on the space to provide the solution.

plastic jackets four sides of columns. Because of floating grease and dirt, plastic diffusers are not used. Metal screens prevent vandalism. An alternate emergency system (incandescent bulbs using 600 volt DC current) is included in same fixture.

Transit Furniture: Downlight is provided individually for each piece. Where possible fixture and furniture are integral, giving freedom in repositioning of furniture. Token booths have a ring of incandescent downlights; direction signs are mounted to a fluorescent fixture which grazes light down across them, lighting the metal without glare. A battery of incandescent downlights is ceiling-mounted above the turnstiles. Incandescent light in telephone booths glows continuously.

Stairs, Ramps, Escalators: Receive additional incandescent downlight. Handrails are hard plastic tubes containing fluorescent light.

Platforms: Only pedestrian areas are lit, tracks, ceilings, and sidewalls are dark. Yellow edge stripes marking the platform are highly reflective plastic. Column fixtures similar to those on mezzanine are used. Column mounted vending machines float in pools of light.

Commercial System

Only the borderline of shops, booths, and spaces designated for commercial leasing is set by the overall design. A prefabricated wall and window unit system is available which fits any curvilinear or rectilinear border line, but other modes of construction may also be used. Certain locations lend themselves to specific kinds of commercial use, but these are only recommendations. The shopkeeper has complete freedom within certain limits: that he must produce a stipulated minimum light level radiating from the store and that he may not use the materials of the communications and warning systems. Mechanical vendors are installed where flow of people is low or intermittent.

Communications System

Form: The entry kiosk at street level, a tall, recognizable symbol, different from advertising, store fronts, street signs — identical at every entrance to the station. The simple round and rectangular forms of token booths, maps, and transit-related signs.

Color and Material: See schedules for specifics.

Uniform Type Face: All transit information.

Threads: To lead you in. The problems of getting in and getting out are not equal; the wrong train is worse than the wrong street corner. Colored glowing light threads solve this basic problem: which way to the train? Simple and redundant.

Maps — of the Subway System: Plain and electronic. The plain map shows all lines in the city, color-keyed; those running through this particular station are shown as broader lines for emphasis. Lines on maps are keyed to trains with a letter symbol. The electronic map lights up the best route to any destination when the button for that station is pressed. Also a card is ejected showing a route, transfers required, and special information. A fixed set of such cards is pre-made, from which the machine picks the correct one depending on destination and time of day or week.

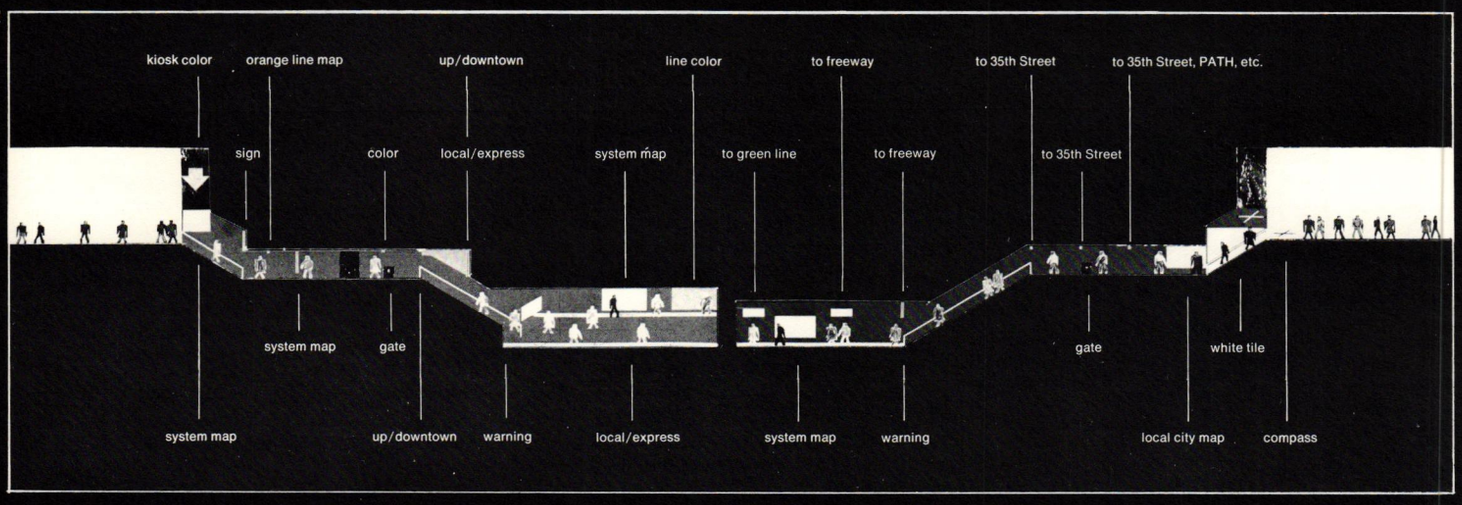
Maps — of the Local Area: Marking special places with inserts for messages, blocks, street numbers, advertising, etc.

Signs: Built up on a grid, six inches by two foot increments of length, corresponding to the fluorescent tubes which light them; always located approximately seven feet above the floor. Signs take on color from the jacket of the fluorescent tube according to the content of their message; see schedule of colors.

Typical Sequences

Street to Train: Moving along a crowded sidewalk, I see the tall kiosk. At side of kiosk a large system map and color key. Color threads beginning at entrance lead to the underground. I descend and arrive on the mezzanine. There is sound of Cretan music; I would like to buy this record. Following the sound of music: window shopping, elegant displays, fascination of mosaic stained glass wall, radiating deep color, peepholes showing electronic equipment. I leave the chapel, Sam Goody's World of Music, a new record in my hand, and follow the green thread. I notice a fortune teller, but there is a waiting line and I have to catch my train. The thread leads past information center in junction: a large system map with color key, and an electronic map, where I find my destination and transfer point. I receive a card from the map. Buying a token, I notice the bank of TV monitors inside the booth. The thread leads on to turnstiles, where line name is repeated. Just before the turnstiles I cannot resist the smell of freshly roasted coffee. Drinking a cup of "the best coffee money can buy", I watch a strange fish in the aquarium nearby. Again the thread and an evening paper at the corner stand.

12



Through the turnstiles signs lead to the next decision point: uptown or downtown and on to a pool of color for stairway or escalator to platform. Threads end. I descend by escalator to the Green Line platform with the scent of perfume from a nearby shop in the air. During descent a sign confirms my choice of uptown. At foot of escalator a sign giving local and express sides of platform. At intervals a large system map. Local and express repeated on stripe at edge of platform. Waiting for the Green train I watch previews of a movie projected on the dark wall opposite the platform. The movie cuts off suddenly signalling the arrival of the train.

Train to Street: Arriving in the station by train, I see a six foot high sign identifying 34th street; also small signs at three different heights on each column. White exit and street signs lead to escalators and stairs. Color signs lead to transfer stairs. Repeated white signs lead through turnstiles to white tile walls at passage to street. On this wall is the street map with its information about department stores, points of interest. North-south-east-west directions are given on kiosk ceiling above stairway to street and on sidewalk paving at exit from kiosk.

Conclusion

The multitude of elements in Herald Square station may give the impression of confusion and unresolved intentions. This is a misimpression: only a sightseer would experience the whole station — the average user will encounter only a few of these elements along his path. But there is a multiplicity of paths leading to any destination — the shortest vs. the long, adventurous journey. Multiplicity provides uniqueness — adding another dimension to a subway journey.

13

14

12. A diagram of the complete information sequence, locating in a generalized section official transit information typically provided: redundancy, reassurance, safety.

13-14. Two collage impressions of the spaces in the subway by Manfred Ibel.

Emilio Ambasz

The Formulation of a Design Discourse

A native of Argentina where he attended the Escuela Nacional No. 2 high school in Buenos Aires, Mr. Ambasz completed both undergraduate and graduate programs at Princeton University in three years. Appointed to the School of Architecture as an Assistant Professor there in 1966, he additionally served as Visiting Professor to the Hochschule fur Gestaltung at Ulm. Having received Princeton's Philip Freneau Bicentennial Preceptorship, Mr. Ambasz will be on leave of absence to act as Associate Curator of Design for the Museum of Modern Art, New York. This article was the first in a series of 4 lectures given at Ulm.

This paper discusses the arguments that support the attempts at developing a *discourse of environmental design,* and proposes a *structure of the design process* upon which to formulate such discourse.

Before going into the arguments that support the need for the enunciation of an environmental design discourse, let us first examine what is there in the present situation of environmental design that makes the formulation of such discourse relevant.

1. Commentary on the Present State of Affairs in Environmental Design

It is my belief that the architect, who is the professional supposed to provide design solutions to environmental problems, has little knowledge on how to deal in abstract with the structure of problems as such, and, moreover, in spite of the fact that his solutions will ultimately adopt physical form, he has little understanding of many of the meanings of the forms which he manipulates. How can the circumstances that have led us to such a situation be critically described, and to what general and specific factors could they be ascribed?

1.1 General factors: Environmental design as a profession; a discipline; and an educational undertaking

If, in order to establish the general factors that determined the present state of affairs, we turn to examining environmental design as a profession, and as a discipline, as well as an educational undertaking, we would then observe that:

As a profession: environmental design lacks systematic approach to contemporary problems, and lags behind other professions such as medicine, sociology, etc., in the fact that it has failed, so far, to organize its accumulated body of experiences into a structured and transmittable body of theory.

As a discipline: environmental design lacks a basic discourse of its own, and is therefore, only infrequently brought into effective correspondence with what are fundamentally related scientific and social disciplines. In addition, the absence of an environmental design discourse proscribes the coordination of disparate terminologies and theories of design methodology which are now being developed in isolation one from the other.

As a consequence of these conditions, environmental design education has yet neither fully defined its aim, nor developed any comprehensive pedagogical theory, and has, in my opinion, failed so far in the exercise of one of its responsibilites: the transmission of an accumulated body of theory and practice structured by the profession into a discipline. Student designers are still trained in pretentious "ateliers" as configuration makers, rather than as problem "solvers" preparing to provide a physical synthesis to the complex processes that affect man, the actor of the built environment.

At this point, it is fair to mention that some schools are exploring more systematic approaches to design. However, such approaches have so far, with some distinguished, though rare, exceptions given rise only to unsophisticatedly rigid "method-idolatry," or to an opportunistic embracement of methodology as design panacea. Such a superficial understanding of the possibilities and limitations of the scientific method as a design instrument amounts to simple-minded neglect for the multifaceted problems of Form, which is, after all, a matter of ultimate importance to the designer of the physical environment.

1.2. Specific factors:
The search for systematic approaches to design

On a detailed level of analysis, it might be possible to ascribe the depicted state of uneasiness in design education to two related circumstances.

1.2.a. Insufficiency of currently available tools for the objectivization of design problems (proportional models)

The first one is a growing tendency to think of design not only in terms of configurations, but also in terms of processes. And the second circumstance is the consequence of a tendency to move away from metaphorical approaches in design methodology in a search for more systematic design methods. Let us now proceed to explore these two intertwined points step by step.

It is to be acknowledged that processes – this so-called "new dimension of the time-space architectural equation," if I may paraprase S. Giedion – have always been, under many other denominations, an implicit concern of environmental design.

In spite of this long-standing concern, the operational implications of processes have not yet been fully comprehended and brought under the control of the designer. This incomprehension, I think, is principally attributable to the inherent limitations and insufficiencies of the traditional tools for objectivizing design problems which have, until now, been at the disposal of the designer – namely *proportional models.*

By proportional models, we understand any two or three dimensional constructions that preserve the relative *proportions* of the original. Their media, therefore, are any two and/or three dimensional construction media that permit a representation of the proportions of the original. For example — plans, sections, three dimensional scale models, etc.

As it becomes evident from the given definitions, proportional models are means used for dealing with notions of two and three dimensional forms.

Proportional models, therefore, do not have the capacity for dealing directly, but only through inference and interpretation, with the more abstract notions of processes (behaviors, operations, tendencies, relations, changes, etc.), and the structures of relationships that processes may assume, because proportional models can only represent relations of (formal) proportions.

Let us suppose that we are requested to analyze the processes of a certain building, and we are given, for that purpose, its plans and sections, i.e., a proportional model. All interpretations that could be deduced from these plans in terms of sociological, economical, political, and even operational processes would usually be inferences of a rather vague sort, to the extent of being unverifiable and unreliable even for speculative purposes.

All I have said does not mean, however, that a regularly trained designer cannot solve tacitly the simple processes which are unsolved in the design of a familiar building type by manipulating its configurations, provided he is acquainted from experience with the processes which are embodied in those known and experienced configurations. However, the shortcomings of this approach to design, which we can call "the metaphorical way" are evident. In a metaphor, a word or phrase denoting one kind of familiar idea or object is used as a mode for understanding another. Similarly, the designer who resorts to this approach as a design technique, is restricted as well as prejudiced, if he wants to gain understanding of the processes occurring in his problem, by the old and familiar forms he has to use as indirect referents.

Underlying the risks inherent in the practice of the metaphorical way – of which restricting the possibility of developing new problem-solving approaches is not a minor one – is the sad fact that the designer is perverting his heritage of formal types into meaningless clichés as a result of his partial understanding of the nature of forms and a lack of operative comprehension of the cultural and technological values which are embodied in forms. It is, moreover, especially alarming that, at a time when the interrelated multiscalar problems of our built environment pervade all of man's actions and thoughts, the professionals who are largely responsible for giving to these forces a physical solution are ill-equipped to do so in terms of the processes involved.

1.2.b. Need for new analytic tools

We may, from the preceding, state that the analytic tools currently employed – such as the described proportional models – for classifying and structuring users' aspirations and needs into design programs are unsatisfactory. And we could propose, then, that instead of his present juggling with patterns and configurations in an "underpowered" attempt to organize the processes inherent in a design problem, the designer would be better served if he would resort to formulating his problems according to the concept of *structural models.*[1] A structural model is an analytic tool specifically conceived for representing the *structure of relationships* of the processes involved in a problem.

The use of such analytic instruments would enable the designer to establish the structure of relationships existing between the different processes involved in a problem. In addition, the use of structural models would aid him in determining, first how will these processes relate to the actors who will enact them; and second how will these actors relate to the physical spaces and objects that they need in order to implement the processes?

In short, the formulation of design problems in terms of structural models would provide the designer with a system for postulating and evaluating a design problem's alternative solution in terms of processes, allowing him, in that way, to operate without previously having to know, for analytic purposes, what form his design will finally adopt.

Allow me at this point to request you kindly not to misunderstand me. Nothing has been said "against" Form per se. On the contrary! Form is here requested to be used not spuriously, but rather as the highest stadium of the designers' task. The arguments for the application of the notion of models should, therefore, be seen as an operative proposal that would contribute toward the development of a more systematic approach to design and toward achieving the evolution of design from a "spoken language" of implicit structure into a "written system with an explicit grammar."

2. **Structure of the Design Process**

2.1. Basic framework

It is inescapable that the explicit formulation of a structure of the design process upon which a discourse can be established will implicitly state a definite design philosophy. Alas, such is the condition of taking sides; but if I manage to delineate the profile of the existing attitudes toward problem-solving, I hope I will be able to turn my partiality into a position capable of objectivization.

It is possible, for the purposes of this presentation, to distinguish two different, though complementary, attitudes regarding problem-solving in design. The first one works toward the solution of the perceived undesired conditions, thus dealing with existing structures, or that "which is." The second one strives to establish an ideal, i.e. a standard for approximation as goal for its solutions, thus proposing that which presupposes "ought to be."

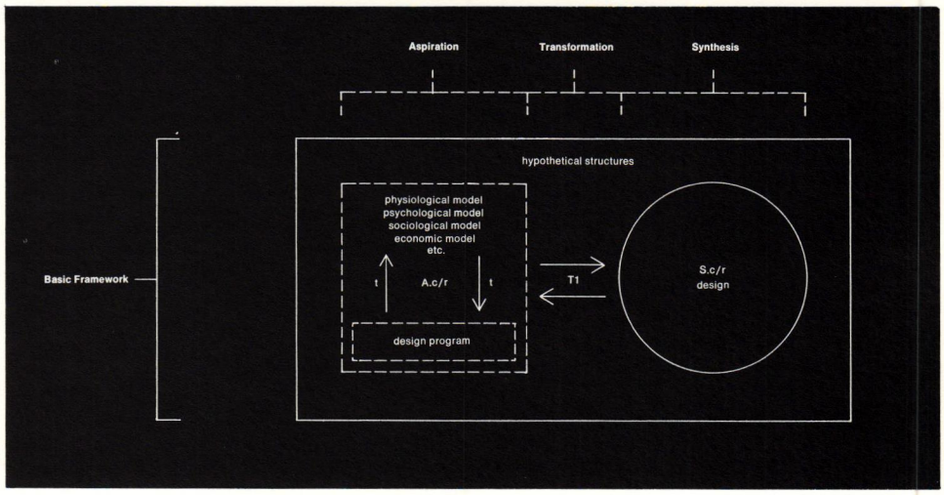
[1]This definition expands, I believe, the definition of analog models given by Max Black, *"Models and Metaphores,"* Ithaca, New York, 1966.

It is not realistic to try to separate one from the other, for both are reciprocal. I will attempt, therefore, to diagram a basic framework on which an environmental design discourse capable of satisfying both presented attitudes could be formulated (**1**). The scheme I will present and the points I will attempt to develop from it are by no means exhaustive of their subject, but postulative. Its intentions are, first, to show possible directions of investigation for the development of such a discourse, and secondly, to indicate some of the practical benefits that the concretion of such enterprise would render to environmental design as a discipline, as a profession, and as an educational undertaking.

2.1.1. Statement of aspirations in terms of models

Let us imagine, for ease of presentation, that we are supposed to design a certain building. Let us also assume that the most proper socio-psychologists, economists, librarians, engineers, and so on, have been duly consulted and that every one of them has provided us with their respective "List of Desired

1



Conditions for the Building": which they have, for our benefit, stated in terms of models (**1**, A.c./r).

Given that we are not concerned here with the specific procedures every one of our consultants followed, we will just accept that they have arrived at the models, in part by observing undesired conditions, and in part by postulating a set of ideal conditions for such a building.

Hopefully, all of our consultants' proposals will be in the end synthesized by our final design of "the building." We could say, however, that a building is not only its formal spaces, but the relation in which these spaces are structured in order to satisfy the many aspirations of our consultants' proposals. The design of the building – now considered as an entity with physical characteristics – will have demands and limitations of its own, and it will have need, therefore, of a special type of model in addition to all the other models previously presented. This special model we have in mind is that thing commonly referred to, but seldom practiced, a Design Program (**1**, A.c/r). The function of a Design Program is to translate all the statements of desired conditions listed in our consultants' models into statements which have direct relevance to the physical aspects of our building's design (**1**, t). More specifically, the function of a Design Program would be to classify all the processes which are wanted to occur in the building. This would be achieved by establishing all the activities that will take place in the building, by identifying all the actors that will participate in the building, by describing what type of physical entities (spaces, equipments, etc.) will the actors require in order to perform the activities which are parts of the processes that will implement our idea of the building. A Design Program should, in addition, establish standards of operational performance by structuring in what way the future building's different spaces and equipment should be organized and related one to the other in order to enable the building's actors to enact those desired conditions that were proposed by our consultants' models.

The question in this instance is to establish how are the statements of our

consultants' models to be translated into statements that have direct and explicit design implications, i.e., the design program? The relevance of this problem of translation becomes evident when we observe, first, that the "language" of the process of design is practiced without an explicit formulation of its discourse or structure; secondly, that the different procedures so far developed for formulating design programs are presented, and supposed to operate, in a vacuum of objective criteria against which to test their rationale; and thirdly, that due to the absence of techniques for formulating design programs which depend on more objective criteria than the common sense of the observer, our consultants do not know in what terms and according to what formats should their statements be formulated so as to facilitate their translation into Design Programs with a minimum of unfaithfulness.

2.1.2. The problem of synthesis

For all its relevance to the final design, a Design Program only establishes norms, i.e., objectives to be fulfilled by the design and against which its performance will be evaluated. There is no indication in it of what should be the final form which will embody all the aspirations proposed by our consultants' model. Even the most accomplished collection of proposal models and the most elaborate of Design Programs – assuming that the above mentioned problem of translation has been solved – can only "assure" that the final design will be, at best, a healthy vegetable. For the design to become a rose . . .

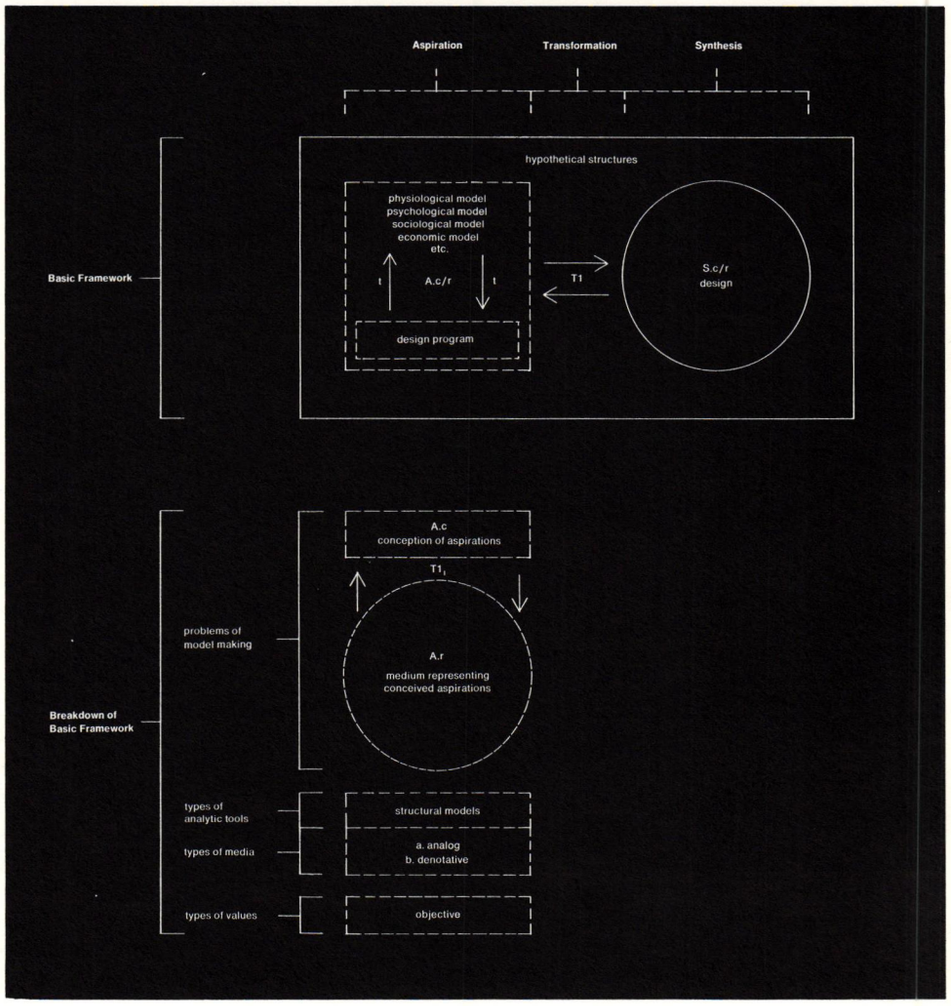
Thus we return to the eternal problem of design and the crucial question that reveals the limits of all methodologies (**1**, T1): how are we to transform the term of our models' proposals into an optimum formal design? How is the gap between *Aspirations* and its design *Synthesis* to be crossed? So far, that gap is only crossed by "lonely jumps." How can we objectivize that gap, and how can we foreshorten the length of the gap? Given that designing is an act of synthesis and not of aggregation, there is not, consequently, a direct and one to one correspondence between the prescriptions of the Design Program and the ensuing design. In spite of this fact of life, there is a belief among many of those involved in design methodology that, if all the possible performances expected of a design could be explicitly stated, then, one and only one aesthetic form would result. Such belief in the program as direct determinant of form is no more than another extremism in a long gallery of designers in search of a ritual.

A Design Program does not determine a design's aesthetic form, but it restricts the possible number of forms by stipulating the level of operational performance that the design's form is to satisfy. If we want to shed some light onto the phenomenon of design synthesis – that lonely jump – we will have the need for developing a more sophisticated approach to the objectivization of design which would be based on an *operative notion of indeterminacy* in design methodology, and would explore the possibility that the domain of methods in a synthetic activity such as designing may lay, in part, beyond the domain of the scientific method and within the dynamic domain of what we would provisorily refer to as *the Synthetic Method.* Such *meta-methodological approach to design systematization* would have to take into account the varying degress of dissonances which are bound to occur between the ideal processes postulated by our consultants in their respective models and the processes that the designed building will generate once built. This meta-methodological, or synthetic method, approach would have to make provisions for dealing operationally with the following two facts: firstly, that research on human behaviour determined by physical environment has yet a long way to go until establishing firmly the basic relations that may exist between man's primary phylogenetic characteristics and his physical environment; and, secondly, that should the relations above mentioned somehow be established, the designer would still have to synthesize intuitively an array of constantly changing cultural and supracultural values (social, aesthetical, cosmological, etc.) which have a dynamic and fluxing influence on human response to physical environment.

However, let us imagine for the sake of continuing with this presentation, that we have, somehow, jumped over the intuitive gap and thereby, hopefully,

synthesized all our consultants' models into the design of a building represented by its plans, sections, and elevations. The design we contemplate now may reveal to us many unexpected things; for example, that different groups of related, though distinct, "desired conditions" were satisfied by means of one single sub-form. The design may also "report" to us that, given adverse contextual circumstances – site problem for example – a certain number of desired conditions had to be compromised; as well as it may show us that a new form is capable of conciliating what before seemed conflicting postulates. As a further design stage we could propose that the designer feedback to the first stage of Aspiration stating, and correct these propositions in the light of what he has learned from the formal synthesis (S.c/r). We will return later (2.5) to this idea of conceiving the design as a model that renders information and permits interpretation as to the value of all its designers. (By designers in this context we refer to consultants as well as to the designer of the physical fabric.)

2



Such is in short terms, maybe too short, the basic framework of relations that can be said to exist between a set of aspirations that motivate the need for a design and the formal design that is created in order to satisfy those aspirations. We were not concerned here with discussing the design phases leading from inception to completion, but with the design processes leading from analysis to communication. Let us now break down the basic framework's diagram in order to examine more carefully the problems involved in the design process.

2.2. Breakdown of the basic framework

2.2.1. Statement of aspirations in terms of models. problems of model making

2.2.1.a. Conception of aspirations in terms of models

In the problems of model making we must distinguish the stage when the consultant conceives the structure of his aspirations from the stage when he represents his aspirations by means of a medium. In order to better understand what happens during the process of structuring aspirations into models, let us imagine that we have assumed the role of any one of our consultants. How do we, as consultants, apprehend the structure of the concepts "behind" our

aspirations? (**2,** A.c) And through what means do we represent them? That is to say, how do we conceive of our aspiration into structural models, and in what medium do we embody our model's concepts? (**2,** A.r)

2.2.1.b. Transformation one-sub-one

Here we have again the problem of transforming the concept of the model into its medium. However, the problem of transformation we face in this case ($T1_1$), is but one component part of the main process of transformation which we have previously defined as transformation one (T1) in our diagram. Consequently, $T1_1$ is more readily definable and easier to bound as a problem than what T1 could be. That is not difficult to see, for while in the case of T1 we had to embody all our models' proposals by means of a design, here, in $T1_1$ we only have to find the right medium to embody the concept of one model at a time.

2.2.1.c. Problem of media

What media are available for representing structural models? I have been able, so far, to distinguish two types of media, namely *analog* and *denotative,* which can be utilized for such representation:

Analog medium: in this case[2] one type of known medium is used as analogy for the one wanted. For example, Joel Cohen, a Harvard mathematician, has a book[3] on economical competition in which he uses a biological model of cellular competition to illustrate the procedure and process involved in economic competition. In this case, as in metaphors, one known medium's behavior has been used as a way of explaining the not yet understood behavior of the original. The use of analog medium involves, therefore, the change of medium (as seen from the economic medium, which was not directly accessible, into the biological medium, which was known). Problems of approximation and faithfulness do, therefore, arise in the process of transforming the model's concept into its representing medium, i.e. the transformation designated as $T1_1$ (**2**).

Denotative medium: in this case a "new language" has to be created in order to represent the model's structure of relationships.

The medium used for representing the relation of spatial adjacencies in our example may be a graphic diagram in which the spaces are represented by circles, and the relationships between them are represented by lines. But in this case, as opposed to that of the analog medium, there is no change of medium, but on the contrary, the denotative medium – that is, the new language created for denoting the relation of space adjacencies in our design – becomes the model of those relations. There is no way of disembodying one from the other. Under this circumstance, the denotative medium becomes the structural model itself, acquiring the state of icon in Peirce's terminology.[4] Whatever we know of the concept of the structural model by virtue of its representation is all and whatever the model will be. The problem in the case of the denotative medium is that a system of symbols – whether graphic, mathematical, etc. – which will stand for the concept of the model has to be invented.

2.2.1.d. Rules for transformation

There is need, in the above described case of transformation ($T1_1$), as well as in all the other cases of transformation, for the formulation of a set of rules to be used in the transformation of the concept of the model into the medium that will denote it.[5]

Given the fact that whatever the medium is it will have demands and

[2]This definition of media is an expansion of Max Black's, *ibid.,* notion of analog model which, in my opinion, is but a partial aspect of the presented notion of structural models.

[3]Cohen, Joel, *A Model of Simple Competition,* "The Annals of the Computation Laboratory," Cambridge, Massachusetts, Harvard University Press, 1967.

[4]Peirce, Charles S., *Collected Papers of Charles Sanders Peirce,* Cambridge, Massachusetts, 1931-1935, Vol. II, pp. 247.

[5]Simon, Herbert, "Models: their uses and limitations," *Current Perspectus in Social Psychology Readings with Commentary,* New York, Oxford University Press, 1963, pp. 79-90.

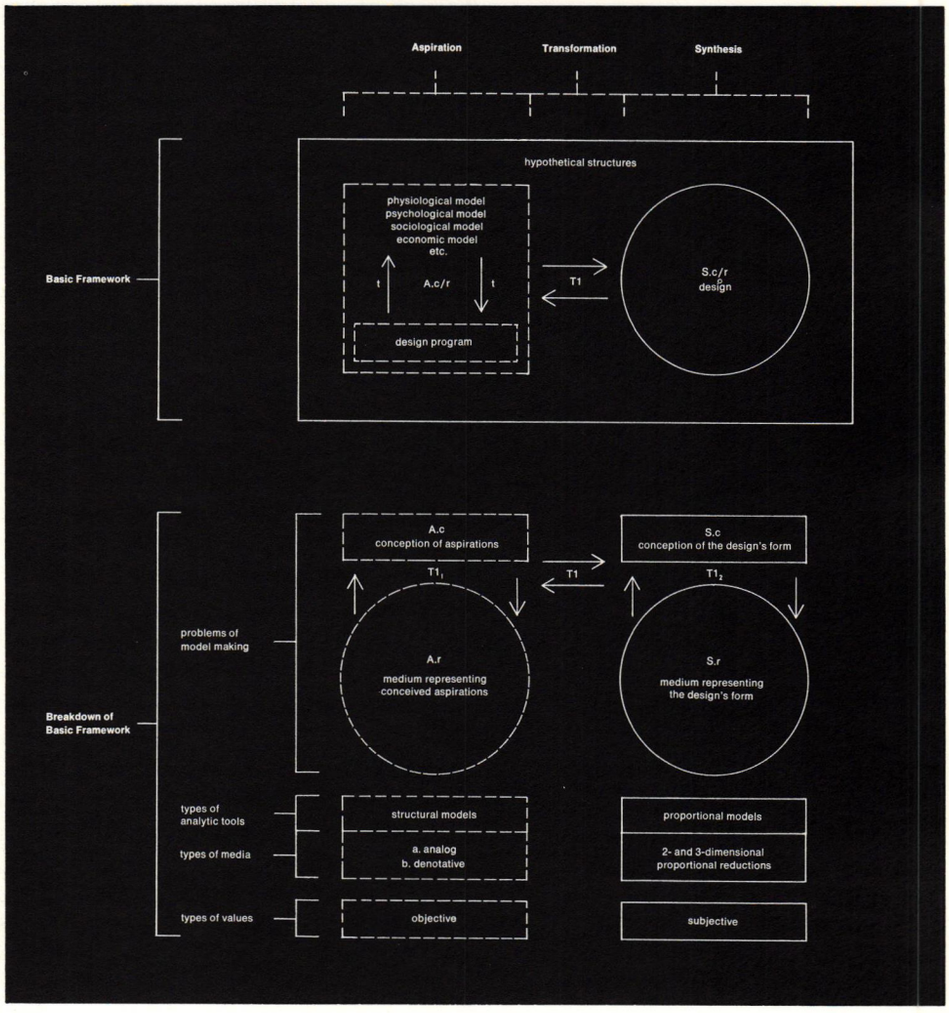
characteristics imposed by its own structure (as is the case, for example, with the Gestalt properties inherent to the use of visual representations). This proposed set of rules for transformation once formulated – not an easy task – would serve for determining whether the medium utilized renders exactly the desired degree of representation or less than expected, or maybe even more than it was initially intended to render (see also 2.2.2.d.).

2.2.2. Problems of synthesis

2.2.2.a. Need for a theory of form

The designer's job is to synthesize all the different proposed models by means of a designed Form. This designed Form will thus embody the objective as well as the subjective contents of our aspirations (our consultants' models, and the designer's values and those of his culture, respectively). However, we know little of the many meanings that can accrue to Form in relation to its multifaceted contents, and in relation to other Forms and their contents. There is an urgent need, therefore, for developing a *Theory of Form* as an integral part of any attempt at formulating the syntactic structure of the design

3



process. A comprehensive theory of form would comprise, as well as establish, the relations existing among the diverse syntactic, semantic, and pragmatic discourses dealing with the abstract, operational, symbolical, historical, psychological, mathematical, philosophical, and aesthetical properties of Form. But this is evidently so complex a subject to allow but a passing reference in this essay.

2.2.2.b. Conception of the designer's form

If we want to understand better the nature of the process of synthesis by which the form of the design is arrived at, we may have to establish, for analytical purposes, a distinction between the stage when the designer conceives the form of his design and the stage when he represents his conception by means of a medium. During the initial conceptual stage when the designer imagines his design – regardless of whether he "flies over it, walks through or along it, sees it in horizontal or vertical projection, or all at once – the conceptual image conceived has the characteristics of a Form, that is, something he can "see" (**3,** S.c).

2.2.2.c. Problem of media and of transformation ($T1_2$)

The next move on the designer's part is to represent his conception of the form of the design through a medium; i.e. in this case (see S.r) a form itself. The problems of transformation ($T1_2$) which are involved in the process of transforming the concept of the design's form into a medium that will represent such concept are easy to grasp and not difficult to operate with. The medium that represents the concept of the design's form belongs to the domain of the already defined proportional models. It is in this defined situation, and only here, where proportional models apply and have full validity.

2.2.2.d. Rules for transformation

The rules for transformation which would help to control this process of transformation ($T1_2$) would involve less complex demands than in the case of $T1_1$, because the only condition that has to be satisfied in this case is that the representing media (any two and/or three dimensional constructions) preserve the proportions of the design's formal concept.

2.3. The hypothetical structures: Problems of transformation two (T.2): "Strategies, Tactics, and Techniques for Implementing Change"

Let us recapitulate here for a moment before going any further. We have, first structured our consultants' aspirations in terms of models; second, we have synthesized these proposals by means of the form of a design; third, we have analyzed and interpreted the resulting design and fed our findings back to the models in order to correct them; fourth, we have corrected the form of our design on the basis of our corrected models. And so we could go on, from aspiration to synthesis, back to aspirations and on and on.

However, regardless of the refinements to which we could carry our structural and proportional models, we would only have in front of us the design's plans, sections, and elevations. The design still belongs to the domain of *hypothetical structures* (**4**).

How is a hypothetical structure transformed into the realm of real structures? How do we change the condition of real structures (zoning laws, traffic ordinances, social systems, geopolitical boundaries, technological procedures, etc.) in order to get them to accommodate the new structure? And to what extent do we compromise the intentions of the hypothetical structure so as to make its concretization feasible? In this case the rules that regulate this transformation (T2) could be called *strategies, tactics, and techniques for implementing change.* They would be related to those disciplines that were involved in the formulation of our models' aspirations and would pertain to the internal political mechanisms and technological disciplines involved in the physical concretization of our building example.

If this set of strategies, tactics, and techniques were developed to an operative point, they could aid the designer in achieving the concretization of his ideas through fighting the enemies of change on the fields of reality rather than by diplomatic compromises on his drafting table.

2.4. Problems of "deterioration" and concept of residue

The process of transforming hypothetical structures into reality necessarily entails "deterioration." We are faced, therefore, with the necessity of devising a *factor of residue* for referring to that deterioration of the ideal. This so-called "deterioration or deformation" (in Platonic terms) or "reformation or transformation" (in Aristotelian terms) occurs not only in the stages of Transformation T2, but in all the other instances of transformation previously described ($T1_1$ and $T1_2$). An example may be found in Renaissance man's conception of the world which was partly structured in transparent and geometric terms. The ideal medium of this world was dimensionless; that is, it had no thickness. However, when physical manifestation had to be given to this conception, man discovered that materials possessed the inconvenient property of having thickness and weight.

A classic instance of this Renaissance procedure is found in Santa Maria dei Miracoli, Venice, by the Lombardi brothers. Its front facade consists of five arches made of white marble. The two arches on either side of the center are infilled with green marble, while the center arch itself contains a door. When you come inside and look back you will see the same thing: five arches. If walls have thickness and corners dimensions, how can this be? If you make a plan of the facade, you will see that the arches visible from the interior of the

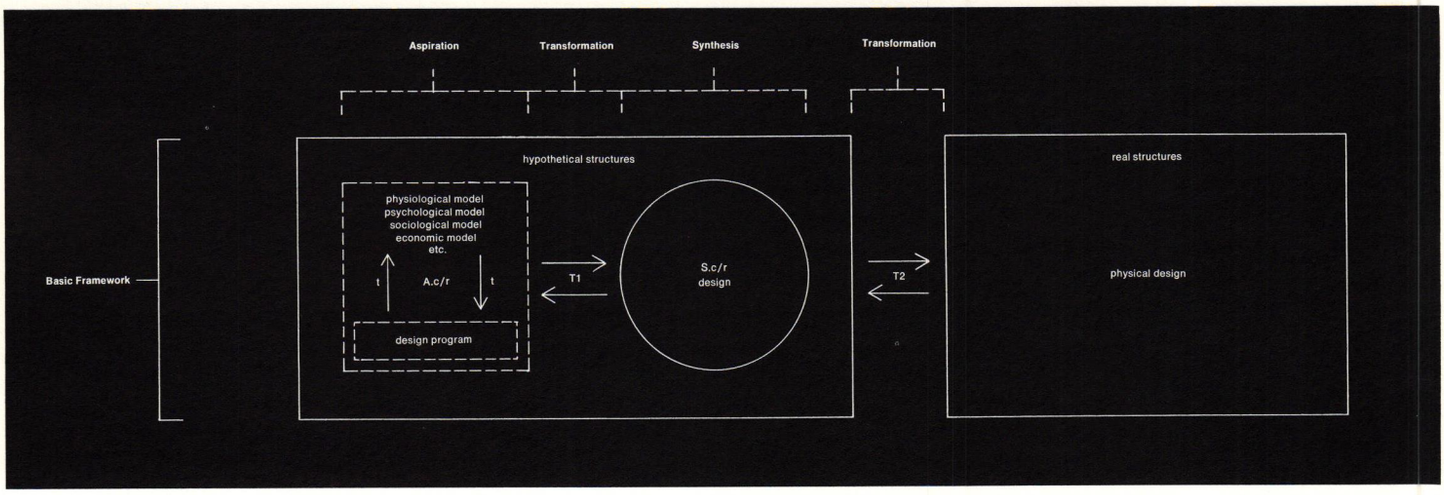
church are in fact applied to the inner side of a regular masonry wall with their dimensions slightly reduced to accommodate their new situation. When Renaissance architects had to give physical consistency to their images of dimensionless structures, they reconciled the ideal structures with reality by diminishing sizes but preserving proportions. The residue factor may then be understood as the measure of discrepancy between the proposed ideals and the facts of reality.

If the notion of residue can be accepted as a measure of existential compromise, the physical design should be seen as the expression of the pact of conciliation established between man's physical and spiritual aspirations and those natural and cultural boundaries within which these desires are exercised and in their turn generated.

2.5. Types of values

The notion of residue factors and deterioration faces us with the issue of value systems and the problem- how to objectivize values in design (**3,** types of values).

4



In the case of our consultants' models and the Design Program, the value systems on which they were based could easily be checked given that they had been explicitly stated as models, i.e. objectives for approximation. However, how can the designer's aesthetic aspirations be stated explicitly before the act of synthesis? And how is the designer to extricate his own system of values from those of the culture that has formed him?

In order to gain some understanding of the mechanism of a designer's value system, let us accept as working hypothesis that: the final design has synthesized all the aspirations stated explicitly by our consultants in their models. Given that the design embodies the values of the consultants' models, we may assume, for a moment, that the design is a very special type of model for information feedback. We would by virtue of this feedback process, be able, at least in theory, to reconstruct those values that we have called objectives; i.e. we should be able to read into the design the different statements of aspirations that were formulated by our consultants prior to the creation of the design. If this analysis were carried through as described, then the results could easily be tested against the record of our consultants' models. Still within our hypothesis, but now on an interpretative level of analysis rather than on an informative one, we could attempt to infer and understand which were the designer's aesthetic values from the interpretation of the aesthetic form of his design. But we must be careful because, not only is the designer's aesthetic value system subjective up to being revealed through the interpretation of the design, but the system of values of he who acts as critic or interpreter is also subjective. The critic's or interpreter's own system are revealed to us indirectly; i.e. through the aesthetic values he will attribute to the design. One could argue that this confusing situation might be obviated if the designer acted as the interpreter of his own aesthetic values.
In order to develop into an operative device, that which Tomás Maldonado,[6]

[6]Seminar given at Princeton University School of Architecture, Fall 1966, under the title "Man and Environment."

after Georg von Wright[7] and Abraham Moles,[8] calls a "logic of aesthetic preference, "we have to deal with the design as a prototype, which if properly interpreted, will render light on the aesthetic values of the designer as well as on the values of the culture that has formed the designer and to which the designer contributes by giving form. Consequently, a "logic of aesthetic preference" can only be formulated after the design has been created.

The important move to further this hypothesis would be, of course, to develop an "operative system for interpretation, "which would be applied to formulating a "logic of aesthetic preferences." If such a logic were formulated it would be possible to extract from it "items of interpretation," and apply these back to our consultants' models, the design program included. In addition, it would be possible to correct and revise these models now in the light of what we have understood from the design that synthesized them. Once the models have been thus corrected and the designer is more conscious of his own system of aesthetic values, good methodological upbringing would recommend that the designer undertake anew the formal synthesis of his improved models.

3. Theory of Formal Types

3.1. Parallel between the basic framework and a theory of formal types

Of course, the framework that I have proposed for structuring the design process is too clean a dissection of a complex act which does not follow exactly such neatly marked steps. However, I believe that I may be able to establish the validity of the proposed structure of the design process, at least, within the context of cultural processes. I would like, therefore, to delineate the parallelism that I see underlying the concepts of Aspirations and Synthesis, whether they are stated as conscious or subconscious acts. In other words, I will attempt to consider aspirations stated in terms of *explicit models* as a concept equivalent to that of *archetype;* and to consider the concept of synthesis stated in terms of *explicitly designed objects* as a concept similar to that of formal *prototypes* (**5**).

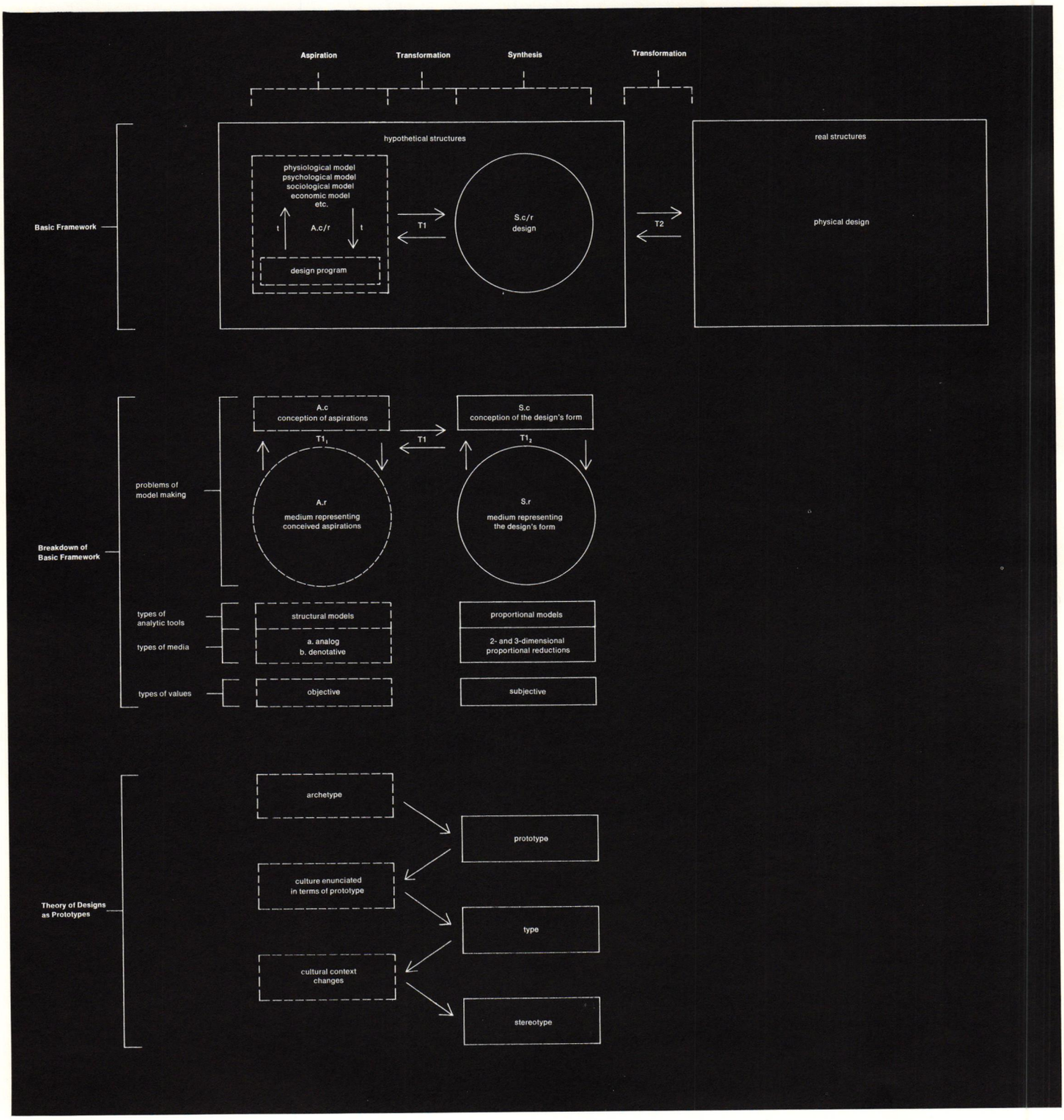
3.2. Notion of "prototype," "type," and "stereotype" as characteristics adopted by the design according to its cultural context

Archetypes, in the Jungian sense of the term, can also, within their realm, be construed as models. We could in this light, accept the aspiration for Order – one of humanity's most widespread and constant desires – as an ever-reappearing archetype, acquiring different formal characteristics – that which we call prototypes – according to whether it is responding to religious, literary, urban, or technological notions of order. The aspirations imbedded in an archetype are always the same, although expressed in different forms according to the values of the culture enacting it. In this manner, the prototype or prototypical form created for satisfying the archetype's aspirations, on one hand is determined by its cultural context and on the other contributes to determine its own cultural context. Thus, Man has travelled, while constantly restating in forms his aspirations for order, through the fenced gardens of Flemish tapestry, over the walled cities of Ambroggio Lorenzetti's paintings, along the Renaissance notions of harmony as geometry,

[7]von Wright, Georg H., "Remarks on the Epistemology of Subjective Probability," *Logic, Methodology and Philosophy of Science,* Edited by Nagel, E., Tarski, A., Suppes, P., Stanford University Press, 1962, pp. 330-340.

[8]Moles, Abraham, *Information Theory and Aesthetic Perception,* University of Illinois, 1963.

5


Aspiration
Transformation
Synthesis
Transformation
Basic Framework
hypothetical structures
physiological model
psychological model
sociological model
economic model
etc.
t
A.c/r
t
design program
T1
S.c/r
design
T2
real structures
physical design
Breakdown of Basic Framework
problems of model making
A.c
conception of aspirations
T1₁
A.r
medium representing
conceived aspirations
T1
S.c
conception of the design's form
T1₂
S.r
medium representing
the design's form
types of analytic tools
structural models
proportional models
types of media
a. analog
b. denotative
2- and 3-dimensional
proportional reductions
types of values
objective
subjective
Theory of Designs as Prototypes
archetype
prototype
culture enunciated
in terms of prototype
type
cultural context
changes
stereotype

out to the coordinates of Versailles, now to just emerge from Le Corbusier's mental landscape of the Radiant City.

3.3. The design as icon

Given that the aspirations of an archetype are synthesized by formal prototypes, it would be possible to consider the transcendence of prototypes, whether conceptual or physical, on many levels. On one, as the formal structure that an archetype adopts for its satisfaction. On the other, as the pact of conciliation established between the aspirations of an archetype and the corresponding physical and cultural boundaries within which these demands are exercised. On a higher level, we could see the prototype as the iconic agent through the interpretation of which the values of its culture are understood and explicitly enunciated.

At this point, the prototype understood – i.e. beheld in terms of the culture that it helped to reveal and that simultaneously unveiled it – makes its conscious re-apparition as *the type.* In other words, it is when the many levels of meaning of the prototype become elements of the semantic domain that it becomes the type. However, it is the condition of cultures to flux, and, thus, those cultural references that gave the key to the type's context, begin to lose their meaning. The type, therefore, no longer responds to a deteriorating discourse, and thus becomes *the stereotype.*

3.4. Domain of the designer as artist and as professional

Let us not, however, commit the error of oversimplifying, for the cultural process' progress is not linear, and prototypes are made with parts of other prototypes, types, and stereotypes. Indeed it is in the form of this combination that the prototype truly occurs. As for the actors in this process, it would be possible to establish a line between prototype and type, for I believe that the creation of the prototype is the domain of the designer as artist, while the institutionalization of the prototype, i.e., the type, is the domain of the designer as professional. In my opinion, it is in the area of type that the convention of any design discourse, its consequent research and design methodology, as well as its corresponding theory of design education is able to be applied and developed.

4. **Conclusions and Future Directions**

I have attempted in the preceding pages to present arguments toward the formulation of a discourse of the design process, and to outline a possible structure of the design process on which such discourse could be enunciated. I have also intended to show that this proposed framework was not only consistent with the structure of the design process, but was also congruent with the notion of physical design as one of the actions through which man reconciles his aspirations with the facts of the natural and cultural world. Clearly, many of this essay's concepts need further exploration and development, for as I indicated before (2.1.), they were by no means intended to be exhaustive of their subject, but postulative. My intentions were first, to indicate possible directions for investigation, and secondly, to remark on some of the practical benefits to be gained from the explicit formulation of a design discourse.

As for directions a re-examination of the arguments presented would indicate that the following points require continued research:

1. the *problem of translating* the requirements stated by our consultants in their models into statements that have explicit design implications (2.1.1.).

2. the need for a *comprehensive theory of form* (2.2.2.a.) which would give the designer an operative understanding of many of the meanings of the forms which he manipulates.

3. *an operational theory for analyzing the design as "a model for information and interpretation:* "as a possible approach toward objectivizing values in design (2.5.), and developing a "logic of aesthetic preference."

4. *a theory of residue* (2.4.) which would deal with the problems of transformation indicated (T1 and T2), and which would also comprehend a system of *rules for transformation* (2.2.1.d.) and (2.2.2.d.).

5. *a meta-methodological approach to design objectivization* (2.1.2) which would provide a way for dealing operationally with the concepts of indeterminacy and intuition in design synthesis.

As for the practical advantages "to be gained from the formulation of a design discourse, there will be for one, the possibility of referring the currently disparate searches for theories and design methods to a common "grammar" of the design process. In addition, the chances for establishing an effective exchange between environment design and the related disciplines would have been enhanced by making explicit the "syntactic" rules of the design process. At the same time, the designer's familiarity with the process of structuring aspirations and proposals in terms of models, as well as his capacity for understanding operationally the distinction between different types of media should assist him in the transfer of methods and solutions developed by other disciplines into the discipline of environmental design.

Alan Colquhoun

Typology and Design Method

Alan Colquhoun is an architect in practice in London. He has been a tutor at the AA School, London; as well as teaching at Princeton and Cambridge Universities. At present he is a Visiting Professor at Cornell. This article first appeared in Arena, *June 1967.*

During the last few years a great deal of attention has been given to the problem of design methodology, and to the process of design as a branch of the wider process of problem solving.

Many people believe, not without reason, that the intuitive methods of design traditionally used by architects are incapable of dealing with the complexity of the problems to be solved, and that without sharper tools of analysis and classification, the designer tends to fall back on previous examples for the solution of new problems – on type solutions. One of the designers and educators who has been consistently preoccupied by this problem is Tomás Maldonado. At a recent seminar at Princeton University, Maldonado admitted that, in cases where it was not possible to classify every observable activity in an architectural programme, it might be necessary to use a typology of architectural forms in order to arrive at a solution. But he added that these forms were like a cancer in the body of the solution, and that as our techniques of classification become more systematic it should be possible to eliminate them altogether.

Now it is my belief that beneath the apparent objectivity of these ideas there lies an aesthetic doctrine. It will be the purpose of this paper to show this to be the case, and, further, to try and show that it is untenable without considerable modification.

One of the most frequent arguments used against typological procedures in architecture has been that they are a vestige of an age of craft. It is held that the use of models by craftsmen became less necessary as the development of scientific techniques enabled man to discover the general laws underlying the technical solutions of the pre-industrial age.

The vicissitudes of the words "art" and "science" certainly indicate that there is a valid distinction to be drawn between artifacts that are the result of the application of the laws of natural science and those which are the result of mimesis[1] and intuition. Before the rise of modern science, tradition, habit and imitation were the methods by which all artifacts were made, whether these were mainly utilitarian or mainly religious. The word "art" was used to describe the skill necessary to produce all such artifacts. With the development of modern science, the word "art" was progressively restricted to the case of artifacts which did not depend on the laws of natural science, but continued to be based on tradition and the idea of the final form of the work as a fixed ideal.

But this distinction ignores the extent to which artifacts have not only a "use" value in the crudest sense, but also an "exchange" value.

The craftsman had an image of the object in his mind's eye when starting to make it. Whether this object was a cult image (say a sculpture) or a kitchen utensil, it was an object of cultural exchange, and it formed part of a system of communications within society. Its "message" value was embodied precisely in the image of the final form which the craftsman held in his mind's eye as he was making it and to which his artifact corresponded as nearly as possible. In spite of the development of the scientific method we must still attribute such social or iconic values to the products of technology, and recognise that they play an essential role in the generation and development of the physical tools of our environment. It is easy to see that the class of artifacts which continue to be made according to the traditional methods (for example paintings or musical compositions) have a predominantly iconic purpose, but such a purpose is not so often recognised in the creation of the environment as a whole. This fact is concealed from us because the intentions of the design process are "hidden" in the overt details of performance specification.

The idolization of "primitive" man, and the fundamentalist attitude which this generated has discouraged the acceptance of such iconic values. There has been a tendency since the eighteenth century to look on the age of primitive man as a sort of golden age in which man lived close to nature. For many years, for instance, the primitive hut or one of its derivatives has been taken as the starting point for architectural evolution, and has been the subject of first-year design programmes, and it would not be an exaggeration to say that frequently a direct line of descent is presumed to exist from the noble savage, through the utilitarian crafts to modern science and technology. The whole edifice of art, certainly since the end of the mediaeval period, is often thought to be corrupt and unnatural, and based on some sophisticated "horror vacui" or the need to aggrandize a ruling class. In so far as it is based on the idea of the noble savage, this notion is quite baseless. The cosmological systems of primitive man were very intellectual and very artificial. To take only kinship systems, the following quotation from Claude Levi-Strauss will make the point clear: "Certainly", he

[1] The word is used here to mean the imitation of a tradition and not in the Aristotelian sense of the imitation of nature.

says, "the biological family is present and persists in human society. But what gives to kinship its character as a social fact is not what it must conserve of nature; it is the essential step by which it separates itself from nature. A system of kinship does not consist of objective blood ties; it exists only in the consciousness of men; it is an arbitrary system of representations, not the spontaneous development of a situation of fact."[2]

There seems to be a close parallel between such systems and the way modern man still approaches the world, and what was true of primitive man in all the ramifications of his practical and emotional life – namely, the need to *represent* the phenomenal world in such a way that it becomes a coherent and logical system – persists in our own organisations, and more particularly in our attitude towards the man-made objects of our environment.

An example of the way this applies to contemporary man is in the creation of what are called socio-spatial schemata. Our sense of place and relationship in, say, an urban environment, or in a building, are not dependent on any objective fact that is measurable; they are phenomenal. The purpose of the aesthetic organisation of our environment is to capitalise on this subjective schematization, and make it socially available. The resulting organisation does not correspond in a one-to-one relationship with the objective facts, but is an artificial construct which *represents* these facts in a socially recognisable way.

It follows that the representational systems which are developed are, in a real sense, independent of the quantifiable facts of the environment.

No system of representation, no meta-language, however, is totally independent of the facts which constitute the objective world. The modern movement in architecture was an attempt to modify the representational systems which had been inherited from the pre-industrial past, and which no longer seemed operable within the context of a rapidly changing technology. One of the main doctrines at the root of this transformation was based essentially on a return to nature, deriving from the romantic movement, but changed from a desire to imitate the surface of natural forms or to operate at a craft level, to a belief in the ability of science to reveal the essence of nature's mode of operation.

Underlying this doctrine was an implied belief in biotechnical determinism. And it is from this theory that the current belief in the supreme importance of scientific methods of analysis and classification is derived. The essence of the functionalist doctrine of the modern movement was not that beauty of order or meaning was unnecessary, but that it could no longer be found in the deliberate search for final forms. The path by which the artifact affected the observer aesthetically was seen as short-circuiting the process of formalization. Form was merely the result of a logical process by which the operational needs and the operational techniques were brought together. Ultimately these would fuse in a kind of biological extension of life, and function and technology would become totally transparent. The theory of Buckminster Fuller is an extreme example of this doctrine.

[2]Claude Levi-Strauss, *Structural Anthropology*, Basic Books, New York 1963.

The relation of this notion to Spencerian evolutionary theory is very striking. According to this theory the *purpose* of prolonging life and the species must be attributed to the process as a whole, but at no particular moment in the process is it possible to see this purpose as a conscious one. The process is therefore teleological. In the same way, the biotechnical determinism of the modern movement was teleological, because it saw the aesthetic of architectural form as something which was achieved without the conscious interference of the designer, but something which none the less was postulated as his ultimate purpose.

It is clear that this doctrine contradicts any theory which would give priority to an intentional iconic form, and it attempts to absorb the process by which man tries to make a representation of the world of phenomena back into a process of unconscious evolution. To what extent has it been successful, and to what extent can it be shown to be possible?

It seems evident, in the first place, that the theory begs the whole question of the iconic significance of forms. Those in the field of design who were – and are – preaching pure technology and so-called objective design method as a sufficient and necessary means of producing environmental devices, persistently attribute iconic power to the creations of technology, which they worship to a degree inconceivable to a scientist. I said earlier that it was in the power of all artifacts to become icons, no matter whether or not they were specifically created for this purpose. Perhaps I might mention certain objects of the nineteenth-century world of technology which had power of this kind – steamships and locomotives, to give only two examples. Even though these objects were made ostensibly with utilitarian purposes in mind, they quickly became *gestalt* entities, which were difficult to disassemble in the mind's eye into their component parts. The same is true of later technical devices such as cars and aeroplanes.

The fact that these objects have been imbued with aesthetic unity and have become carriers of so much meaning indicates that a process of selection and isolation has taken place which is quite redundant from the point of view of their particular functions. We must therefore look upon the aesthetic and iconic qualities of artifacts as being due, not so much to an inherent property, but to a sort of availability or redundancy in them in relation to human feeling.

The literature of modern architecture is full of statements which indicate that after all the new operational needs have been satisfied, there is still a wide area of choice in the final configuration. I would like to quote two designers who have used mathematical methods to arrive at architectural solutions. The first is Yona Friedmann, who uses these methods to arrive at a hierarchy of organisation in the programme. In a recent lecture, in which he was describing methods of computing the relative positions of functions with a three-dimensional city grid, Friedmann acknowledged that the designer is always, after computation, faced with a choice of alternatives, all of which are equally good from an operational point of view.

My second example is Yannis Xenakis, who, in designing the Philips Pavilion while he was in the office of Le Corbusier, used mathematical procedures to determine the form of the enclosing structure. Xenakis says

that calculation provided the characteristic form of the structure, but that after this, logic no longer operated, and the compositional arrangement had to be decided on the basis of intuition.[3]

From these statements it would appear that a purely teleological doctrine of technico-aesthetic forms is not tenable. At whatever stage in the design process it may occur, it seems that the designer is always faced with making voluntary decisions, and that the configurations which he arrives at must be the result of an *intention*, and not merely the result of a deterministic process. The following statement of Le Corbusier tends to reinforce this point of view. "My intellect", he says, "does not accept the adoption of the modules of Vignola in the matter of building. I claim that harmony exists between the objects one is dealing with. The chapel at Ronchamp perhaps shows that architecture is not an affair of columns but an affair of plastic events. Plastic events are not regulated by scholastic or academic formulae, they are free and innumerable."

Although this statement is a defense of the new architecture against the academic imitation of past forms and the determinism it denies is academic rather than scientific, it none the less stresses the release that follows from functional considerations, rather than their power of determining the solution.

One of the most uninhibited statements of this kind comes from Moholy-Nagy. In his description of the design course at the Institute of Design in Chicago, he makes the following defense of the free operation of intuition. "The training", he says, "is directed towards imagination and inventiveness, a basic condition for the ever-changing industrial scene, for technology in flux. The last step in this technique is the emphasis on integration through the conscious search for relationships. The intuitive working methods of genius give a clue to this process. The unique ability of the genius can be approximated by everybody if one of its essential features be apprehended: the flash-like act of connecting elements not obviously belonging together. If the same methodology were used generally in all fields we could have *the* key to the age – seeing everything in relationship."[4]

We can now begin to build up a picture of the general body of doctrine embedded in the modern movement. It consists of a tension of two apparently contradictory ideas – biotechnical determinism on the one hand, and free expression on the other. What seems to have happened is that, in the act of giving a new validity to the demands of function as an extension of nature's mode of operation, it has left a vacuum where previously there was a body of traditional values. The whole field of aesthetics, with its ideological foundations and its belief in ideal beauty, has been swept aside. All that is left in its place is permissive expression, the total freedom of the genius which, if we but knew it, resides in us all. What appears on the surface as a hard, rational discipline of design, turns out rather paradoxically to be a mystical belief in the intuitional process.

I would like now to turn back to the statement by Maldonado which I mentioned at the beginning of this paper. He said that so long as our classification techniques were unable to establish all the parameters of a problem, it might be necessary to use a typology of forms to fill the gap. From the examples of the statements made by modern designers it would seem that it is indeed never possible to state all the parameters of a problem. Truly quantifiable criteria always leave a choice for the designer to make. In modern architectural theory this choice has been generally conceived of as based on intuition working in a cultural vacuum. In mentioning typology, Maldonado is suggesting something quite new, and something which has been rejected again and again by modern theorists. He is suggesting that the area of pure intuition must be based on a knowledge of past solutions to related problems, and that creation is a process of adapting forms derived either from past needs or on past aesthetic ideologies to the need of the present. Although he regards this as a provisional solution – "a cancer in the body of the solution" – he none the less recognises that this is the actual procedure which designers follow.

I suggest that this is true, and moreover that it is true in all fields of design and not only that of architecture. I have referred to the argument that the more rigorously the general physical or mathematical laws are applied to the solution of design problems, the less it is necessary to have a mental picture of the final form. But, although we may postulate an ideal state in which these laws correspond exactly to the objective world, in fact this is not the case. Laws are not found in nature. They are constructs of the human mind; they are models which are valid so long as events do not prove them to be wrong. Not only this. Technology is frequently faced with different problems which are not logically consistent. All the problems of aircraft configuration, for example, could not be solved unless there was give-and-take in the application of physical laws. The position of the power unit is a variable, so is the configuration of the wings and tailplane. The position of one may affect the shape of the other. The application of general laws is a necessary ingredient of the form. But it is not a sufficient one for determining the actual configuration. And in a world of pure technology this area of free choice is invariably dealt with by adapting previous solutions.

In the world of architecture this problem becomes more critical because here the general laws of physics and the empirical facts are even less capable of fixing a final configuration than is so in the case of an airplane or a bridge. Recourse to some kind of typological model is more likely to be necessary. It may be argued that, in spite of the fact that there is an area of free choice beyond that of operation, this freedom lies in the details (where, for instance, personal "taste" ought legitimately to operate). This could probably be shown to be true of such technically complex objects as airplanes, where the topological relationships are largely determined by the application of physical laws. But it does not necessarily apply to architecture. Here, on the contrary, because of the comparatively simple environmental pressures that operate on buildings, the topological relationships are seldom rigorously determined. In the case of the Philips Pavilion, for example, it was not only acoustic requirements which established the basic configuration, but also the need for a building which would convey a certain impression of vertigo and fantasy. It is in the details of plan or equipment that natural laws become stringent, and not in the general arrangement. Where the designer decides to be governed by operational factors, he tends to work in terms of a thoroughly nineteenth-century rationalism, for example in the case of the office buildings of Mies and SOM, where pragmatic planning and cost considerations converge on a received neo-classic aesthetic to create simple cubes, regular frames and cores.

It is interesting that in most of the avant-garde projects where form determinants are held to be purely technical or operational, rationalism and cost are discarded for forms of a fantastic or expressionist kind. Frequently, as in the case of "Archigram", forms are borrowed from other disciplines, such as space engineering or pop art. Valid as these iconographic procedures may be – and before dismissing them one would have to investigate them in relation to the work of Le Corbusier and the Russian constructivists who borrowed the forms of ships and engineering structures – they can hardly be compatible with a doctrine of determinism, if we are to regard this as a modus operandi, rather than a remote and utopian ideal.

The exclusion by modern architectural theory of typologies, and its belief in the freedom of the intuition, can at any rate be partially explained by the general theory of expression which was current at the turn of the century. This thory can be seen most clearly in the work and theories of certain painters – notably Kandinsky, both in his paintings and in his book *Point and Line to Plane*, which outlines the theory on which his paintings are based. Expressionist theory rejected all historical manifestations of art, just as modern architectural theory rejected all historical forms of architecture. To it these manifestations were an ossification of technical and cultural attitudes whose raison d'être had ceased to exist. The theory was based on the belief that shapes have physiognomic or expressive interest which communicates itself to us directly. This view has been subjected to a great deal of criticism, and one of its most convincing refutations occurs in E. H. Gombrich's book *Meditations on a Hobby Horse*. Gombrich demonstrates that an arrangement of forms such as is found in a painting by Kandinsky or by Paul Klee is in fact very low in content, unless we attribute to these forms some system of conventional meanings not inherent in the forms themselves. His thesis is that physiognomic forms are ambiguous, though certainly not without expressive value, and that they can only be interpreted within a particular cultural milieu.[5]

One of the ways he illustrates this is by reference to the supposed affective qualities of colours. Gombrich points out, in the now famous example of traffic signals, that we are dealing with a conventional and not a physiognomic meaning; and maintains that it would be equally logical to reverse the meaning system, so that red indicated action and forward movement, and green inaction, quietness and caution.[6]

Expressionist theory probably had a very strong influence on the modern movement in architecture. Its application to architecture would be even more obvious than to painting, because of the absence, in architecture, of

[3] "La Poeme Electronique de Le Corbusier", from *Le Collection Force Vivre*, Editions du Minuit, Jean Petit.

[4] L. Moholy-Nagy, *Vision in Motion*, Paul Theobald and Company, Chicago.

[5] These principles are similar to those formulated for sign systems in general by F. de Saussure, see *Course in General Linguistics*, F. de Saussure, The Philosophical Library, Inc. New York 1959.

[6] It is interesting that, since his book came out, the Chinese have, for ideological reasons, reversed the meanings of their traffic signals.

any forms with overt iconic meanings. Architecture has always, with music, been considered an abstract art, so that the theory of physiognomic forms could be applied to it without having to overcome the hurdle of direct representation and anecdote as in painting.

But if the objections to expressionist theory are valid, then they apply to architecture as much as to painting. If, as Gombrich suggests, forms by themselves are relatively empty of meaning, it follows that the forms which we intuit will, in the unconscious mind, tend to attract to themselves certain associations of meaning. This could mean not only that we are *not* free from the forms of the past, and from the availability of these forms as typological models, but that, if we assume we are free, we have lost control over a very active sector of our imagination, and of our power to communicate with others. It would seem that we ought to accept a value system which takes account of the forms and solutions of the past, if we are to retain control over concepts which will obtrude themselves into the creative process, whether we are aware of it or not.

There does seem, in fact, to be a close relationship between the pure functionalist or teleological theory that I have described, and expressionism, as defined by Gombrich. By insisting on the use of analytical and inductive methods of design, functionalism leaves a vacuum in the form-making process. This it fills with its own reductionist aesthetic – the the aesthetic that claims that "intuition", with no historical dimension, can arrive spontaneously at forms which are the equivalent of fundamental operations. This procedure postulates a kind of onomatopoeic relationship between forms and their content. In the case of a biotechnico/determinist theory the content is the set of relevant functions – functions which themselves represent a reduction of all the socially meaningful operations within a building – and it is assumed that the functional complex is translated into forms whose iconographical significance is nothing more than the rational structure of the functional complex itself. The existent facts of the objective situation in functionalism are the equivalent of the existent facts of the subjective (physiognomic) situation in expressionism. In both cases the resulting forms are assumed to obey natural laws, in the one case physical, and in the other psychological.

But traditionally, in the world of art, the existent natural facts, whether objective or subjective, are less significant than the values which we attribute to these facts, or the system of representation which embodies these values. As in language, the meanings attributed to elements which constitute the system cannot be derived solely from the elements themselves. In a given cross section of history it is never possible to reduce a sign system to one in which all the elements can be shown to be the result of natural forces.

It is true that the analogy between a system such as architecture and language is not exact, because in the case of architecture there are natural (technical and expressive) facts which are not present in language. But these facts are not sufficient to explain the entire meaning system, which depends less on the intrinsic nature of the signs than on convention, and the series of expectations that such a convention makes possible.[7] It follows that a plastic system of representation such as architecture has to presuppose the existence of a given system. No more than in the case of language can the problem of form be reduced to some kind of essence outside the system itself, of which the form is merely a reflection. In both cases it is necessary to postulate a conventional, arbitrary system embodied in solution/problem complexes.

My purpose in stressing this fact is not to advocate the reversion to an architecture which accepts tradition unthinkingly. This would imply that there was a fixed and immutable relation between forms and meanings, which it has been one of the chief purposes in this paper to refute. The characteristic of our age is change, and it is precisely because this is so that it is necessary to investigate the part which the modifications of the stereotype play in relation to problems which are without precedent in any received tradition. The process of change must involve a dialectical relationship between those parts of the system that are resistant to change (because they are conventional) but changeable (because they are arbitrary); and those parts of the system which depend on natural laws which progressively come to light under the pressure of technological evolution. Underlying both there are undoubtedly certain psycho-physical constants; but these are always mediated both by the existent language on the one hand and by technological developments on the other.

I have tried to show that a reductionist theory according to which the problem/solution process can be reduced to some sort of essence is untenable. One might postulate that the process of change is carried out, not by a process of reduction, but rather by a process of exclusion, and it would seem that the history of the modern movement in all the arts lends support to this idea. If we consider painting and music we can see that, in the work of Kandinsky and Schönberg, traditional formal devices were not completely abandoned, but were transformed and given a new emphasis by the exclusion of ideologically repulsive iconic elements. In the case of Kandinsky it is the representational element which is excluded; in the case of Schönberg it is the system of triads based on the harmonic series.

The value of what I have called the process of exclusion is to enable us to see the potentiality of forms as if for the first time, and with naivety. This is the justification for the radical change in the iconic system of representation, and it is a process which we have to adopt if we are to keep and renew our awareness of the values which can be carried by forms. The bare bones of our culture – a culture with its own characteristic technology – must become visible to us. For this to happen, a certain scientific detachment towards our problems is essential, and with it the application of the mathematical tools proper to our culture. But these tools are unable to give us a ready-made solution to our problems. They only provide the framework, the context within which we operate.

[7] "When semiology becomes organised as a science, the question will arise whether or not it properly includes modes of expression based on completely natural signs. . . . In fact, every means of expression used in society is based, in principle, on collective behaviour. . . . Polite formulae, for instance, though imbued with a certain natural expressiveness (as in the case of a Chinese who greets his Emperor by bowing down to the ground nine times) are none the less fixed by rule; it is this rule and not the intrinsic value of the gesture that obliges one to use them." F. de Saussure, *op. cit.*

STRANGELY ENOUGH I THINK THAT WOULD INDEED BE SUBVERSIVE. IF YOU COULD EVER IMAGINE A SITUATION IN WHICH THIS COULD BE DONE YOU WOULD HAVE THE REVOLUTION. IF YOU COULD REALLY ENVISAGE A SITUATION WHERE AT THE END OF PARK AVENUE THERE WOULD BE A HUGE GOOD HUMOR ICE CREAM BAR AND IN THE MIDDLE OF TIMES SQUARE A HUGE BANANA I WOULD SAY—AND I THINK SAFELY SAY—THIS SOCIETY HAS COME TO AN END. BECAUSE THEN PEOPLE CANNOT TAKE ANYTHING SERIOUSLY: NEITHER THEIR PRESIDENT, NOR THE CABINET, NOR THE CORPORATION EXECUTIVES. THERE IS A WAY IN WHICH THIS KIND OF SATIRE, OF HUMOR, CAN INDEED KILL. I THINK IT WOULD BE ONE OF THE MOST BLOODLESS MEANS TO ACHIEVE A RADICAL CHANGE. BUT THE TROUBLE IS YOU MUST ALREADY HAVE THE RADICAL CHANGE IN ORDER TO GET IT BUILT AND I DON'T SEE ANY EVIDENCE OF THAT. AND THE MERE DRAWING WOULDN'T HURT AND THAT MAKES IT HARMLESS. BUT JUST IMAGINE THAT OVERNIGHT IT WOULD SUDDENLY BE THERE.

HERBERT MARCUSE, COMMENTING ON CLAES OLDENBURG'S PROPOSED MONUMENTS FOR NEW YORK CITY, IN AN INFORMAL TAPED DISCUSSION WITH STUART WREDE, IN CAMBRIDGE, MASSACHUSETTS, JUNE 1968. TYPOGRAPHY AND PHOTOGRAPH OVERLEAF BY JOEL KATZ, BASED ON A SERIES OF DRAWINGS MADE BY OLDENBURG IN 1965.

LOEW'S STATE
JOHN STEINBECK'S
EAST OF EDEN
AN ELIA KAZAN PROD
CINEMASCOPE
DEBORAH
KERR
VAN
JOHNSO
The End of
the Affair
NO
RIGHT
TURN

Kenneth Frampton

Maison de Verre

Kenneth Frampton received his professional training at the AA School in London. He has been an associate of the firm Douglas Stephen & Partners, London, since 1961. From 1962-64 he was technical editor of the magazine Architectural Design. *In 1965 he was a Hodder Fellow at Princeton and during 1966 and 1967 he served as a visiting lecturer at the School of Architecture, Princeton University, where he is at present a member of the faculty.*

The drawings for this article were made from notes compiled by Mr. Frampton, Robert Vickery, and Michael Carapetian when they jointly measured and photographed the Maison de Verre in July 1965. All the photographs are by Mr. Carapetian unless otherwise stated. Michael Carapetian is now a practicing architect in Teheran, Iran, and Robert Vickery is presently a lecturer in architecture at the Cheltenham College of Art, Gloucestershire, England.

The author is indebted to Michael Curtis, Harrison Fraker, John Harrell, William Johnson, Peter Mayer, Thomas Pritchard, Salvatore Vasi, Augusto Villalon, and Jeremy Wood for their invaluable assistance in the preparation of the drawings for publication. He would like also to express his gratitude to Dr. and the late Madame Dalsace for their cooperation in making this documentation and to the late Dollie Pierre Chareau for her photograph of Pierre Chareau and for her assistance in translation. Lastly, he would like to credit Margaret Tallett, whose plan drawings of the house, published in the magazine "Architecture and Building" in May 1960, pp. 192-195, proved an invaluable basis upon which to begin the survey.

1. Bijvoet & Chareau, golf club-house at Beauvallon, 1927.

2. Bruno Taut, glass pavilion at Werkbund Austellung, Cologne, 1914.

In the Maison de Verre one is confronted with a work which defies any accepted form of classification. It is not merely a question of an inability to place it from a stylistic or conceptual point of view. The genre of the work itself is problematic. Are we to regard it as a building in the accepted sense or should we rather think of it as a grossly enlarged piece of furniture, interjected into an altogether larger realm? The site plan reveals this realm, as an elongated building lot, integral to the residential infra-structure of 18th century Paris. The Maison de Verre is an insertion into this lot both horizontally and vertically and thus it is more probably correct to regard it as a large furnishing element rather than as simply a house in the conventional sense. This precious distinction acquires greater validity once one realises that Pierre Chareau was, by temperament and training, more concerned with interiors than with exteriors. It is further substantiated by the relative banality of Chareau's free standing buildings. One cannot recognise the golf club built at Beauvallon in 1927 (**1**) to the designs of Chareau and Bijvoet, as being a work, by the same team who produced the Maison de Verre.

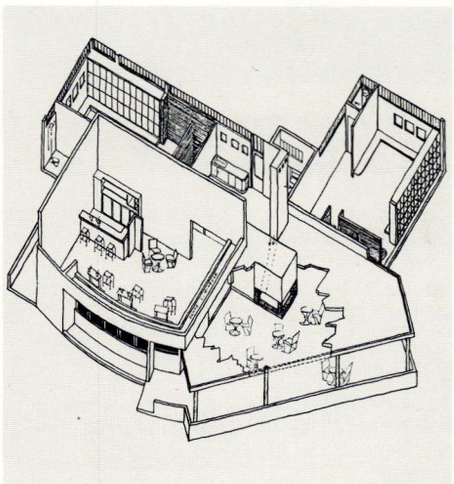
There is no demonstrable conscious link between Paul Scheerbart's *Glasarchitektur* of 1914 and the Maison de Verre. Nonetheless the Maison de Verre curiously echoes, however unconsciously, Scheerbart's prophetic vision. It embodies an altogether richer and more total realisation of this vision than either he or his professional alter-ego Bruno Taut were ever to achieve. Between Taut's glass pavilion dedicated to Scheerbart and built for the *Deutsche Werkbund Ausstellung* of 1914 (**2**) and Chareau's Maison de Verre, no structures exist in which glass lenses were used as the prime protective skin. Auguste Perret naturally had the audacity to use glass lenses as early as 1903; as cladding to the stair shaft of his famous Rue Franklin apartments. As a general walling technique however, they made a relatively late entry into the vocabulary of 20th century architecture.[1] This delay, despite Taut's versatile demonstration of 1914, was no doubt due in part to a certain technical insecurity. Even as late as 1929, St. Gobain was still unprepared to give a weather proof guarantee to the proposed use of lenses in the Maison de Verre. It is a measure of Chareau's clients' courage that they were willing to adopt such an unproven material for the enclosure of their house.[2]

Iconographically, glass lenses had long been anticipated, first by Mackintosh and then in the work of the Viennese school. Both Hoffmann and Loos made extensive use of square gridded areas of glass throughout their work. This glazing device, derived from Japan, was consciously employed by late Art Nouveau architects in order to increase the area of glazing and at the same time to emphasize the surface of transparent planes. Thus used to much the same end, the glass lenses in the Maison de Verre, largely account for the oriental atmosphere which pervades the house. (**3**) Mackintosh's Glasgow School of Art Library of 1907 and Hoffmann's Palais

[1]Glass lenses do not occur to any extent in Le Corbusier's work until his first project for the Armée du Salut of 1929.

[2]As I have remarked elsewhere both the Maison de Verre and the Rietveld-Schroeder house involved the direct patronage of highly cultivated women. See *Arena, Journal of the Architectural Association*, London, April, 1966, pp. 257-262.

1



2

Stoclet, Brussels of 1905 are both prototypical in respect to such planar emphasis, while a typical contemporary Viennese example is Loos' Michaelerplatz department store of 1910. (**4**). In the Michaelerplatz store, as in the Glasgow School of Art, gridded glass is projected into the frontal plane where it occupies a position usually reserved for massive construction. In further anticipation of the Maison de Verre the gridded glazed planes of this store are pierced with opening lights of clear glass.

It is obvious that the Viennese school and in particular, Hoffmann's pupil, Gabriel Guvrekian and to a greater extent Adolf Loos, exercised a considerable influence on Chareau's development. Apart from the mutual friendship of all three men during the period of Loos' extended sojourn in Paris, during the 20's, the similarity of their separate approaches to the problem of the domestic interior is testimony in itself. Guvrekian's interior for his Villa Heim of 1926 and Loos' Moller House, Vienna of 1928 are very parallel, at least stylistically to Chareau's project for an embassy suite (**5**) displayed at the *Exposition des Arts Decoratifs* in 1925.

Despite his polemical radicalism Loos maintained an allegiance to bourgeois values which found direct symbolic expression in his predilection for hard wearing traditional materials, such as teak or walnut panelling, parquet flooring and marble. This *revetment* symbolism appears to have influenced the stylistic point of departure of the Parisian Union des Artistes Moderne, founded in 1929, by René Herbst, Pierre Chareau, Francis Jourdain, Hélene Henry, Rob Mallet-Stevens, Charlotte Perriand and Sonia Delaunay, amongst many others. The UAM artists however introduced a much lighter touch into the Loosian vocabulary, a tendency deriving partially out of Hoffmann and Voysey, partially out of cubism and particularly out of a French preoccupation with ingenuity and invention for its own sake. This development was somewhat at variance with Loos' *haute couture* taste. By the late 20's however, the UAM group had freed itself from the influence of measured ostentation in favour of a preference for modest interiors of plywood furniture and off white walls. The eccentric Loosian juxtaposition of rustic *Style Anglais* with neoclassical luxury found its aesthetic resolution in this UAM development; in the simple homogeneity of Jourdain's severe interiors and, as a one off piece, in the rich articulation of material in Chareau's Maison de Verre.

All the same the high bourgeois style of Loos conditioned the material aura of the Maison de Verre, even if it in no way determined its organisation, which arose directly out of Chareau's inventiveness and Bijvoet's sense of order. Chareau, in conjunction with his *artisanat* Dalbet, had literally begun to invent his *poésie d'équipage* as early as 1918, when he designed the interior of a two room St. Germain apartment (**6**) for a young doctor and his wife, Doctor and Madame Dalsace, who were later to become the clients of the Maison de Verre.[3] Chareau's penchant for invention was fundamental to the final form of the house, as were the peculiar circumstances under which it was eventually to be achieved.

[3]See *Decorative Art 1933, Yearbook of "The Studio,"* London, p. 113. This commission involved Chareau in the design and construction of two pieces of furniture, a bed and a desk, which were subsequently exhibited in the Salon d'Automne of 1919, an event which established Chareau's reputation as a designer. Pierre Chareau first met Dalbet through working on purpose-made pieces of this kind, Dalbet was a type of artisan very comparable to Gerrit Rietveld.

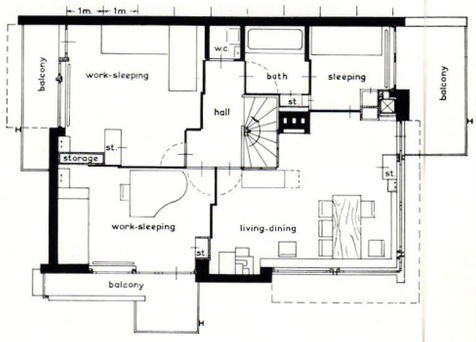
3

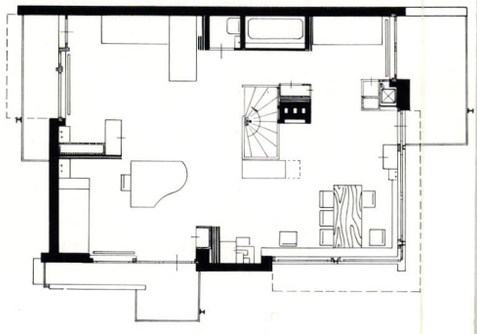
6

4

5

7





3. Pierre Chareau, dressing room design, around 1925. A combined reference to well established oriental and nautical traditions.

4. Adolf Loos, Goldman & Salatasch store, Michaelerplatz, Vienna, 1910.

5. Pierre Chareau, embassy suite, Exposition des Arts Décoratifs, Paris, 1925.

6. Pierre Chareau, Parisian interior.

7. Gerrit Rietveld, Rietveld-Schroeder House, Utrecht, 1924. Two versions of the main floor plan, showing the full potential of its flexibility.

In 1928 Madame Dalsace's father bought an 18th century town house in 31 Rue St. Guillaume. The property was flanked on both sides by party walls of varying height and comprised in addition to an existing three story house, a small forecourt and a garden in the rear. Initially the clients had every intention of demolishing the existing house and building anew but the presence of an uncooperative old lady in residence on the second floor, secure as a protected tenant under law, compelled both client and architect to devise a new solution. This impasse led to the perhaps inevitable but nonetheless daring decision to permanently underpin the existing second floor with steel. The subsequent demolition of the unoccupied floors, spared only the staircase access to the existing second floor. This residual feature, assymetrically located, afforded the only distortion in a volume which was otherwise a clear rectilinear roofed over space extending from forecourt to garden. This volume possessed sufficient elevation to comfortably accommodate three new floors of normal height. Consequently three new levels were provided, each one being devoted to a different activity. The ground floor was allocated to medical practice, the first floor to "public" and "semi-public" space and the second floor to private sleeping space, bedrooms, bathrooms, etc. A three story service wing, comprising kitchen and maids quarters was built out from the main volume to one side of the forecourt. Once this shell was complete, it only remained to organise these levels in detail and "to envelope the necessities of the house."[4] For this purpose glass lenses were selected for their translucent property which afforded both privacy and light. Of this mutual decision of client and architect to totally glaze the house Dr. Dalsace has written as follows:

"Thanks to an old lady who did not wish to leave her sordid apartment on the second floor, Pierre Chareau realised a structural *tour de force* of three luminous floors, within the ground floor and first floor of this small town house. These two floors had been so dark that the employees of the old lady, who would live to be a hundred, were obliged to work throughout the day by artificial light. Light permeates freely, around this block, of which the ground floor is given over to medicine, the first floor to social life and the second to nocturnal habitation. The problem thus posed was enormously difficult to resolve. The interpenetration of rooms, some which ran through two floors (i.e. consultation room and hall) made the problem of sound insulation very difficult. . . . The ground floor, the professional section of the house, facilitates work and affords to the patients, once their first anxiety is over, great calmness. The whole house was created under the sign of amity, in perfect affective accord."[5]

These words of Dr. Dalsace are very revealing for they indicate with great economy, the nature of the close collaboration that occurred between these exceptionally cultured clients and their architect. In referring to the first floor as being designated to *la vie de societe,* Dr. Dalsace makes it clear that this level was from the outset thought of, as being unusually public. It was not simply a *salle de sejour.* It is this initial central concept of a large public salon flooded with light, which no doubt now accounts for one's invariable experience of this house as a "world within a world," enclosing its own hierarchy of public and private spaces. The light diffusing through the salon walls simulates a quality of illumination comparable to that experienced in the open air and this condition is maintained at night, when the interior of the house is again illuminated by light, diffusing through the glass lenses of its *pan verre,* from floodlights mounted off the forecourt and garden facades. One cannot but recall Scheerbart's words of 1914. "In order to raise our culture to a higher level, we are forced, whether we like it or not, to change our architecture. And this will be possible only if we free the rooms in which we live of their enclosed characters. This, however, we can only do by introducing a glass architecture which admits the light of the sun, of the moon, and of the stars, not only through a few windows, but through as many walls as feasible, these to consist entirely of glass – of coloured glass."[6] And later of the artificial illumination of such a house, from within its double walls of glass he wrote: "This kind of lighting would make the entire glass house into a huge lantern which can glow on quiet summer nights like glow worms and fireflies."[7] Today the light radiating from the Maison de Verre at night, concretises this pioneer vision.

Early interior perspectives of this house (**21, 22, 23**) indicate that details of its sub-division were finalised during the course of its construction. These naive drawings are the only evidence we have as to the nature of its invention and fabrication. They suggest that once the main concept was established the total work evolved like a montage, stage by stage and element by element.[8] A maquette of the house (**20**), exhibited as late as 1931 shows a definite stage in this development. From the outset the commission was exploited as an opportunity for evolving a technically determined environment rather than as an occasion for simply another piece of domestic design. Both the materials and techniques adopted were redolent with industrial potential, even although the methods of actual realisation were far from industrial.[9] It is clear for instance, that the demonstrative use of bent duralumin somewhere in the house was envisaged from the outset. In an early project sketch (**21**) the balustrade to the main stair is shown as being fabricated out of this material. It was finally realised in tubular steel – bent duralumin re-emerging as a material-form in the master bathroom storage-space dividers and in the cylindrical broom cupboard. Thus a "poetry of technique" – pervades the whole house and must prevail over any simple functional interpretation of its conception and realisation. In this respect, the projected mobile book cabinets in the main salon perspective, were in their context, more of a poetic idea, than they were a reasonable solution to the problem of book storage. Here we have a pure example of image preceding idea in the design process, a procedure which is now an anathema to today's methodical designers. In this instance, the initial "image-idea" became transformed into two separate mobile pieces of equipment situated at either end of the salon: the one, the suspended dumb waiter, running from the kitchen to the dining area, (forever to remain incomplete) and the other, the mobile access ladder to the double height book wall. Herein a metaphorical mobility becomes ironically balanced, the two units dispensing physical and spiritual food respectively.

The invention of the Maison de Verre may be characterised under three separate but interrelated aspects, articulation, transformation and transparency.

Through the articulation and standardisation of its components the house acquires implications that extend outside the confines of its domestic scale. Limited in its actual prefabrication, it nonetheless postulates, through its modular order, a world of high quality mass production. Doors, balustrades, book racks, storage units and fenestration are all treated as modular components of a grid, running through the house from front to back and in limited sections from side to side.

The apparent "elementarism" of this articulation is due in part no doubt to the influence of Frank Lloyd Wright, whose presence is clearly in evidence in the early work of Bijvoet and Duiker. Bijvoet for his part has recently denied that he was ever under the influence of Rietveld, although he was certainly aware of his work. This being so any Neoplastic influence must be largely discounted. There remains of course Kiesler's *Cité dans L'Espace* which, built for the 1925 Exposition des Arts Decoratifs, would have presented to an aware Parisian audience, an "elementarism" of constructivist origin.[10] One final implication of the articulated order of the Maison de Verve is that its component units are not only modular but in essence interchangeable; yielding a "mobility" dependent upon a potential for modification and replacement rather than movement per se.

The Maison de Verre is the transformable plan *par excellence;* "transformable" to such a degree that the *raison d'être* of its transformation ranges from necessity, to convenience, to subtle poetic variation. The pivotal radial door to the landing of the main stair is necessary for the separation of the private accommodation from the medical suite, while the sliding wall to the salon conveniently isolates the doctor's study from the main living space. Many other examples of necessary transformation clearly abound; however, poetic variations in small scale components, occur throughout the house and these are largely provided in order to achieve subtle changes in light and transparency. The components of the house are thus often articulated into "primary", "secondary" and "tertiary" elements and it is the latter that usually provides this final degree of lyrical variation. It is the perforated metal "butterfly" screens for instance which transform the main stair enclosure from a condition of transparency, to one of translucence. A very similar but functionally even less justifiable variation to the degree of enclosure is built into the screening of the garden entrance door.

In contrast to the Rietveld-Schroeder House of 1924, (**7**) the one classic transformable plan to which it may be readily compared, the mobile space dividers of the Maison de Verre

[4]Viollet-le-Duc, *Entretiens sur l'Architecture.*

[5]Rene Herbst, *Pierre Chareau,* Editions du Salon des Arts Ménagers, Union des Artistes Modernes, Paris 1954, pp. 7-8.

[6]Paul Scheerbart, *Glasarchitektur,* Berlin, Verlag der Sturm, 1914, p. 11 (Translation by C. C. & G. R. Collins).

[7]Op. cit., p. 48.

[8]Bernard Bijvoet has recently confirmed in an interview with Robert Vickery that no proper working drawings were ever prepared for the house.

[9]Nevertheless, according to Julien Lepage (see footnote 16) Chareau consciously regarded the house, "as a model realised by artisans with a view to industrial standardisation."

[10]See Henry van der Velde, "Die Pariser Kunstgewerbeaustellung." Republished in *Werk,* No. 2, February 1965, pp. 59 & 60. Apart from Kiesler's work and Le Corbusier's Pavillon L'Esprit Nouveau, the Peter Behren's greenhouse for this exhibition is also to be regarded as having been influential.

frequently only modify the basic character of the available space, rather than effect a total transformation. In this respect, the folding screens which determine the limits of the patients' waiting area, provide a partial (i.e. visual) transformation of the space. On the other hand, the frameless pivoting story-height doors and sliding wall panels have a capacity to radically alter the spaces in which they are located.

The walls of the Maison de Verre are predominantly translucent. Hence its composition is ordered primarily through a transparency which is phenomenal rather than literal. In its interior, it is inherently organised as a series of vertical planes or layers of space preceeding frontally from the forecourt towards the garden. That this was the initial design intention is suggested by the treatment and arrangement of the columns and column axes. The main floor slabs of the house are cantilevered beyond the column system on both the front and rear facades. In each instance, the row of columns immediately adjacent to the cantilever have their web axes aligned parallel to the elevations, that is, directly at right angles to the web axes of the interior columns. (**8**) As a counterchange this establishes "slots" of space immediately behind the facades and these "slots" naturally stress the transverse plane and induce a reading of similar stratified layers throughout the remaining space.

In their essay[11] on literal and phenomenal transparency Colin Rowe and Robert Slutsky submit that similar stratifications of space are to be perceived in Le Corbusier's Villa Garches of 1927, wherein planar recessions occur not only as vertical phenomena but also horizontally in plan. It may be argued that almost exactly parallel conditions pertain in the Maison de Verre where horizontal planes are deliberately displaced over each other, partly to emphasise certain areas, and partly to create a deflecting cubistic "rift" in the spatial expression. (**8**) This split in level not only subdivides the space but also affords a directional transition between the implied shallow spaces adjacent to each of the facades and the overall depth of the total volume. In the Villa Garches, the floor levels remain constant and a comparable spatial modulation is achieved through the use of free standing elements. This geological fault as it were, in the Maison de Verre, runs laterally from front to back on the ground and first floors and is even echoed in the organisation of the garden. It also finds complementary expression in the facades of the house. On the forecourt facade it manifests itself as a subtle displacement to the lowest course of glass lenses; a "break" which is precisely reflected in the articulation of the entrance foyer roof. On the garden facade it appears as a much more complex overlap of "transparent" planes, laterally displaced – a series of projections and counter projections which mutually occur in respect of the main translucent facade, comprising the projected curtain wall of Mme. Dalsace's day room and the cantilevered bedroom terrace above. On each facade these "overlaps" receive their most articulate expression in the detailing of the steel framed glazing. Thus Mme. Dalsace's conservatory is consistently treated as a first floor version of the forecourt entrance foyer. In spite of this consistency, the fundamental contrast between the garden and forecourt facades, between dynamism and restraint, serves to remind us of a similar contrast of expression to be found in the Villa Garches.

Out of an attempt to emphasise such spatial displacements, horizontally, as well as out of a need to provide appropriate functional surfaces, a number of contrasting floor finishes have been applied throughout the house. Thus a studded off-white tile is used throughout the active public spaces, a small black ceramic tile is used in the semi-public quiet places, a wooden strip tile surfaces the dining area and the gallery, while an off-white ceramic tile is applied to the kitchen and the medical examination suite. These different floor materials are combined together in a manner highly reminiscent of synthetic cubist cottage. Changes in surface finish announce either changes in "use" or space definitive non-utilitarian changes in the floor level. Finally it should be noted that an atypical crank in the slab occurs in the second floor, which although it stresses the transverse space serves primarily as a structural anchor to the terrace which cantilevers beyond.

The mechanisation of the Maison de Verre was extensive and (such was the calibre of Dalbet's craftsmanship) economically conceived and precisely executed. In many of the details the strength of the material used is pushed to its limits. Typical of this is the mobile book wall ladder, which travels on a carriage made out of a single bent metal tube. The remote controlled steel louvres to the salon and the opening lights of the main facades are thus by no means the only *éléments-méchanique type de la maison.*[12] On the contrary mobility permeates, every detail of this house, from adjustable mirrors to pivoting closets. Even the system of servicing the house seems to have been conditioned by this concern for mobility. Thus throughout the house all wiring, power, light, telephone, etc. is conveyed vertically through free standing tubes, rising from floor to floor. These tubes mount control consoles in which all outlets and switches are located; thus relieving the walls of this task. In the same manner as these tubes carry power and light, the floor slabs carry heat in the form of ducted air, emitted from raised outlets set in the floor. This combined servicing system is open to being read as horizontal planes carrying heat in the form of conditioned air, pierced at intervals by vertical lines carrying power and light.

The "functionalism" of the Maison de Verre is permeated by such metaphorical ideas at every level. A great deal of its equipment and mechanisation is poetic and symbolic rather than strictly functional. Thus the provision of bidets is "symbolically" in excess of the amount that could be conceivably required by the programme, on the grounds of hygiene. The lateral mobility of these elements serves only to emphasise yet further their ironic profusion in the house of a gynaecologist. Save for its highly rudimentary kitchen the Maison de Verre was a total demonstration of a "complete" architectural vocabulary. To this end it became the vehicle for five distinctly different solutions to the problem of the stair. From a retractable ship's companion ladder, to a stringless stair structurally integral with its balustrade, to the articulated treads of the main stair bracketed off steel string beams, each stairway link was made the occasion for a different approach. The result was the building out of a possible technical repertoire *à la Neufert.* The next generation would bring certain elements of this repertoire a step nearer to general adoption by the society at large. The work of the French "artisan-engineer" Jean Prouvé represents the most direct practical continuation of this line. In this context Prouvé's work since 1935 and in particular his present curtain wall designs may be regarded as extended, independent developments of the curtain wall railway carriage window type first prototyped in the Maison de Verre.

The relation between the Maison de Verre and the architectural tradition of which it is a part is as complex as it is elusive. The work and thought of Le Corbusier must have played an important role in its conception. Bernard Bijvoet, on his own admission, was under the influence of Le Corbusier at this time, as was his Dutch partner Johannes Duiker. This partnership had displayed immediate post war affinities with the work of Wright, but during the late twenties appears to have veered towards a European *Neue Sachlichkeit* position. In any event Le Corbusier's *Five Points of a New Architecture* first published in 1926, (**9**) certainly appears to have influenced the basic conception of the house, three of these points finding very definite expression in its form; – *le plan libre; la façade libre* and *la fenêtre en longeur.*[13] After the completion of the house at the end of 1931, there is sufficient evidence of it having some counter influence on the work of Le Corbusier. Le Corbusier's Immeuble Clarté (**10**) built in Geneva in 1932 has by virtue of its glass lenses, its glass stair treads, its indirect lighting, its fenestration, and its transformable plans, definite affinities with the Maison de Verre.[14]

Similar characteristics are to be found in the detailing of Le Corbusiers' own apartment house built at Porte Molitor, Paris in 1933. (**11**) One may argue of course that this "syntax" had already been partially anticipated by Perriand and Le Corbusier themselves in their joint interior exhibit for the Salon d'Automne of 1929.[15]

In spite of its caliber the Maison de Verre did not exert an extensive influence on the next generation. At the time of its completion it was well received by the yellow press as a curiosity, and partly criticised by the professional press, for being too utopian, intellectual, and insufficiently utilitarian.[16] Thus it became at once part of an underground tradition; its immediate influence limited to a select few who were sympathetic to its creation. Le Corbusier was of course a member of this *coterie,* but no other member of the main stream seems to have been either aware of or touched by its achievement. Bijvoet of course carried its presence to Holland, when he returned home after Duiker's death in 1934, to complete the Hotel Gooiland in Hilversum. (**12**) The rich materials adopted in its foyer detailing and the transformable nature of its public space, jointly suggest a Parisian attitude in this hotel design that can only be attributed to Bijvoet.

Of the next generation only the young Parisian architect Paul Nelson appears to have been profoundly influenced by the unique conception of the Maison de Verre. Above all else, Nelson appears to have been

[11] Colin Rowe and Robert Slutsky, "Transparency Literal and Phenomenal," *Perspecta No. 8, Yale School of Architecture Magazine,* 1964, pp. 45-54.

[12] A phrase coined by Le Corbusier and Pierre Jeanneret in their, "Cinq Points d'une Architecture Nouvelle", 1926.

[13] Le Corbusier et Pierre Jeanneret, *Oeuvre Complete, 1910-1929,* 8th Edition, Les Editions d'Architecture, Girsberger, Zurich, 1965, pp. 128 & 129.

[14] See Stani von Moos, "Aspekte der Neuen Architektur in Paris, 1912-1932", *Werk,* No. 2, February 1965, pp. 52-56.

[15] Le Corbusier et Pierre Jeanneret. *Oeuvre Complete, 1929-1934,* 6th Edition, Editions Girsberger, Zurich 1957, pp. 42-47.

impressed by its creation of a world within a world, the internal realm being all but totally isolated from the outside by a continuous translucent membrane. This notion of isolation was first developed by Nelson in his project for a hospital facility at Ismalia (**13, 14**) for the Suez Canal Company designed in 1936.[17] Here the external isolation took the form of a continuous independent sun-screening envelope – Nelson's *envelope parasolaire* within which the hospital surgical facility was to have been housed. This facility itself also comprised in its turn a world within a world, for Nelson incorporated within it for the first time, his invention of an ovoid operating theatre, of the type that he was eventually to realise in his Franco-American hospital at St. Lo. In fact, there was a whole hierarchy of such Chinese boxes in Nelson's Ismalia project; – firstly, the four ovoid theatres, secondly, their surrounding service space, thirdly, the hospital proper and finally, the total brise-soleil envelope. Nelson followed this study in isolation with his famous 1936-37 project for a Maison Suspendue, which was to be his most direct development of the concepts embodied in the Maison de Verre.

La Maison Suspendue (**15-19**) was directly parallel to the Maison de Verre in its program. It too, could only have been erected in the service of an elite, even if such an elite was envisaged as no longer being a bourgeois elite, but rather an elite of a new collective society. Nelson's own analysis of the spatial order of his project, into ground floor service level, second floor living level and first floor non-utilitarian leisure space, directly reflects the organisation of the Maison de Verre. In this respect Nelson's commentary on the Maison Suspendue could be applied just as equally to the Maison de Verre. In 1937 he wrote: "The principle of isolating the individual suggests at once the idea of a closed form in contrast to the open form of collective architecture," (and) . . . "because the principle of its enrichment suggests an architecture which develops itself in the interior of this closed form" (there is a) – "contrast to the traditional house wherein the elevation plays the major role." For Nelson this concept yields, "an architecture in which the spiritual needs of man become predominant in a new space which one may term "useless", in comparison with the purely

[16]See *L'Architecture d'Aujourd'hui*, No. 9. November/December 1933, pp. 4-15. This was the first full length documentation of the Maison de Verre with critical appraisals by Pierre Vago, Paul Nelson and Julien Lepage. Some of Lepage's comments were very perceptive and are worth quoting. He wrote: "Above all one notices the same care to make visible and express every possible function and not only to acknowledge the real needs of the owner, but even to organise all his possible needs and to arouse in him and to satisfy in advance new desires, which he has not yet thought of." And again of the mechanical aspects of the house Lepage wrote: "In this sense however there is nothing mechanistic about this house. None of the equipment is menacing. It is all treated with such delicacy and its function is so well revealed that all these pieces are more like organs than instruments." Elsewhere he wrote: "It is astonishing to see how the architect by inserting more, or less transparent windows in the translucent brick skin of the house is able to evoke a character which is alternately, intimate, free and liveable in the bedrooms, the official reception and patient's waiting area; — precise and scientific, in the consulting room and soft and feminine in the boudoir suspended over the garden." This was in strict contrast to Vago's critique, for whom the house was too mechanistic to be considered as a general solution. Thus Vago rhetorically demands "It is indispensable for men of the 20th century to spend their days, their hours, of leisure and rest in a glass box, among randomly placed columns, with their rivets exposed, in a laboratory open on all sides . . . to receive the roast on a suspended wagon, to enter one's room via a mobile ladder . . ."

[17]*Deux Etudes Hospitalieres par Paul Nelson*, Editions Morance, Paris, 1934. (See Pavillon de Chirurgie — d'un groupe hospitalier en pays chaud, Ismalia, 1936.)

8. Combined diagrammatic plan. Lines "A" and "B" (solid and dotted) indicate ground and first floor "rifts" respectively. "C" and "D" are points of elevational displacement. Tone indicates shallow space.

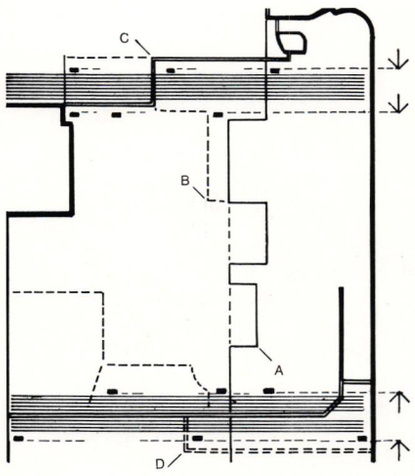
9. Le Corbusier, the 5 points of a New Architecture (1926) represented in a composite drawing.

10. Le Corbusier & Pierre Jeanneret, Immeuble Clarté, Geneva, 1930-32. Entrance hall and staircase with glass block treads.

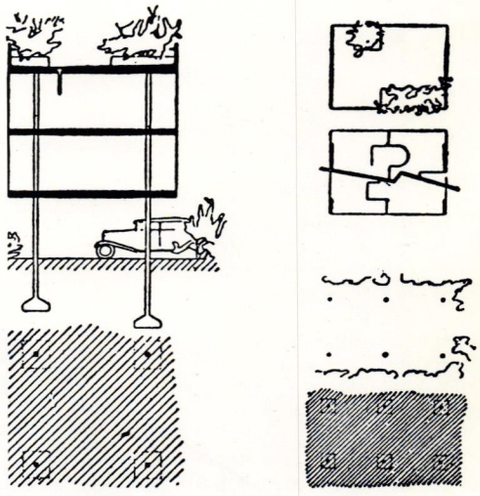
11. Le Corbusier & Pierre Jeanneret, Immeuble Locatif à la Porte Molitor, Paris, 1933.

12. Bijvoet & Duiker, Hotel Gooiland, Hilversum, 1934-6. Ground floor plan shows flow of "transformable" space from hotel foyer to dance floor, to theatre auditorium.

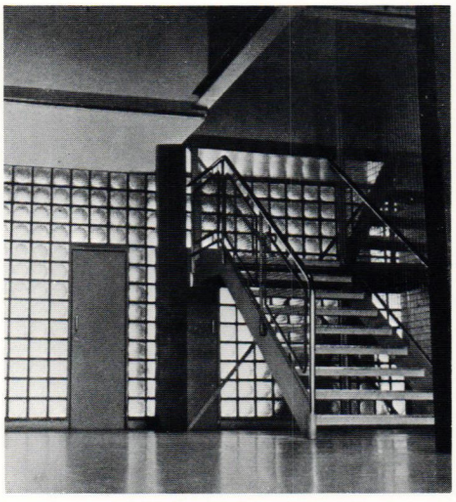
8



9

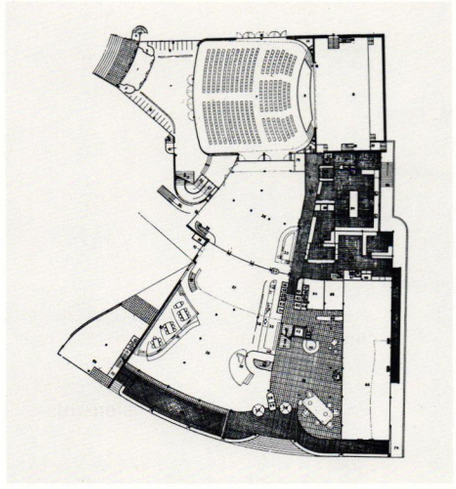


10



11

12



13. Paul Nelson, Surgical Pavilion, Ismalia,1936.

14. Paul Nelson, Surgical Pavilion, Ismalia, ground floor plan.

15. Paul Nelson, La Maison Suspendue 1936-8, ground floor plan.

16. La Maison Suspendue, balcony level plan.

17. La Maison Suspendue, upper level plan.

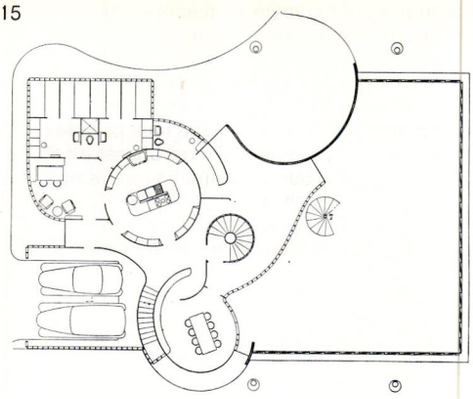
18. La Maison Suspendue, transverse section.

19. La Maison Suspendue, photograph of maquette.

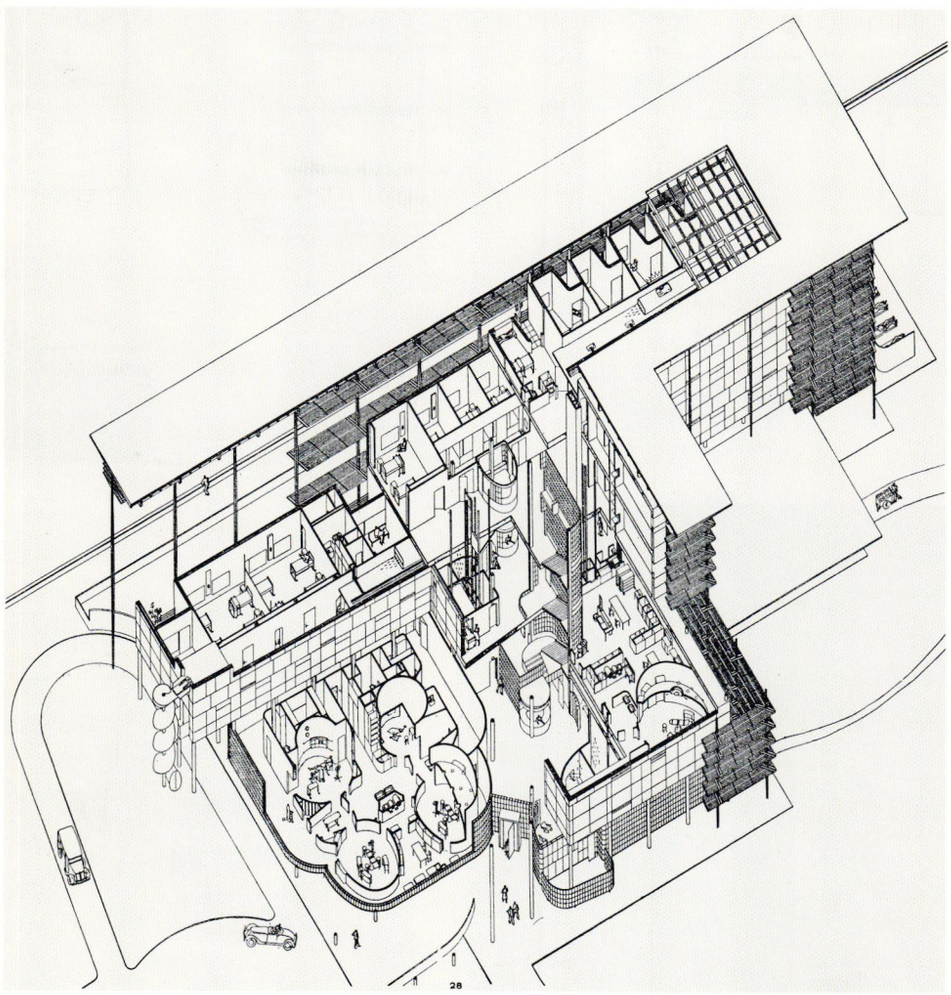
20. A model of the house exhibited in 1931.

21. Early perspective (1929) of the interior of the main first floor salon. This drawing is revealing as to evolution of certain "initial" concepts in the final furnishing of the house. The main stair and its well were initially to have been equipped with duralumin balustrades. This was later abandoned in favor of a consistent use throughout of the metal balustrading as shown here on the second floor gallery. Bent duralumin was later used for the bathroom fittings (see pages). Similarly the folding screen adjacent to the second floor gallery stair was later reserved for ground floor use only. Of particular interest is the indirect lighting proposed for the second floor and the "mobile" book cases shown in the salon, the latter being a "poetic" mechanical invention typical of Chareau.

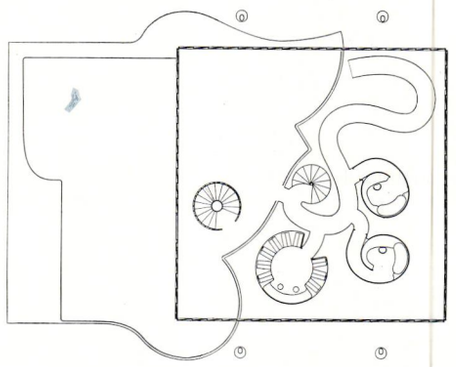
15



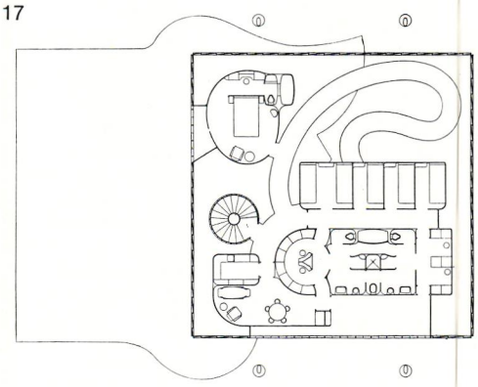
13



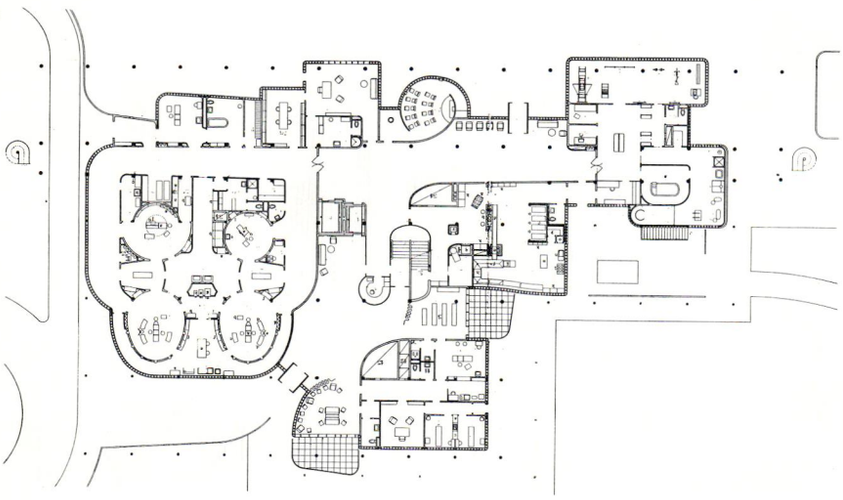
16



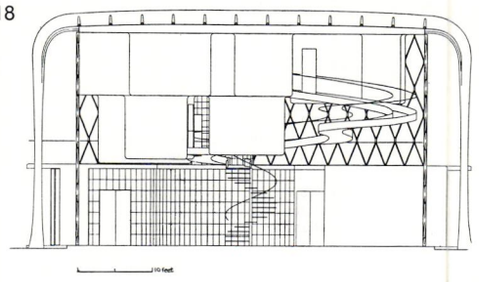
17



14



18



utilitarian space of material needs – (in) contrast to rational architecture."[18]

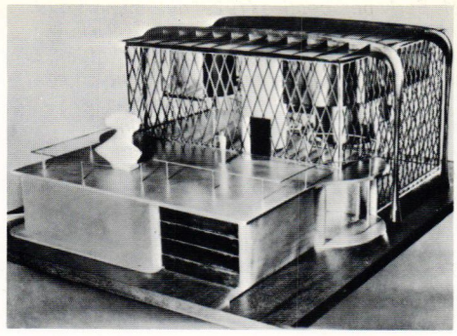
In this brief outline resides not only the paradox of the Maison de Verre and the Maison Suspendue, but also the final paradox of the work and thought of Pierre Chareau and in the end the curious problematic nature of the 20th century architectural tradition as a whole. For Chareau, as many other 20th century designers, created his finest work, in the service of an elite bourgeoisie, yet he wanted, as is clear from his essay *"La Crêation Artistique et l'Imitation Commerciale,"* to place his services at the disposal of the society as a whole.[19]

In an age of population explosion and shelter scarcity, the minimal dwelling of a "rational architecture" for which Nelson implied a certain contempt can now no doubt be the only initial standard for domestic building in a mass society. In spite of our much proclaimed affluence, the inundations of our consumer industry and the deprivations of our military waste render elusive an optimum adequate level of environment for all. As a general system the Maison de Verre is technically feasible but in societal-spatial terms, economically unattainable. What, in the thirties, could have been construed as a belated one-off realization of technical utopianism, now appears as a utopianism of space. In our present circumstances, *une abondance d'espace inutile*[18] can have substance only as the motivating ideal of some future nonrepressive society. The general realisation of such lavish spatial standards would involve a major reallocation of resources and an unimaginable degree of technicalization. All the same the conscious attempt to elevate the scale of a home into that of a palace, (a line evoked by Le Corbusier), projects the program of a dwelling out of the private domestic realm into a myth of collectivity wherein the house becomes a prototypical *palais du peuple.* How a private bourgeois residence could come to acquire even some of these public and collective connotations remains as yet one of the cultural paradoxes of the 20th century. It is curious that, thirty-seven years after its erection, a purpose-made house should still have a capacity to exert a powerful influence on our imagination. Perhaps, it is because it continues to offer through the fluidity of its plan, the standardization of its components and the mobility of its parts and through its clear assembly of public and private spaces within a single envelope, a general model from which to evolve solutions to some of the indeterminate problems of our epoch.

[18]Paul Nelson, *La Maison Suspendue,* Editions Morance, Paris 1937. In this document Nelson postulates the Maison Suspendue as being in strict opposition to the "rational-collective" architecture; the *existenzminimum* of the socialist technocratic architects of the thirties.

[19]See *L'Architecture d'Aujourd'hui,* No. 9, September 1935, pp. 68-69. In this highly charged essay Chareau testifies to his "position". He writes: "Architecture is a social art. It is at one and the same time a consummation of all the arts and an emanation of the masses. The architect can only create if he listens to and understands the voices of millions of men, if he shares in their sufferings, if he struggles with them for their freedom, if he becomes the precentor of their hopes, the realiser of their aspirations. He uses the iron that they forge. He gives life to the theories they conceive. He helps them to live, to produce, to create, to consume. He guides them toward the future because he is aware of that which belongs to the past. Indeed he lives only for them. Architecture is determined by the lives of these men. It can choose to either lead, deceive or mesmerize them."

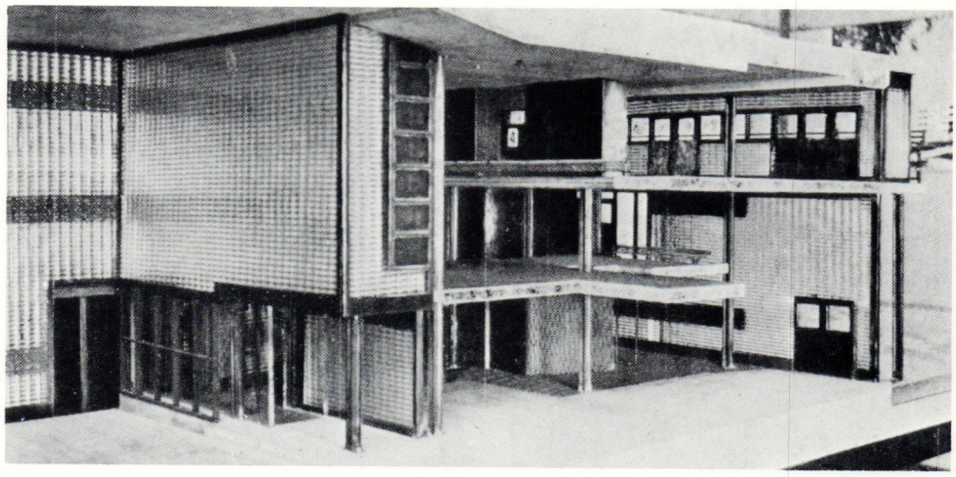
19



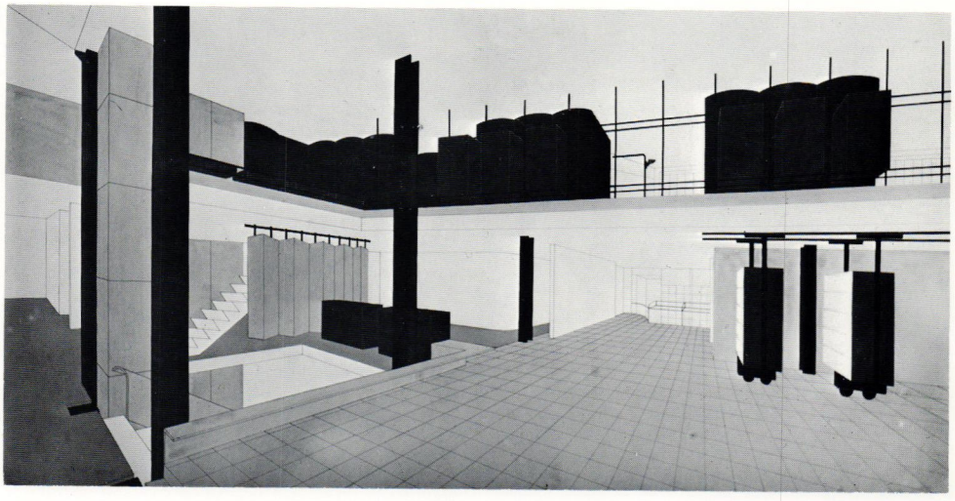
22. Early perspective of the foyer between the waiting room and the doctor's study on the ground floor.

23. Early perspective of the salon from the second floor gallery.

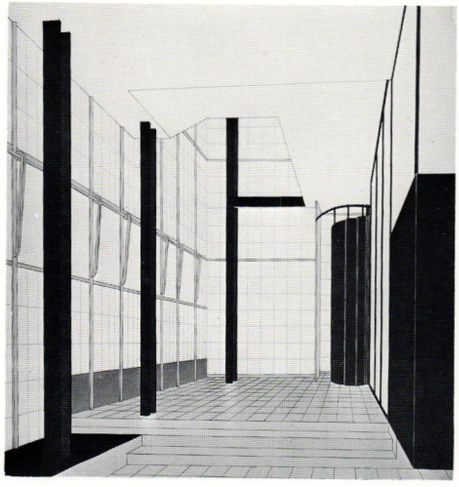
20



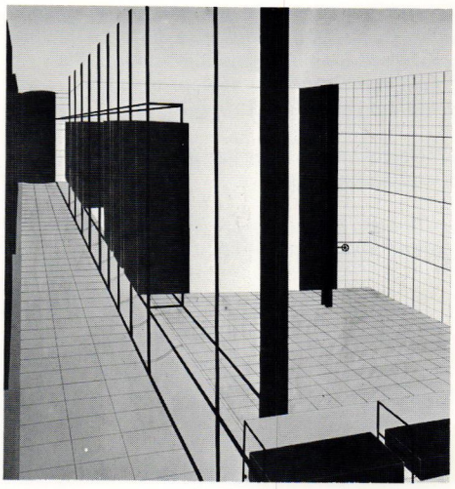
21

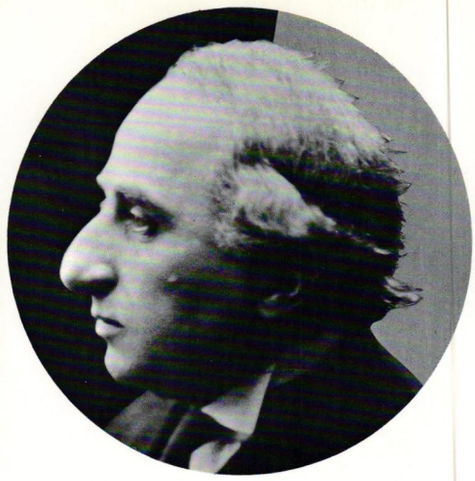


22



23





24

25

26

24. Forecourt view of the 18th century house at 31 Rue St. Guillaumes, mid-June, 1928. The steel underpinning of the third floor of the house is virtually complete, prior to the demolition of its supporting walls.

25. Garden view of the house under construction, 1928.

26. Second floor interior view of the house under construction, 1930.

Pierre Chareau was born into a Le Havre ship owning family in 1883. He studied in Paris and at 17 hesitated between painting, music and architecture. He decided in favour of a career as a decorator and entered the Paris branch of the famous English furnishing firm Waring & Gillow, where he remained for four years. With the outbreak of war in 1914 he entered military service.

In 1918 he designed the interior of a St. Germain apartment for the Dalsace family, who later became his clients for the Maison de Verre. Furniture pieces for this commission were subsequently exhibited at the Salon d'Automne of 1919, an event which brought Chareau recognition.

Chareau met Dalbet at this time and the two men became collaborators. During the twenties Chareau produced numerous interior pieces in collaboration with artists such as Jean Lurçat, Hélène Henry, Jacques Lipchitz and his wife Dollie Pierre Chareau.

For the famous *Exposition des Arts Décoratifs* of 1925 he designed an embassy suite which revealed his interests in indirect lighting, in mechanism and in traditional rich materials. On this occasion he met Bijvoet and persuaded him to leave Holland and join him in Paris; thus together they designed in 1926 Chareau's first and only free standing work of any size, the golf clubhouse for Monsieur Bernheim, the father of Mme. Dalsace.

By 1927 they were again at work on a reception hall for a hotel at Tours and in the following year they began their first studies for the Maison de Verre. The Maison de Verre was finally completed at the beginning of 1932. In 1932 Chareau realized a suite of offices for the L.T.T. Paris, a design which was gauche compared to the Dalsace house. After this commission came the full impact of the depression. In the general dearth of work, Chareau suffered more than most of his colleagues and it was this no doubt that partly provoked his bitter essay, *"La Création Artistique et l'Imitation Commerciale,"* published in September 1935.

Chareau continued to produce small pieces for the UAM exhibitions, but even these made little impression. In 1937 he designed a house for Djemel Anik and in 1938 an equally unknown work for the French Foreign Ministry.

After his emigration to America in 1939 he designed a studio for Robert Motherwell at East Hampton, Long Island, plus two small houses in the vicinity, one of which he occupied on completion. He died in 1950 in Easthampton.

Maison de Verre*

Paul Nelson

Bernard Bijvoet was born in 1889 in The Hague. He was educated in The Hague and then at the Technical University of Delft where he graduated in 1913 as a *Boukundig Ingenieur.* In Delft he met Johannes Duiker and after graduation they worked together for Professor Evers and on competitions.

In 1917 Bijvoet and Duiker were successful in a competition for old people's housing in Alkmaar and on the strength of this they established their partnership. In 1918 they were again premiated for their design for the Rijksacademie of Fine Arts. During the early twenties Duiker and Bijvoet were strongly influenced by Wright. The Dutch Neoplastic movement curiously enough was never an influence on their work. By 1924 however with the realization of their remarkable Aalsmeer house, they had acquired a totally different, almost *Neue Sachlichkeit*, orientation.

In 1925 Bijvoet met Chareau in Paris at the exhibition, where the Duiker/Bijvoet entries for the Rijksacademie and the Chicago Tribune were being exhibited. The depressing Dutch economic situation encouraged Bijvoet to remain in Paris and to work as an associate of Chareau. After the completion of the Maison de Verre in 1932 Bijvoet left Chareau to work with Beaudoin and later with Nelson.

In 1934, on Duiker's death, he returned to Holland to complete the work which Duiker had initiated on the Hotel Gooiland, Hilversum. During the late thirties he worked with Holt in Haarlem and afterwards spent the war years in the Dordogne. He now lives in The Hague where he continues to run an extensive practice.

The present epoch has created a life of new awareness and reflexes, but architecture has not evolved sufficiently to be able to express it; for it cannot be expressed only by a detail or a facade, nor by iron mongery or through the use of certain materials, nor by the use of such cliches as horizontal or vertical windows. It is discouraging to observe this decorative application of moderne, *changed in accordance with fashion, to dress up the most* pompiers *of* pompier *buildings and to alight upon these so-called "pure" buildings which, like a poster, have nothing in common with the advertised product. There is another task for contemporary architecture, possibly less spectacular, wherein the philosophical awareness of the architect allows for the spiritual and physical program of this new life to be established and for its expression in plan and where the knowledge of building technique permits this plan to be realized so that it works. A Parisian doctor has given Chareau a chance to attempt this task.*

Amplification is the essential characteristic of this new life. Since the invention of the bicycle established an epoch, man has extended the amplification of his powers through mechanical means: the telephone, the telegraph and the automobile are all conquests in two dimensions, while the airplane, the radio and the television are conquests in three. The house must then be a machine which amplifies our sensation of life. Man today has an awareness of space and, to an even greater extent, of movement in space. A study in plan and section no longer affords the architect the means by which to fulfill and represent his requirements: the fourth dimension, time, intervenes. One must create spaces which have to be passed through in a relative lapse of time. One must feel the fourth dimension. This house in Rue St. Guillaume incites this sensation.

One has begun at the outset by limiting space in order to be able to create it. (The window or the transparent wall is, in reality, a direct connection to the outside and destroys the impression of space. Therefore it should be used with great discretion; only where a definite function exists.) It is now, a question of making the most of this space enclosed by translucent glass blocks. The dynamism of the fourth dimension in contrast to the static. The static in architecture is the structure supporting that which should be perpetually fixed. Completely independent of this is the dynamic expressed by the horizontal and vertical distribution, by the fixed and moving partitions, by the built-in furniture and by the staircases, etc. The columns are co-ordinates, which, regularly spaced, establish points around which the functional layout is irregularly organized.

The Chareau House is not immobile nor is it photographic; it is cinematographic. One must pass through the spaces in order to be able to appreciate it; another aspect by which it is connected to contemporary man.

It is built. It functions. It is not solely based on the dictates of abstract ideas, for it works. The walls are solid; the sliding doors slide. There are no leaks. The air conditioning works. It would appear that one does not suffer from either the heat or the cold. It is realized.

This house is a point of departure. Herein technical problems have been tackled and bravely resolved up to the last detail. Pure aesthetic research has not been the aim here, but strangely enough, solely through technical research, this house has outstripped surrealist sculpture. Calder and Giacometti would be able to see its realization in these terms. The pivoting door suspended in front of the main stairway is a surrealist sculpture of great beauty. The metal cupboards are similarly so. All this has been achieved without having any desire to make art for art's sake.

"Modern architecture" is dying. It has become a romanticism, a sentimentalism best expressed in literature and in music. Now a technological architecture emerges, a realizable architecture wholly conditioned by the requirements of the new life and by a real knowledge of building. Chareau knew how to limit himself. It is because of this that he has created a beautiful work, which one recognizes as a point of departure towards a true architecture.

*From *L'Architeture d'Anjourdhui, No. 9, November/ December 1933, p. 9.*

27. View of house from courtyard entrance.

28. Detail of garden facade.

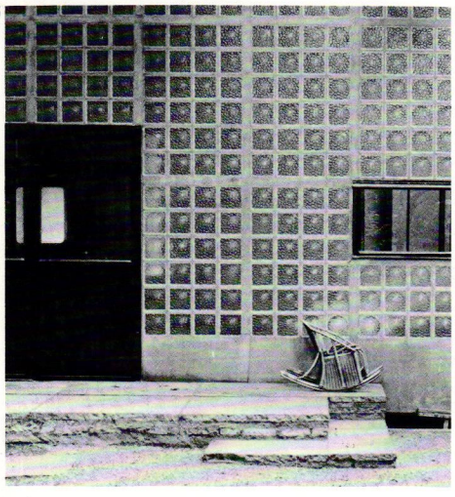
29. Site plan with ground floor.

1. tunnel entrance
2. forecourt
3. 2-car garage
4. existing 18th century building
5. entrance to house
6. entrance to house above
7. service wing
8. garden access
9. consulting room terrace
10. ground ivy
11. grass and shrubs
12. gravel play court

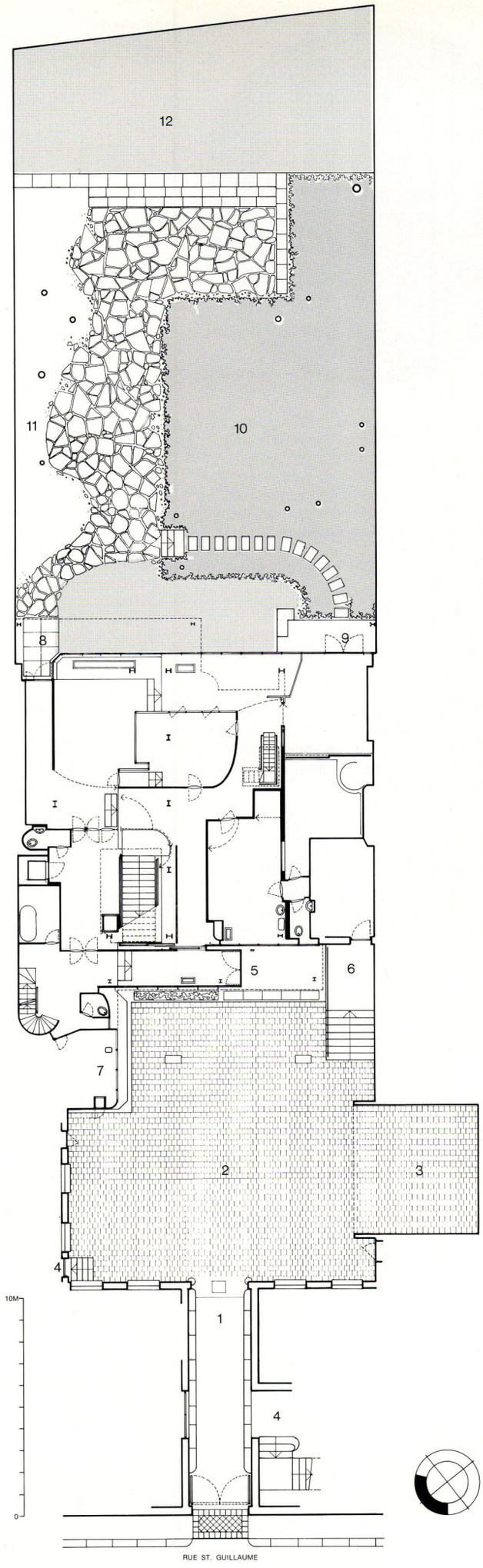
30. Axonometric of interior from forecourt.

27

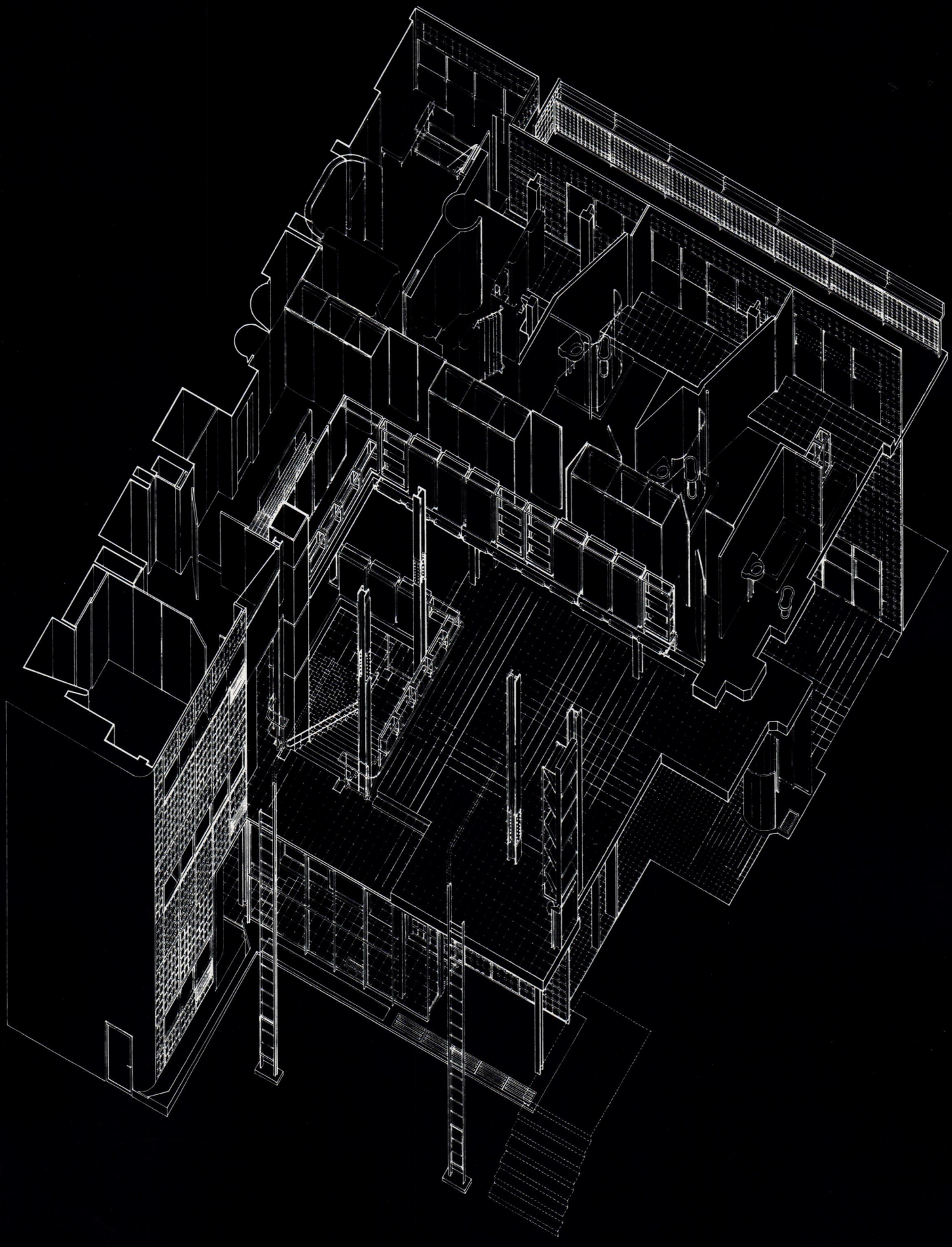
28



29



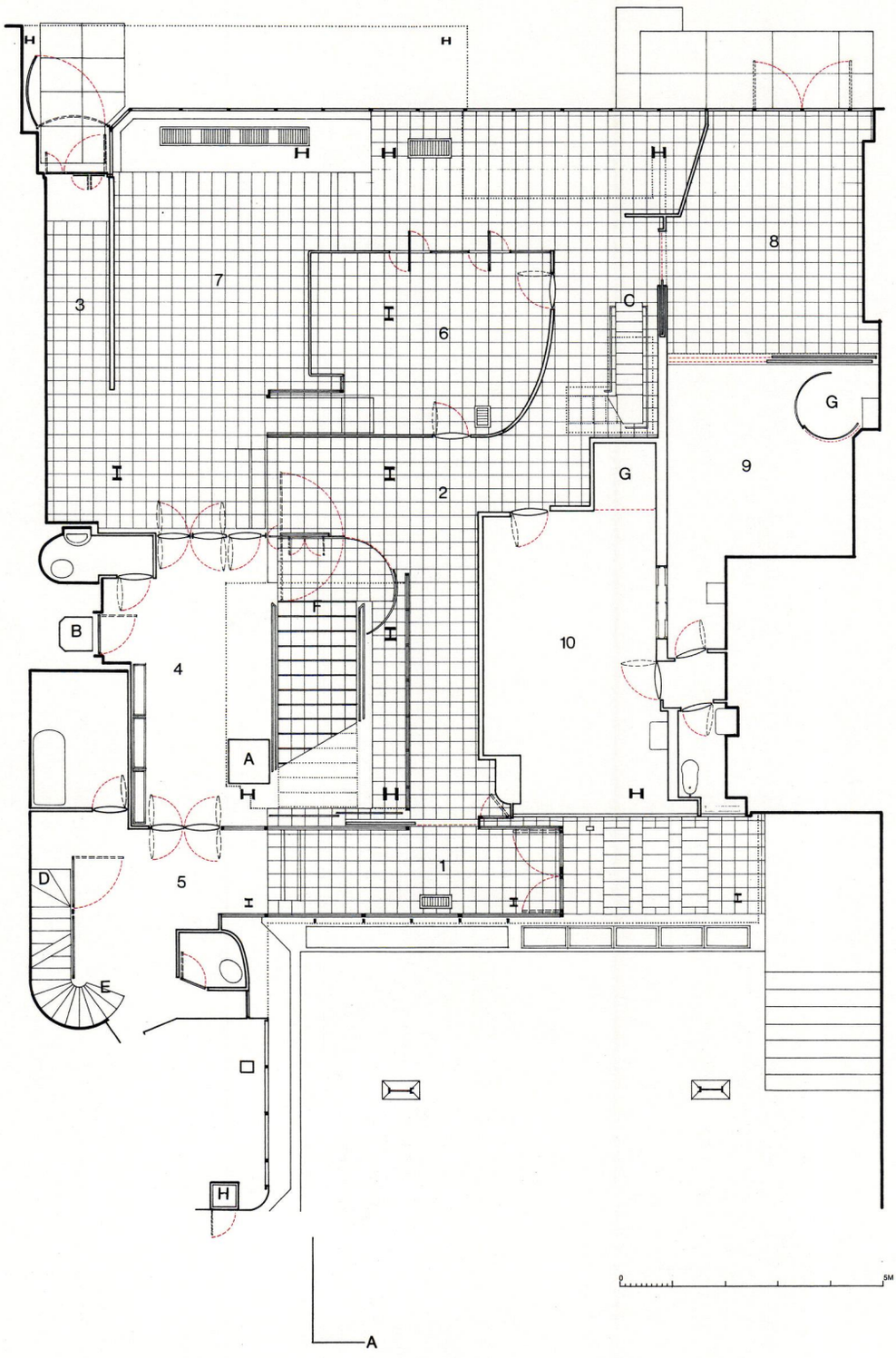
30



31. Ground floor plan.

1. entrance lobby
2. central corridor
3. garden corridor
4. service foyer
5. servants' entrance
6. receptionist
7. waiting room
8. consulting room
9. examination room
10. attendance room

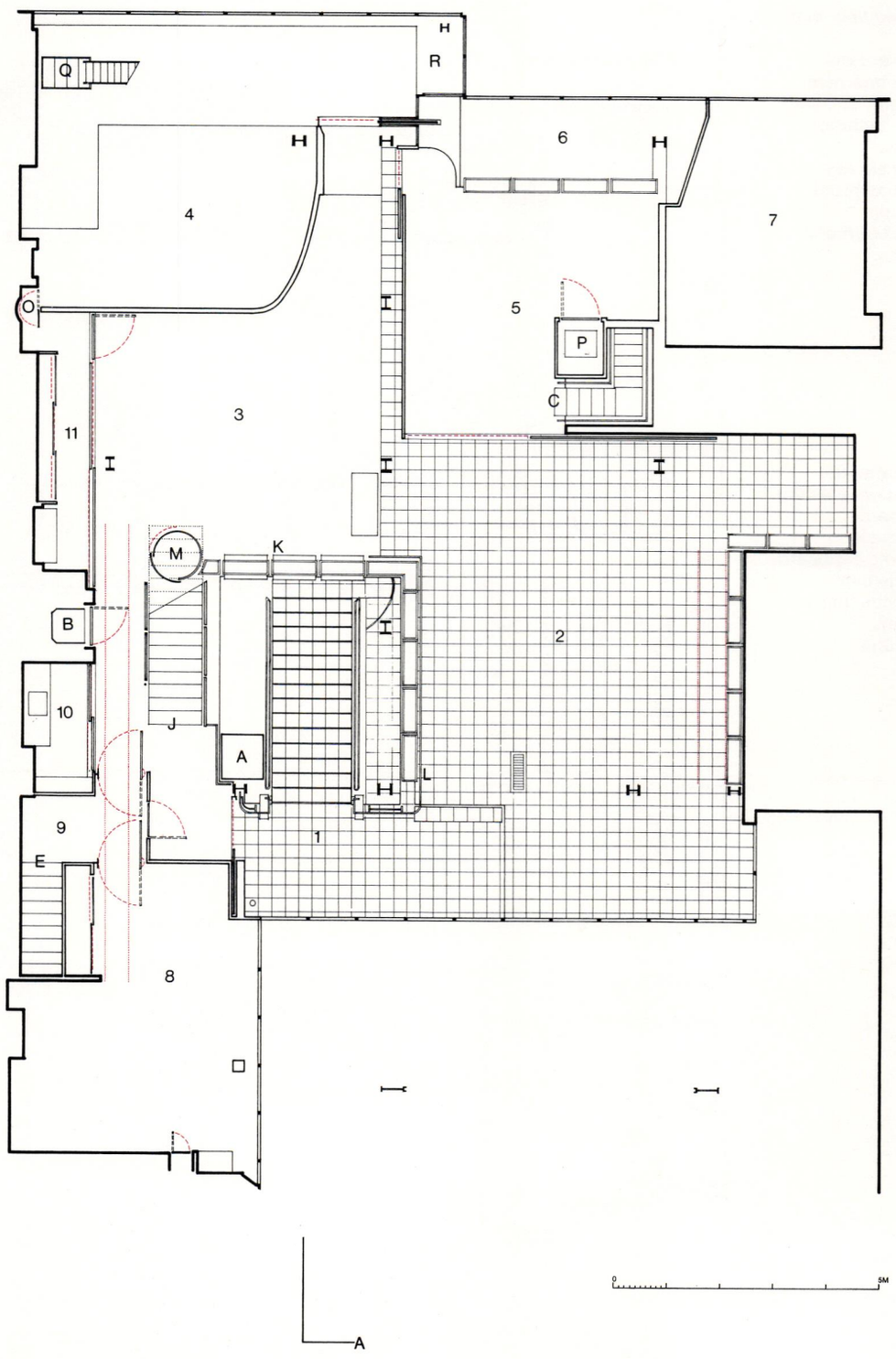
A. dumb waiter
B. passenger elevator
C. auxiliary stair to study
D. stair to basement
E. stair to kitchen
F. main stair to salon
G. changing cubicle
H. refuse



32. First floor plan.

1. main landing
2. main salon
3. dining area
4. day room
5. study
6. void over foyer
7. void over consulting room
8. kitchen
9. kitchen entrance
10. wash up
11. storage wall

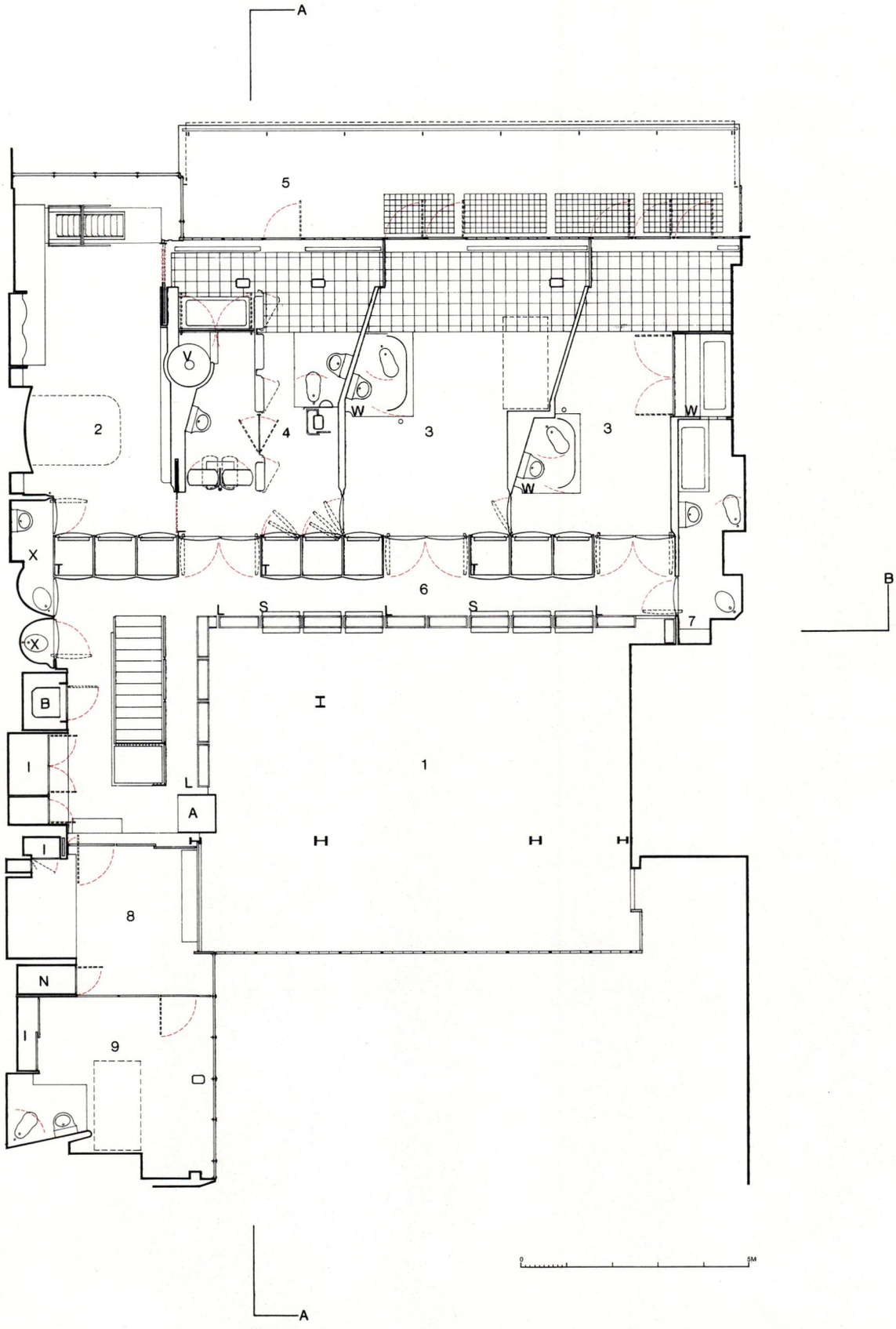
A. dumb waiter
B. passenger elevator
C. auxiliary stair to study
E. stair to kitchen
H. waste disposal
J. storage unit
K. storage unit
L. book rack
M. rotary cleaning cupboard
O. pass through
P. telephone kiosk
Q. retractable stair to master bedroom
R. plant conservatory



33. Second floor plan.

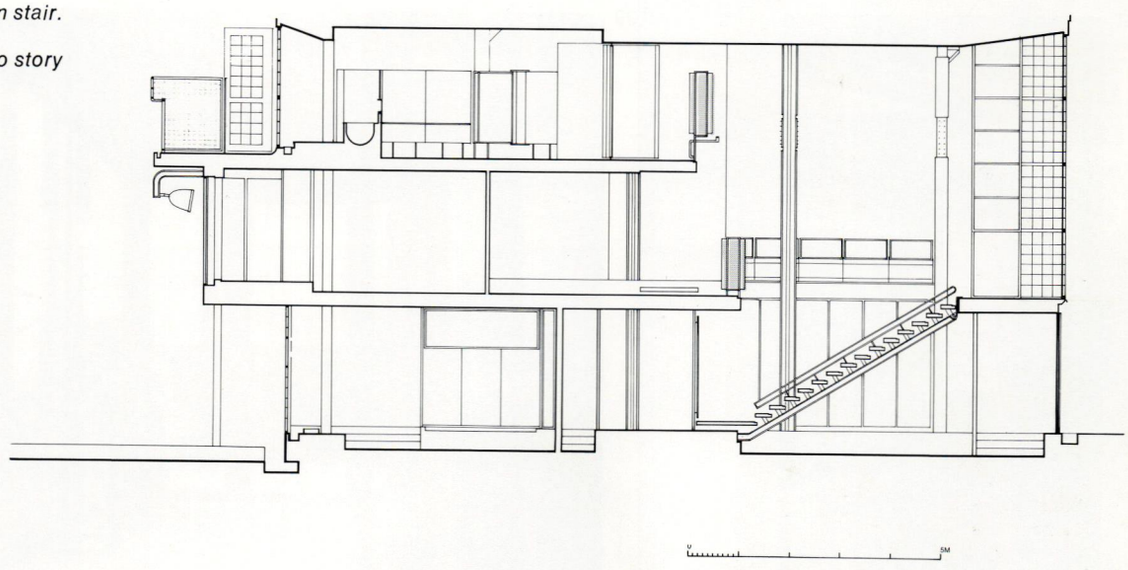
1. void over salon
2. master bedroom
3. bedroom
4. master bathroom
5. terrace
6. gallery access
7. guest bathroom
8. workroom
9. maid's bedroom

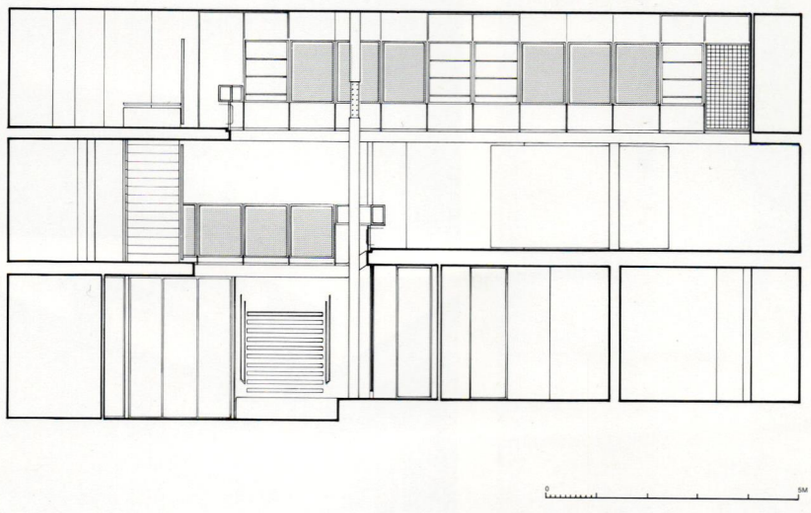
A. dumb waiter
B. passenger elevator
I. cupboard
L. book rack
N. cleaning cupboard
S. storage unit
T. wardrobe unit
V. shower
W. toilet unit
X. w.c.



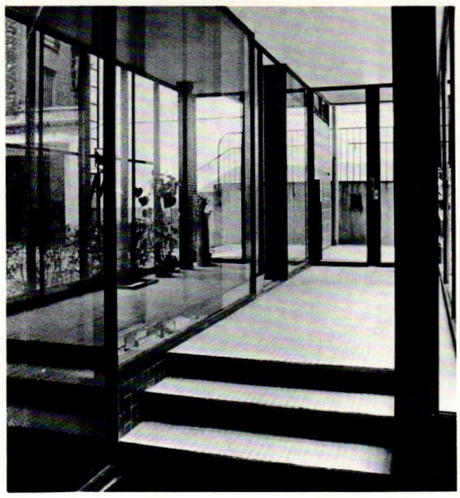
34. Transverse section through main stair.

35. Longitudinal section through two story salon.





38



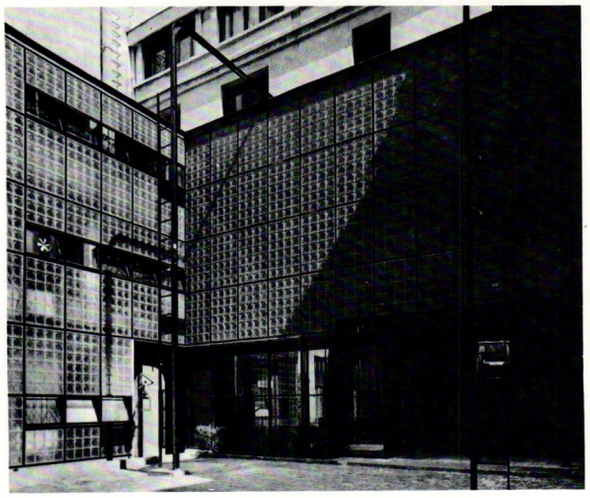
36. Detail of main entrance door furniture.

37. Detail of main entrance showing free standing steel mounting for call buttons.

Ground Floor

39

40



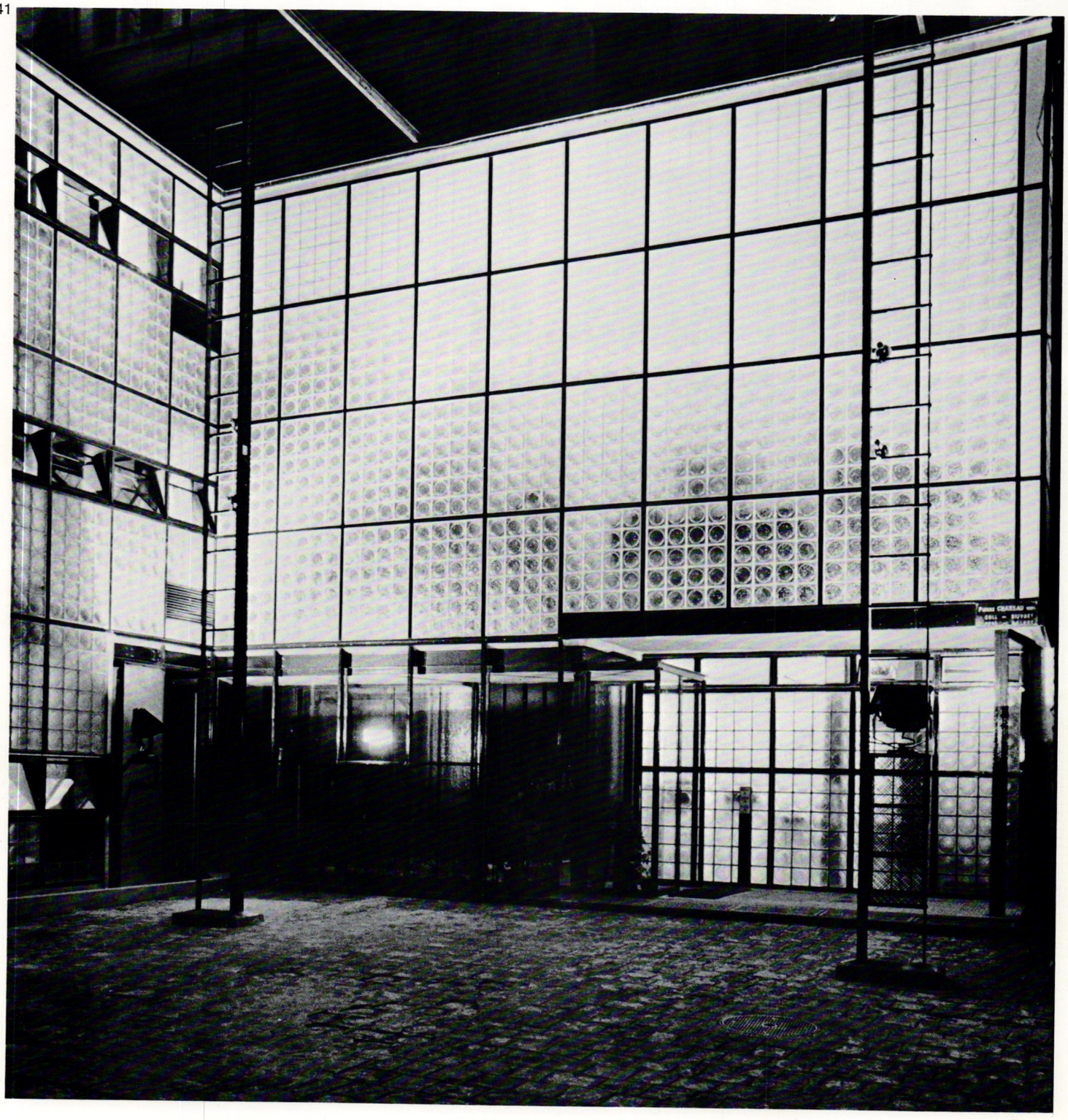
38. View of entrance foyer from service wing.

39. View of entrance foyer from service wing.

40. Forecourt day view of house. The forecourt elevations were re-fitted by St. Gobain in the mid-'60's. The metal facings to the glass lense sub-frames being a noticeable change from the original facade.

41. Forecourt night view of house, illuminated both internally and externally.

41



42

44

43

45

42 and 43. Sliding door entry from entrance foyer to central ground floor complex. Typical wooden slide used throughout the house.

44 and 45. Entry corridor to control ground floor complex. The main staircase to the salon overhead is to the left, beyond the glazed screen. On the right is the standard tube conduit used to distribute electrical supply to all floors. There are no wall switches. The full height "airplane wing" section door leading to the receptionist's office is a typical detail used throughout.

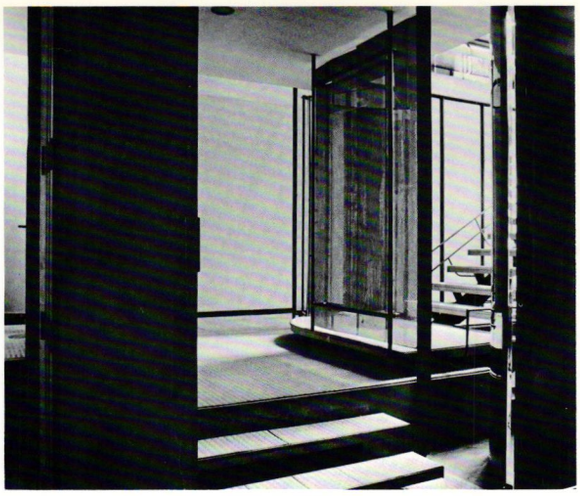
46 and 47. Main stair entry with pivoting glass screens and perforated metal sub-screens. In figure (46), the pivoting radial screen is closed; in figure (47), it is open. The condition of closure ranges from translucence, to transparency, to clear opening. In figure (47), the perforated metal sub-screens are "elevated" to permit transparency, while in figure (46), they are closed.

46

47

48, 52 to 55. Various views of main stair entry with pivoting screens and sub-screen "opened" and "closed" as in figures 46 and 47. Figures 54 and 55 show auxiliary doctor's stairway beyond. Figures 52 and 53 are views from the main stair. The studded rubber floor tile is used throughout the main public areas including the stair treads.

50



48

49

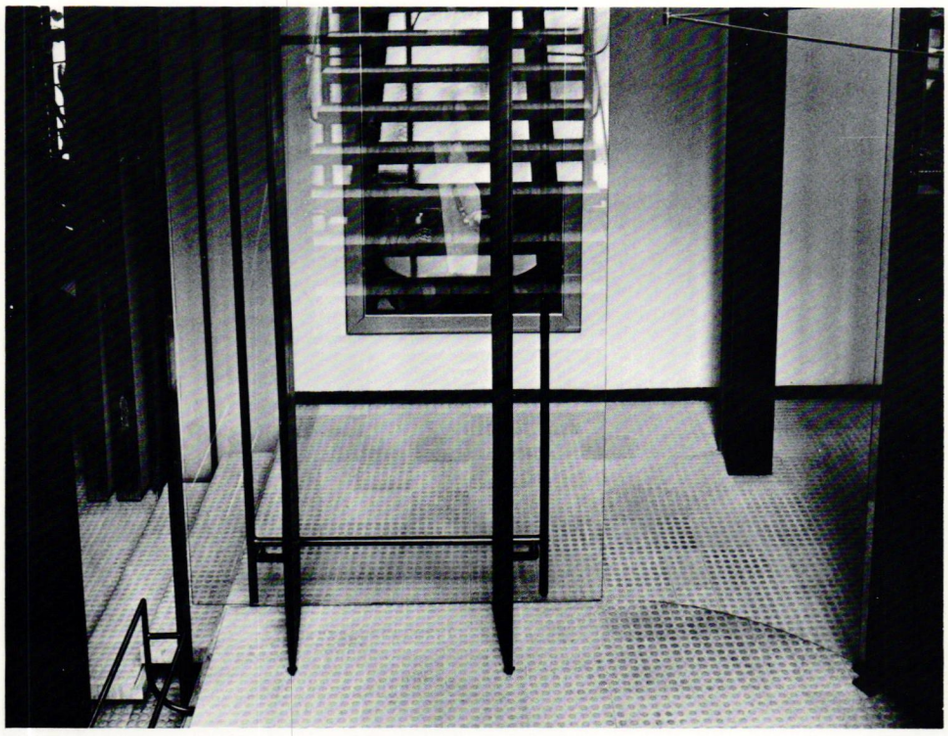
51

49. Passageway from stair entry to garden exit and patients' waiting area.

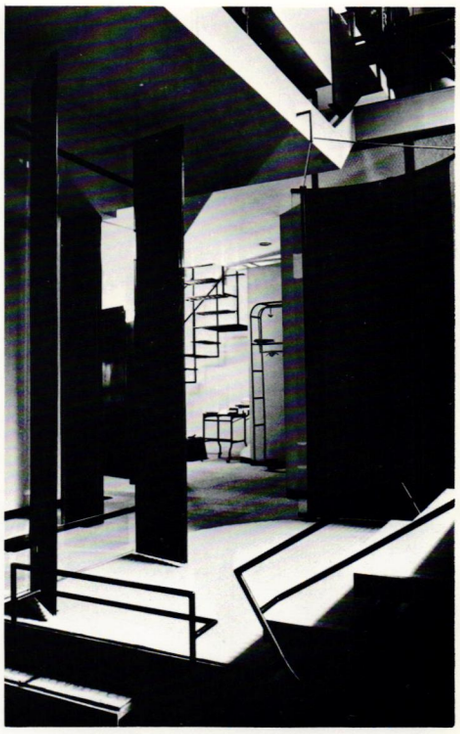
50. View of main stair from entry to patients' waiting area. The "space" is highly transformable at this point. Steps at extreme left lead to receptionist's office. Folding screens to the left and full height pivoting doors to the right serve to either "open" or "close" the adjacent spaces, while the pivoting stair screen may rotate through 90 degrees to cut off the whole stair area.

51. View of patients' waiting area from the "service" hall.

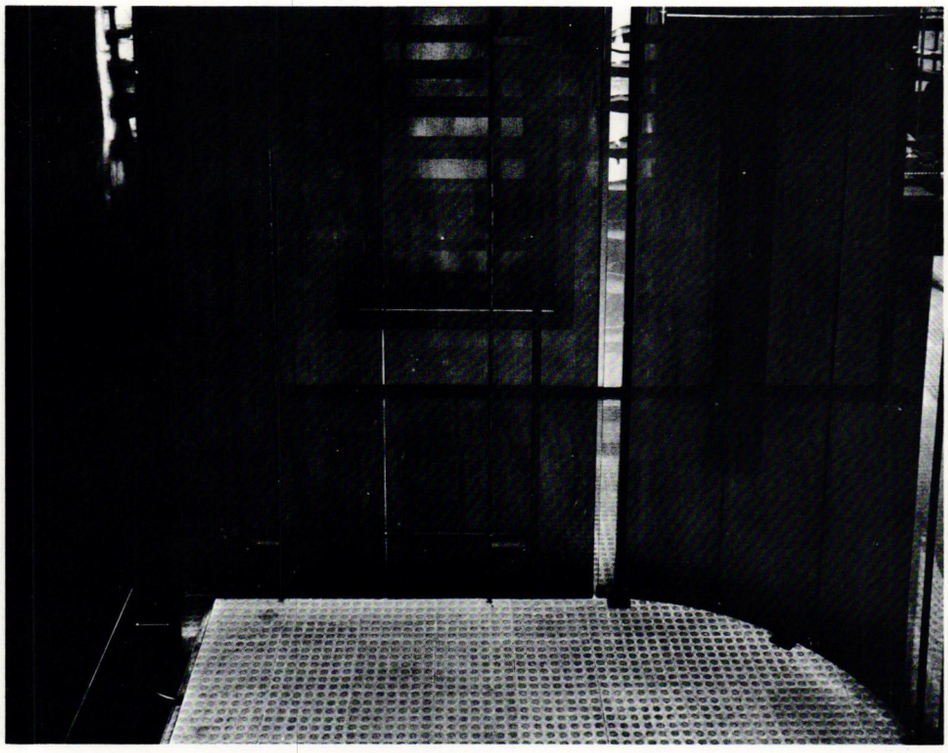
52



54



53



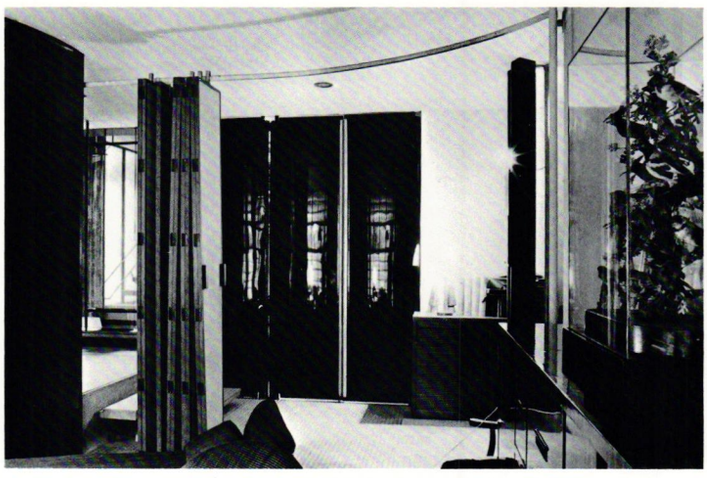
55

56 and 57. View of service hall and main stair from patients' waiting area. The "dumb waiter" in the service hall can be seen in figure (84) , while figure (57) shows the same space partially "transformed" by pivoting doors.

58. Patients' waiting area; exit to garden on extreme left, passageway to doctor's consulting room far right. The circular table is a development of a Duiker design.

56

57



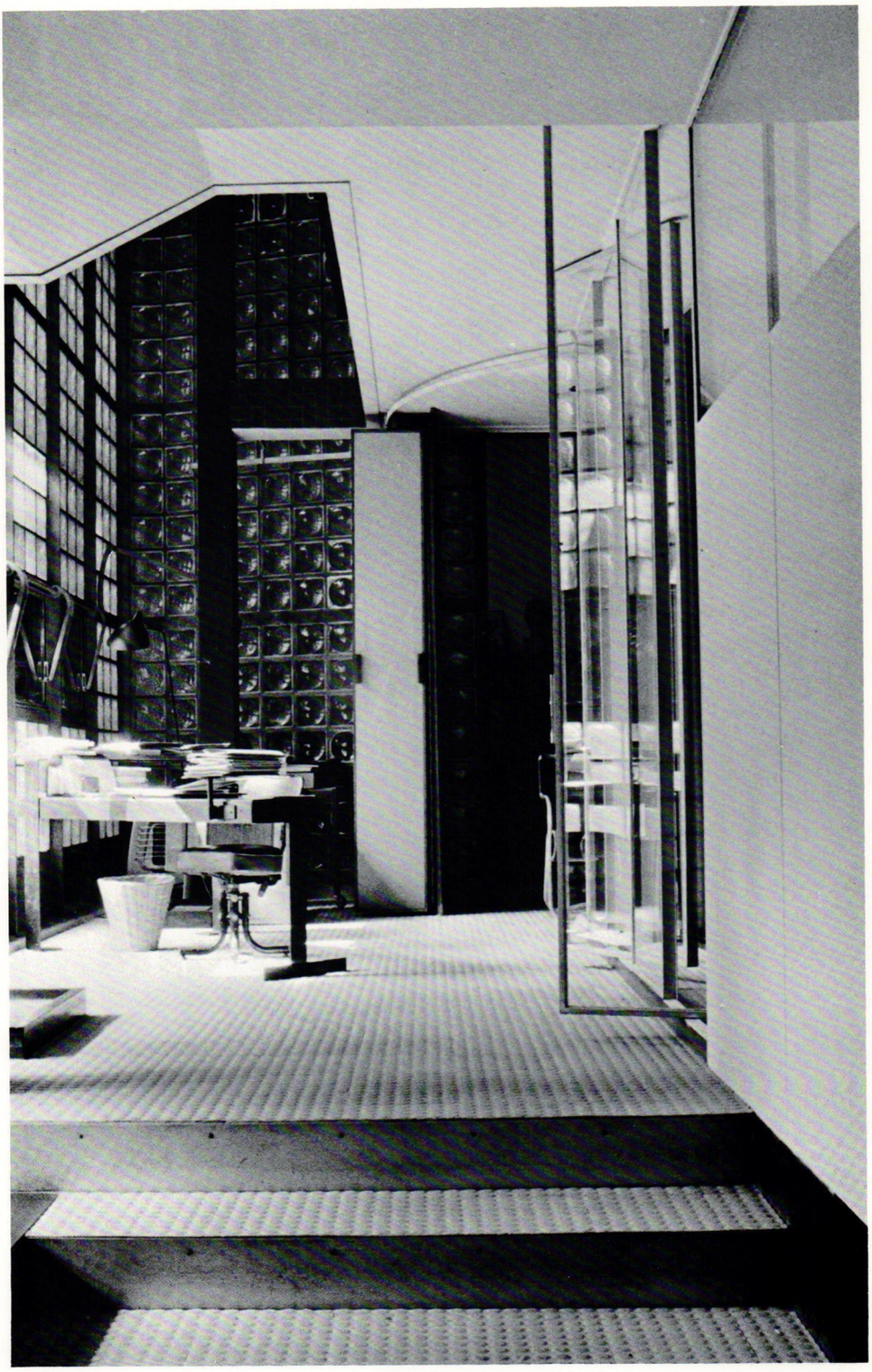
58

59. Detail of patients' waiting area. Note electrical "stub" conduit.

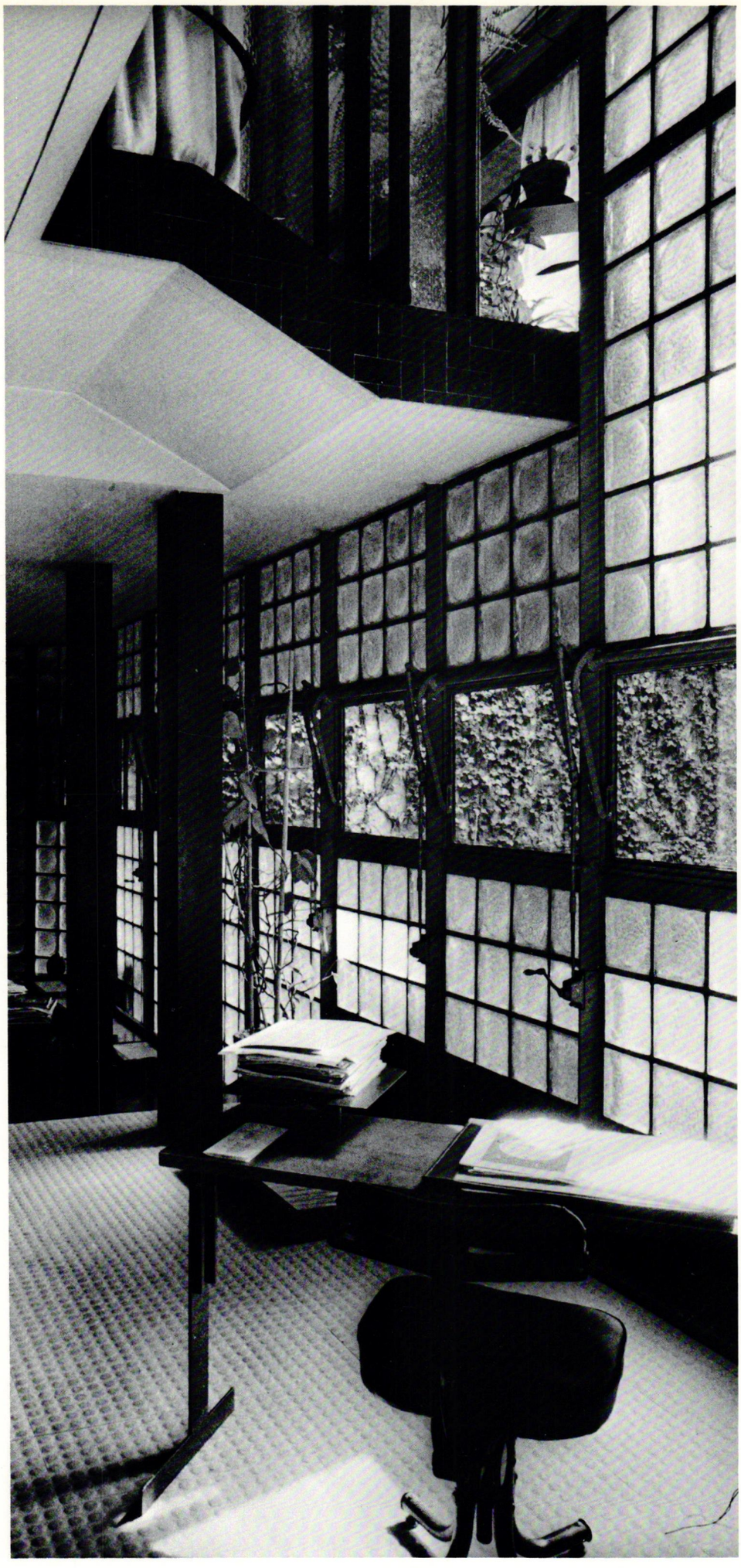
60. Foyer between room and doctor's consulting room. The receptionist's office is to the right.

59

60



61



61. View of patients' waiting area from foyer.

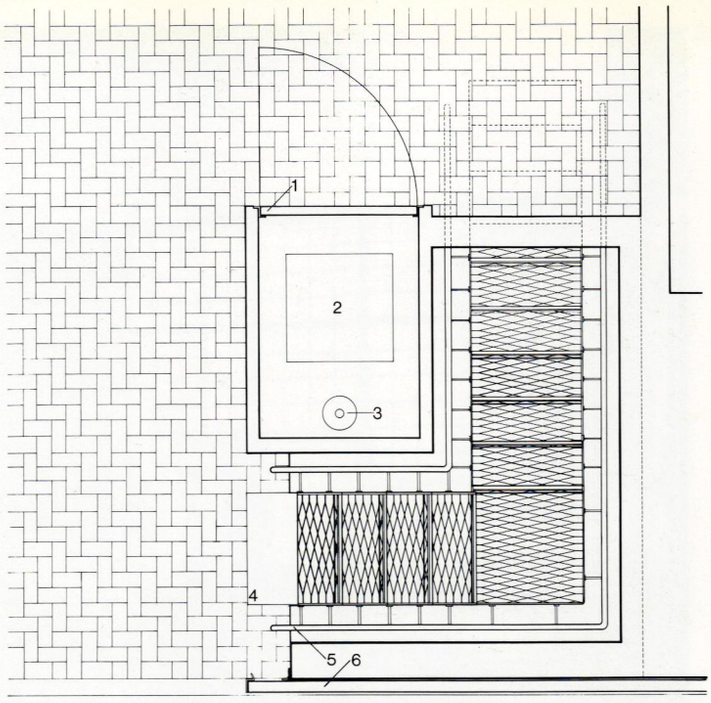
62. View from foyer through receptionist's office to the main stairway beyond. Pivoting clear glazed screens separate office from foyer.

62

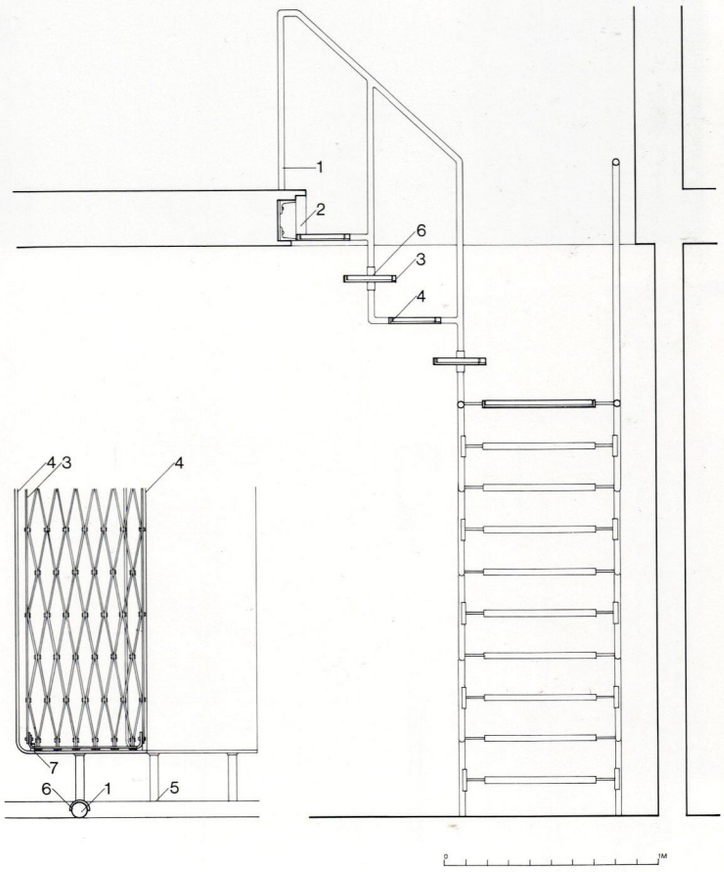
63. Auxiliary stair from doctor's consulting study on the first floor.

63

64



65



64. Plan of auxiliary stair between doctor's study and ground floor.

1. acoustically insulated door
2. panel switch for light
3. telephone standard
4. studded rubber landing tread
5. 3 cm dia. tube handrail
6. sliding panel (study/salon)

65. Section through auxiliary stair between doctor's study and ground floor.

1. 3 cm dia. tube upright
2. 4 x 0.9 cm steel strap hanger
3. steel deck insert tread/1.6 x 0.25 cm steel flat
4. frame/2.5 x 0.5 cm steel flat
5. 1.5 cm dia. welded lug brackets
6. 3.5 cm dia. x 10 cm bearing/screw fixed
7. 0.7 cm x 0.7 cm dia. peg support to insert tread

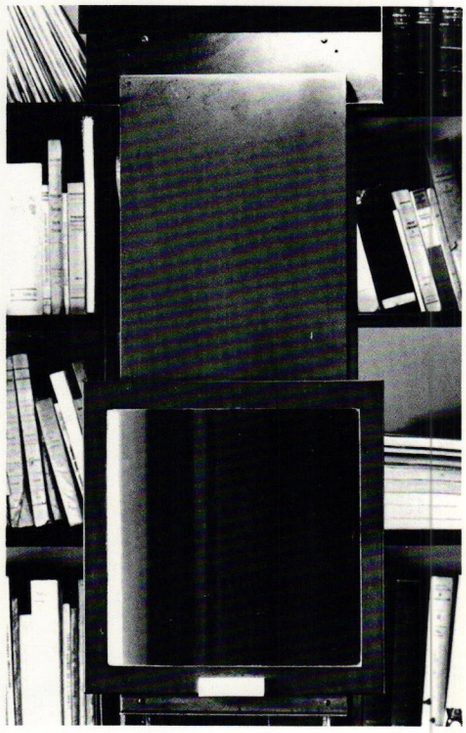
66

66. Access corridor to gynecological suite. Consulting and examining rooms beyond. Pass through double sided surgical cabinet on extreme left between corridor and operating room.

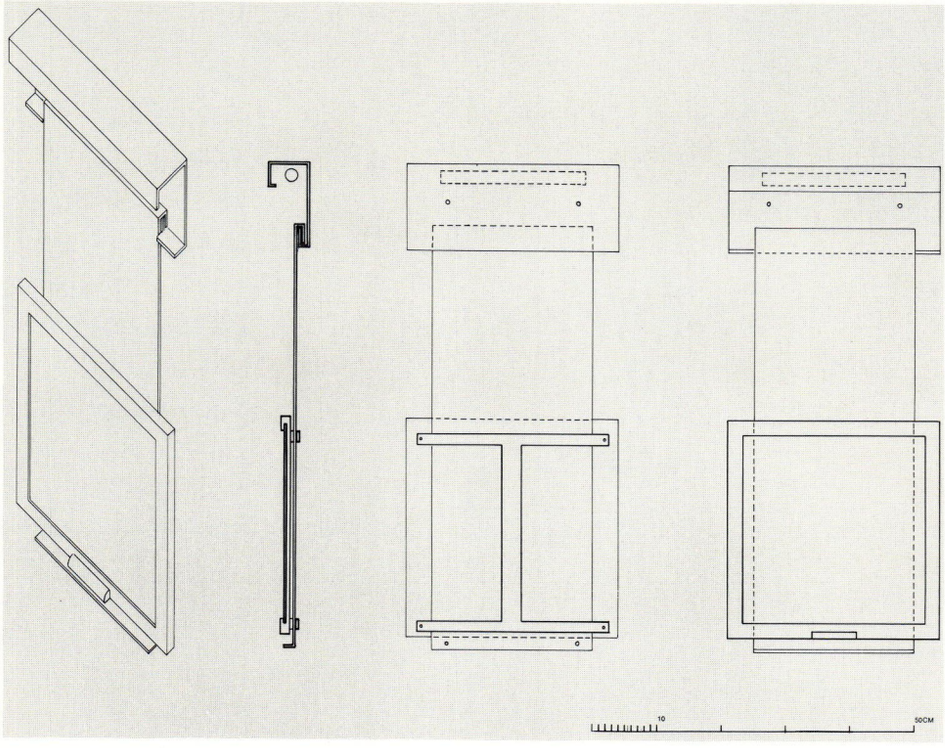
67. Detail of adjustable mirror in patients' waiting area.

68. Details of an adjustable mirror fitting designed by Pierre Chareau. The unit consists of a brass mount from which is suspended a brass plate. The mirror fitting itself slides on this plate, thereby affording adjustment in height. The mirror is lighted by a concealed tube lamp in the mount.

67



68



69. View from doctor's consulting room to examination room. A heavy sliding panel divides the two spaces. Auxiliary stair to the extreme right.

70. Operating room looking towards forecourt.

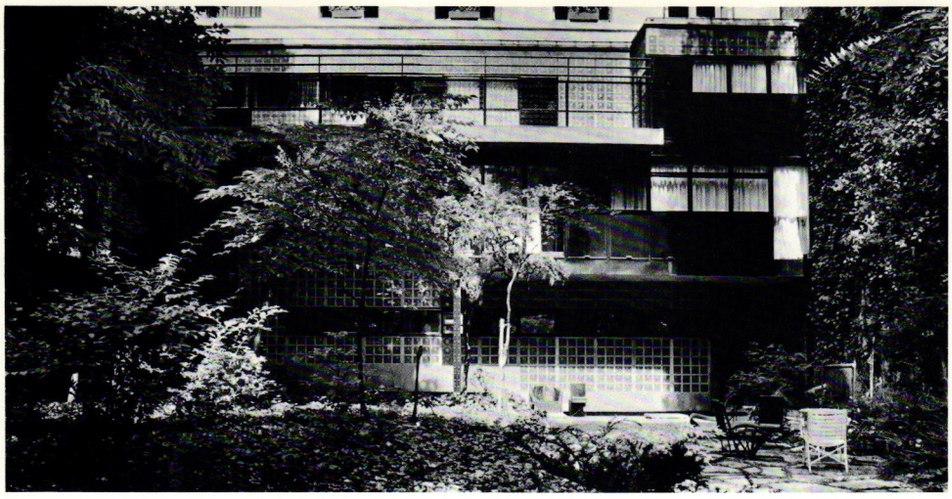
71. Toilet in gynecological suite. Note exceptional uses of exposed radiant heating and terrazzo finish to all surfaces.

69

71

0

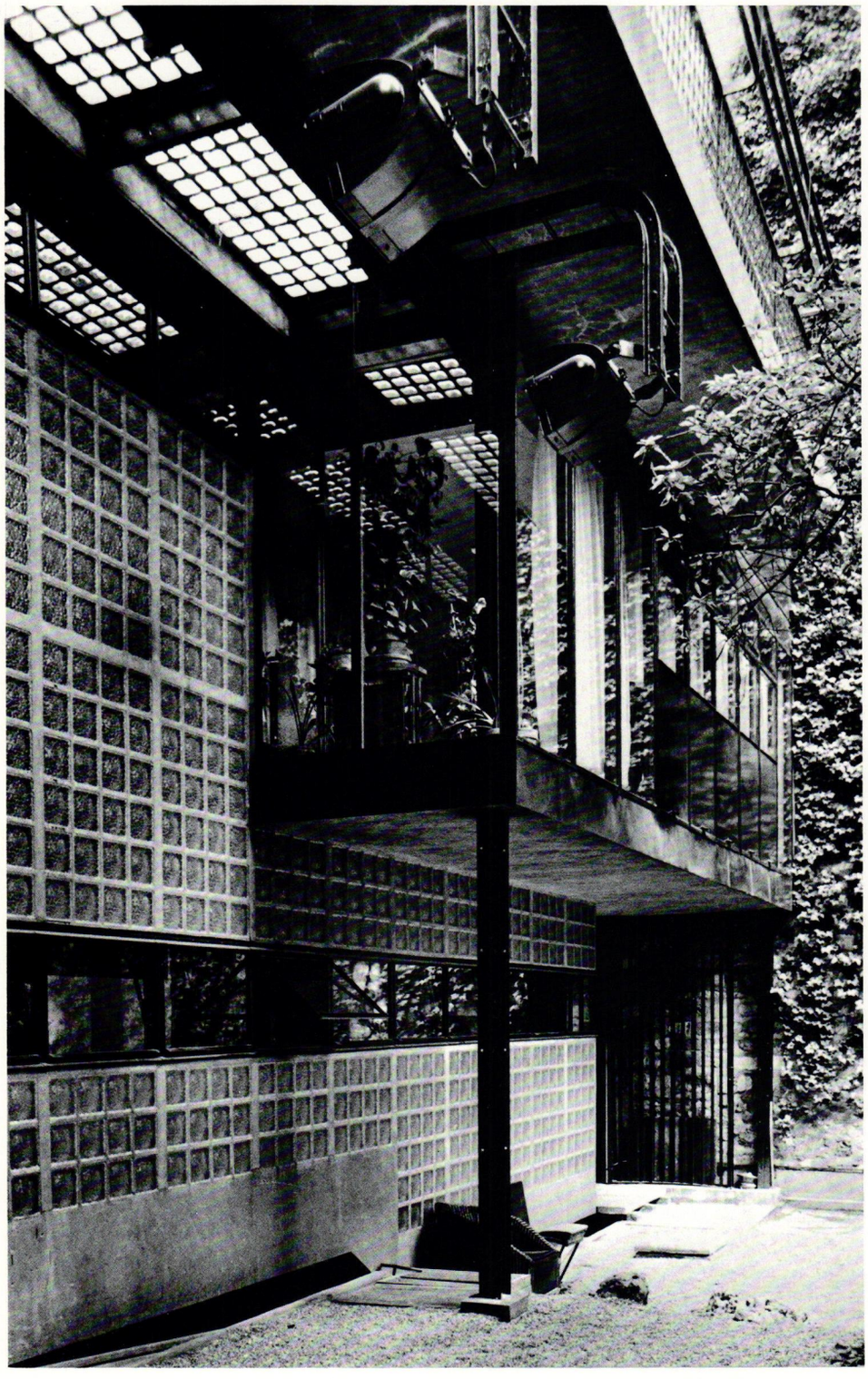
72



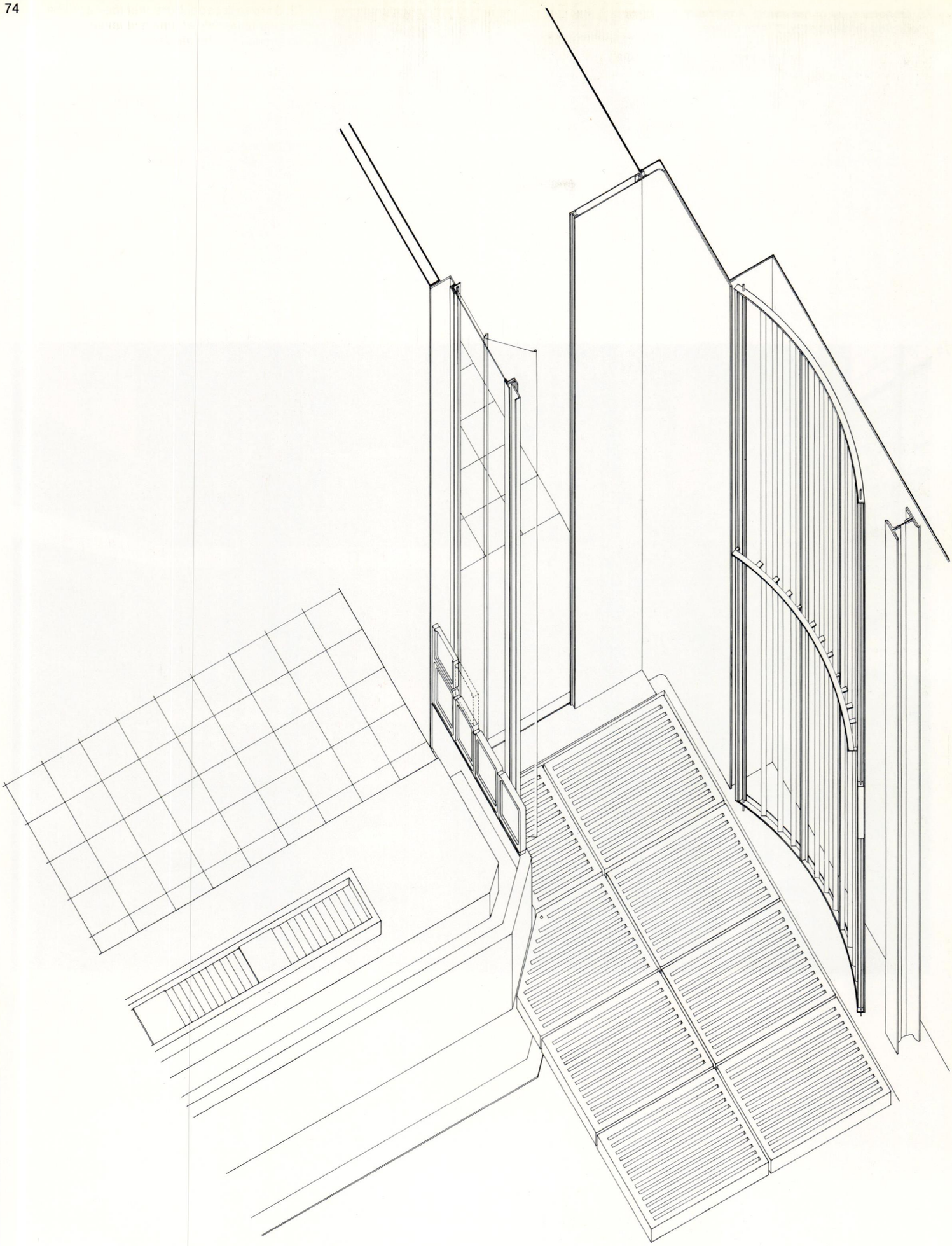
72. Garden facade. Note that the "collage" of layered materials at different levels is extended into the garden.

73. Detail of garden facade. Garden entrance with grill gate is in the rear ground. Madame Dalsace's day room and conservatory project outward at first floor level. Lense lights are set into the second floor bedroom terrace overhead, with night floodlighting also suspended from this level.

73



74. An axonometric of the garden entrance; the closure comprises two unequal leaves. The wider leaf is the door itself, which is steel framed and glazed. It is equipped with perforated metal "butterfly" screens, as are the screens to the internal main stair. The narrower leaf is a steel-faced panel, flush with the steel lining of the opening. A pre-cast concrete gridded decking leads to the garden, and a gate built up out of welded steel angles secures this entrance. The drawing also shows typical upstand hot air outlet in the bay of the adjacent waiting room.



75. General view of the salon. Armchairs are according to designs by Pierre Chareau.

75

76

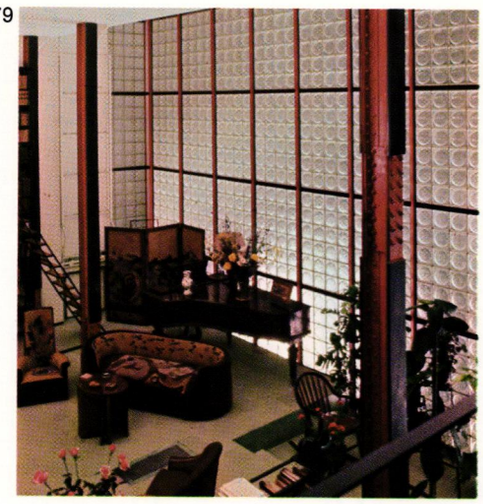
76. View of main stair well from the salon. The columns run continuously through three floors at this point.

77. General view of salon from the main stair landing. The large steel vents in the background had to be introduced in order to meet the ventilation requirements for the salon according to the building codes.

77

78

79



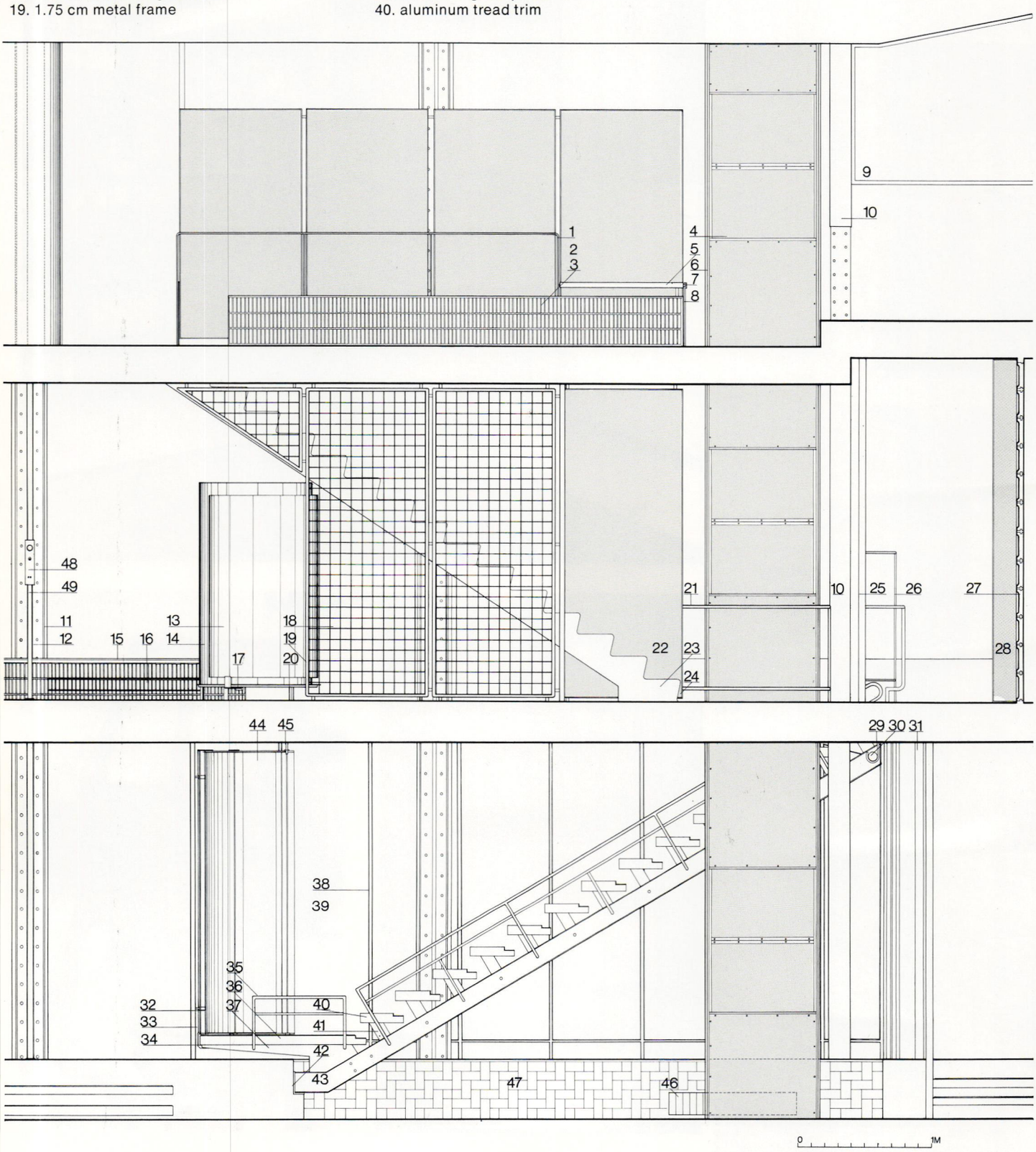
78. The doctor's study at the second floor level. The two-story space runs through to the patient's waiting foyer below. A partially screened view of the dayroom conservatory is in the rear. The vents to the glass block wall are controlled by one wheel located near the conservatory.

79. The salon from the third floor bedroom level at night. The space is illuminated through the forecourt glass block facade by floodlights mounted off the courtyard ladder frames.

80. Detail plan, first floor.

81. Detail section through three floors.

1. handrail/4.75 cm x 1.2 cm flat steel
2. 5 cm panel/perforated metal face
3. wood tiled upstand
4. dumb waiter/perforated metal face
5. wood tiled seat
6. metal trim
7. metal rail/4.75 cm x 1.2 cm flat steel
8. metal support
9. glazed opening
10. steel column/slate faced
11. slate facing
12. steel facing
13. sliding semicircular casette
14. cleaning cupboard/main cylinder
15. aluminum step trim
16. 9 cm wood tiled step
17. pivoting bracket to casette
18. 8 cm x 8 cm wire grid mesh
19. 1.75 cm metal frame
20. 3 cm dia. tubular leg to cupboard
21. 2 cm dia. handrail
22. panel/perforated metal face
23. wood tiled staircase
24. metal trim
25. metal channel/door stop
26. secondary guard rail
27. glass lenses
28. sliding door/perforated metal face
29. 1.5 cm steel hook
30. 7 cm steel rod support
31. sliding glazed panels
32. perforated metal screens
33. pivoting glazed panel
34. 7 cm steel pivot arm to rotary door
35. guard rail
36. aluminum landing trim
37. steel cantilever landing support
38. 1.5 cm x 5.5 cm metal framing
39. obscured glass panel
40. aluminum tread trim
41. steel tread bracket
42. channel
43. steel staircase string
44. rotary metal framed door/glazed and screened
45. 1.6 cm dia. top pivot to rotary door
46. louvered hot air outlet
47. 14 cm x 7 cm matte black tile
48. switch and signal light
49. vertical conduit

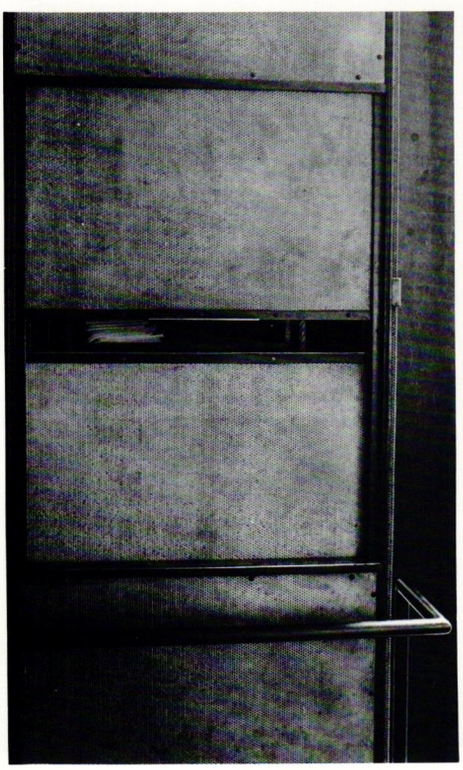


Maison de Verre

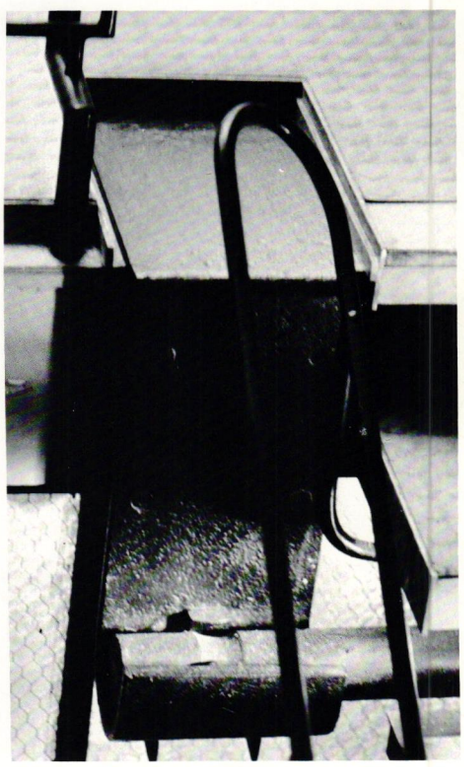
First Floor

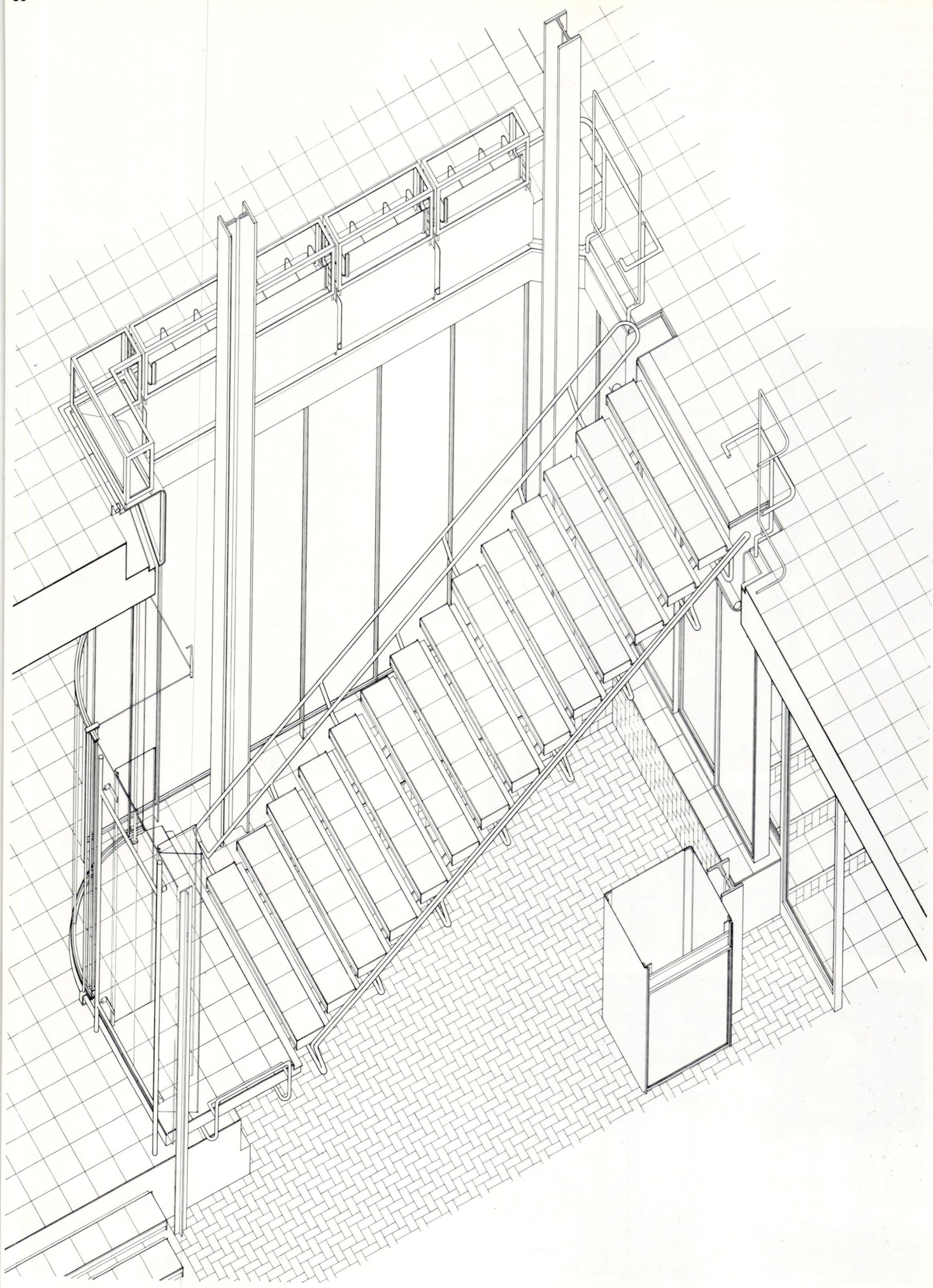
3

4



85

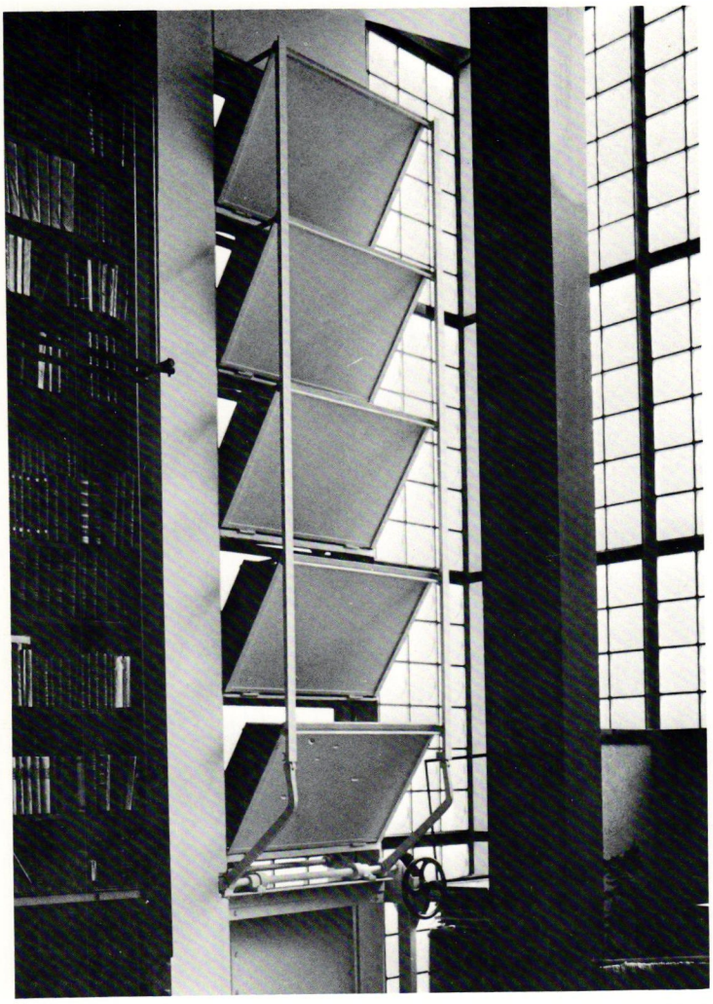




87. Ventilating louvres to main salon.

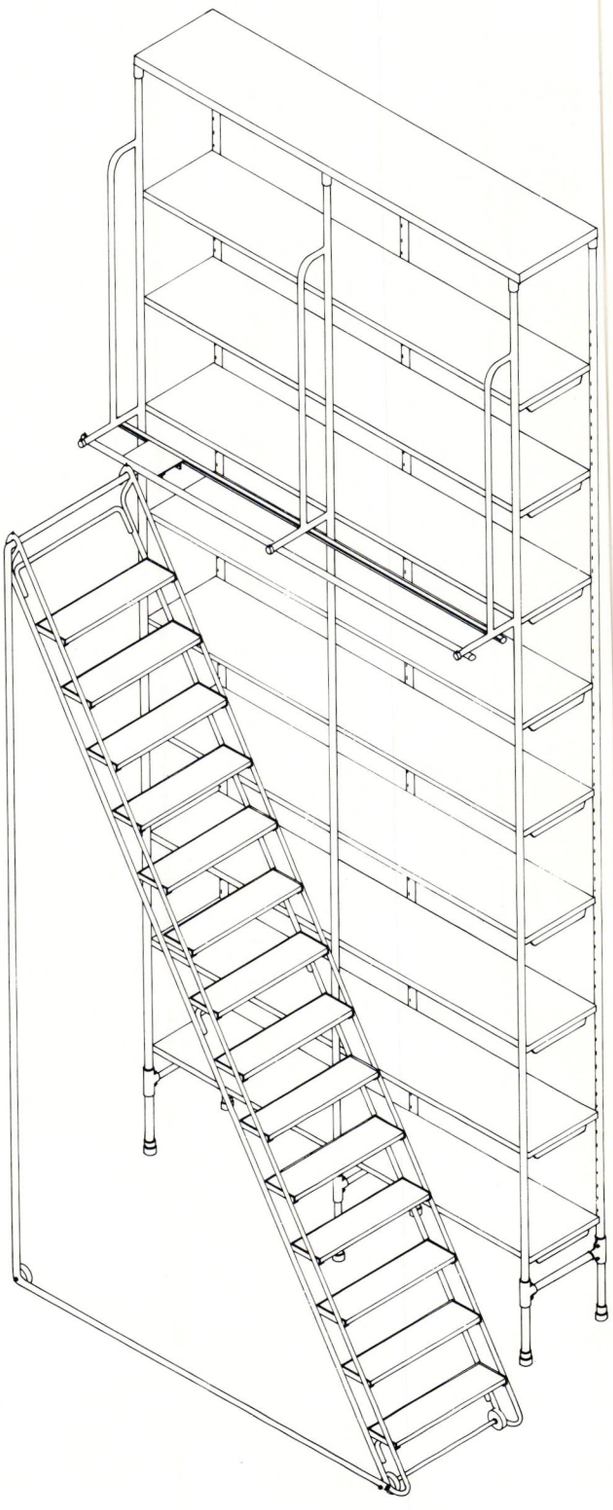
88. Detail of standard bookrack balustrading to main stair well. Note perforated metal screening, shelving, and glass book trays. A similar module and method of construction is used for wooden cabinets in the rearground and also for the storage balustrade units to the second floor gallery.

87



88

89

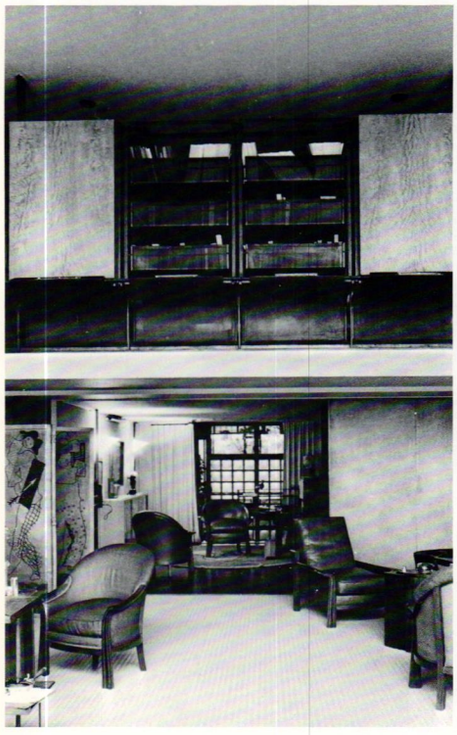


89. Partial axonometric of mobile library step ladder and bookcase, an outstanding example of Chareau's inventive imagination and of Dalbet's brilliant and economic use of tube steel. The main member of the ladder consists of a 3 cm diameter tube bent through 90° in two different planes. The ladder itself, fabricated out of 2 cm diameter tube strings between which are wooden treads slotted into metal angle frames, hooks over the main bent member, with the trolley axle running through it at ground level. The whole assembly is welded to a flat steel plate which slides in two slotted tubes hung off the bookcase framing.

90. View from main salon to doctor's study. Glazed wall to garden facade is beyond with curtained entrance to Madame Dalsace's day room. The sliding panel on right is in "open" position. The furniture in the foreground is by Chareau.

91. View from main salon as in figure (90) but with sliding panel closed.

92. View of main salon, at night, with external lighting from second floor gallery. Note travelling book wall stair. The easy chair and settee are by Chareau and finished in fabric by Andre Lurcat.



91

93

93. View from dining area towards the conservatory.

94. Passageway between kitchen and dining area. Access, on right, to second floor, bedroom level, faced in wooden slip tiles to match floor of dining area. Passenger elevator is on the left. Overhead is the carriageway and carriage for horizontal dumb waiter, never finally installed. See project drawing.

95. View from the kitchen to the dining area. The semi-circular carriage of the dumb waiter automatically opens the two way kitchen door and overhead flap. Stair access down to ground floor service area is to the storage cabinet. The storage wall beyond is faced with perforated metal.

96. The main fuseboard in the storage wall.

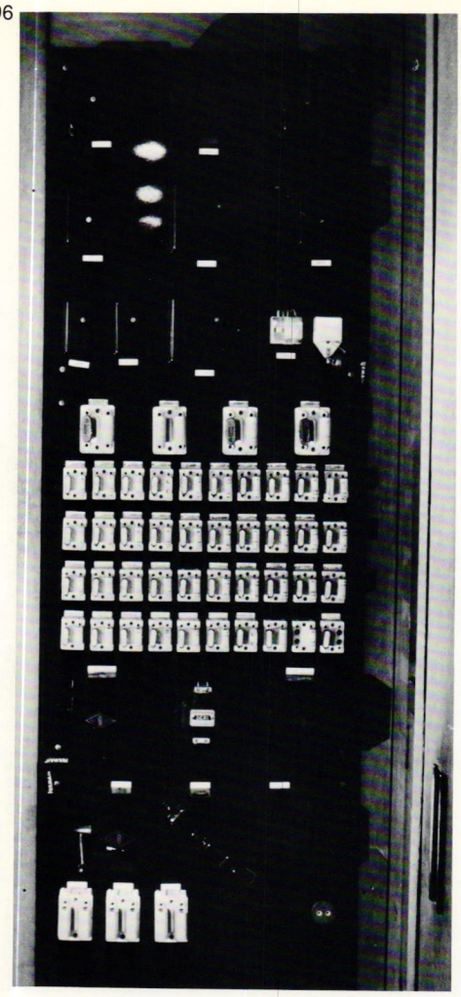
97. A general view of the kitchen.

98. An early perspective project drawing published in 1933 on completion of the house. The horizontal dumb waiter from kitchen to dining area is shown as originally intended.

94

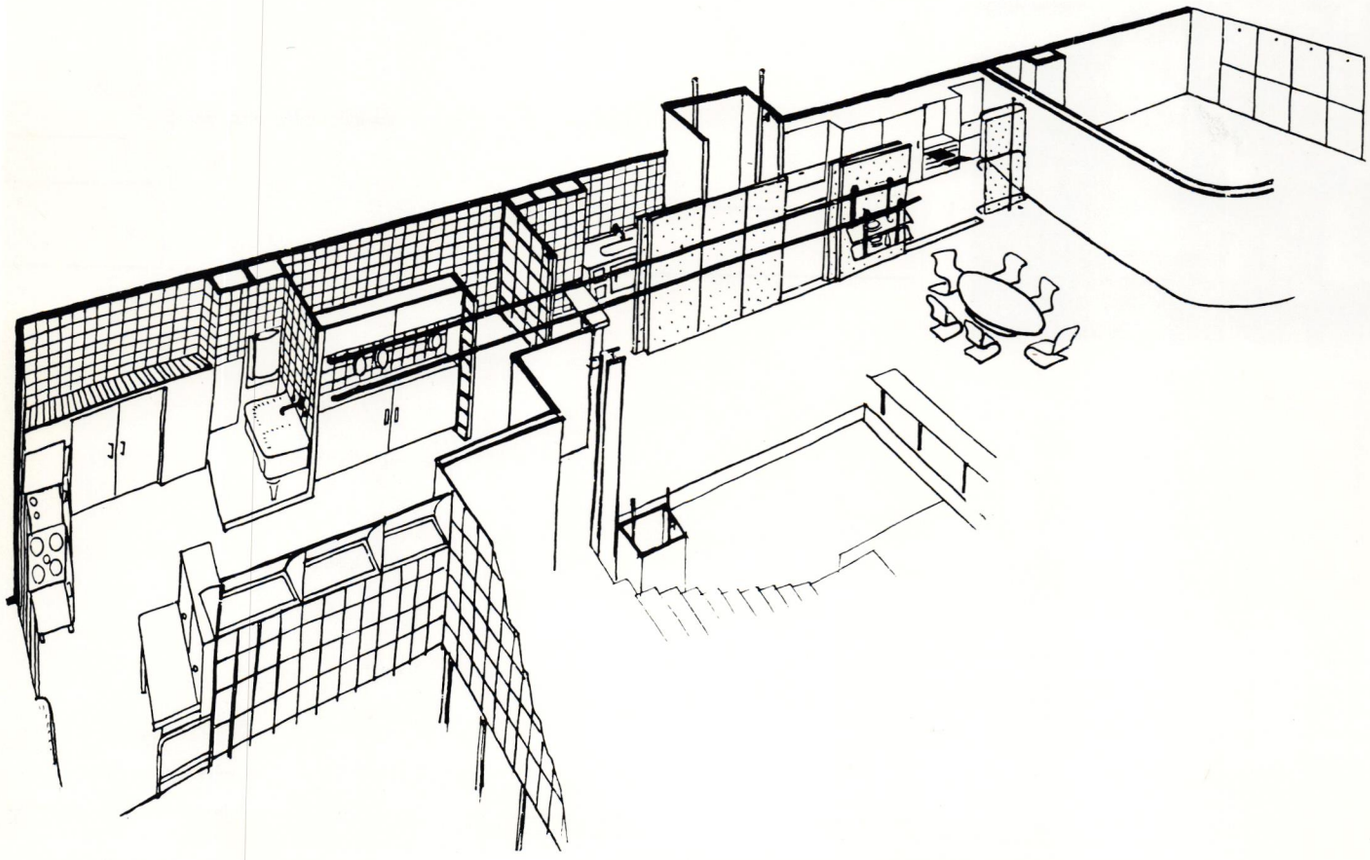
95

96



97

98



99. A detail of the passageway to Madame Dalsace's day room and conservatory from the doctor's study. See foldout drawing on page110.The glass louvre high level vents to the garden facade are manually controlled at this point.

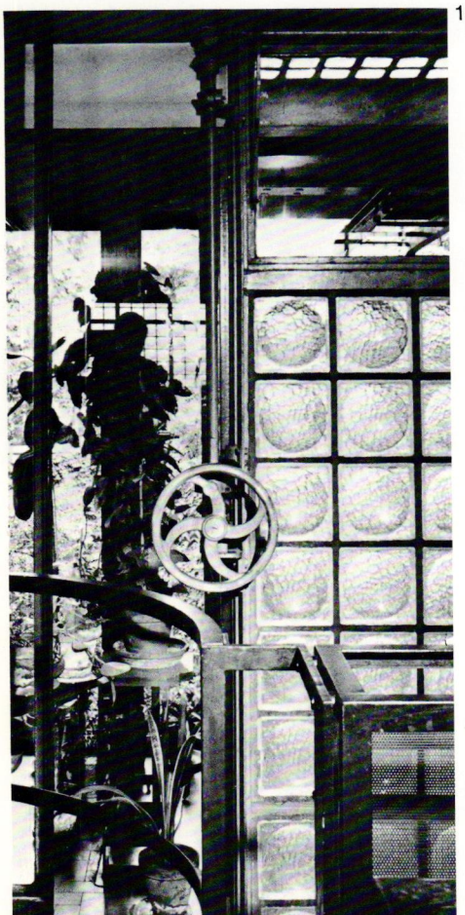
100. Detail of retractable stair.

1. brass sheet lining to opening
2. 3.5 cm dia. metal socket for support rod
3. retractable stair
4. 16.5 cm dia. spring loaded cable drum
5. telescopic pull bars
6. 2 cm dia. tube handrail
7. 2 cm dia. tube protecting rail
8. 11.5 cm dia. pulley
9. 3 cm dia. pulley
10. metal bracket and guide
11. groove in stair frame
12. metal stop
13. metal cable fixing
14. ceiling panel
15. socket fitting for ball lock
16. pull chain
17. brass sheet stair plate
18. cantilevered lug
19. fixed frame/steel deck
20. sliding frame/steel deck
21. louvered outlet/hot air
22. ball lock

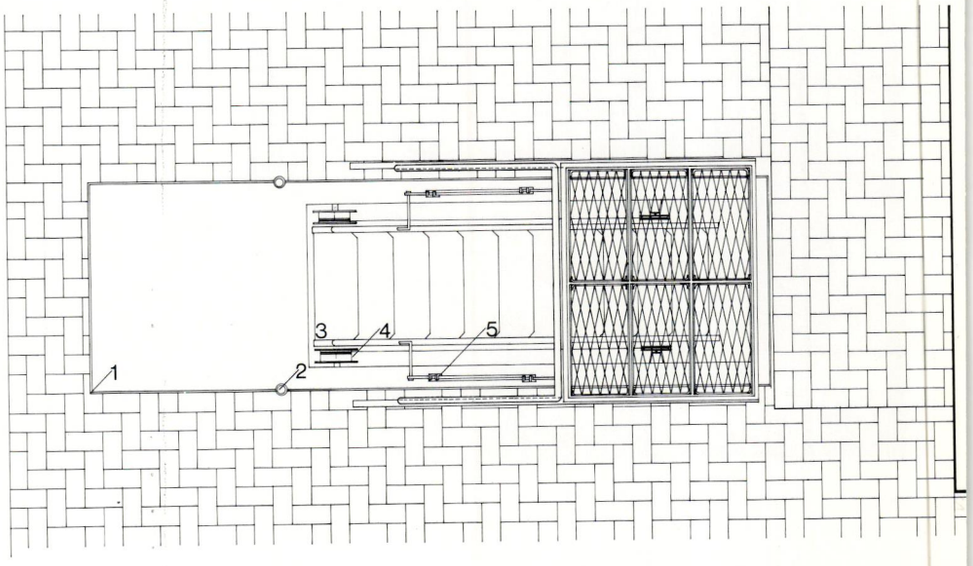
101. View of conservatory from Madame Dalsace's day room.

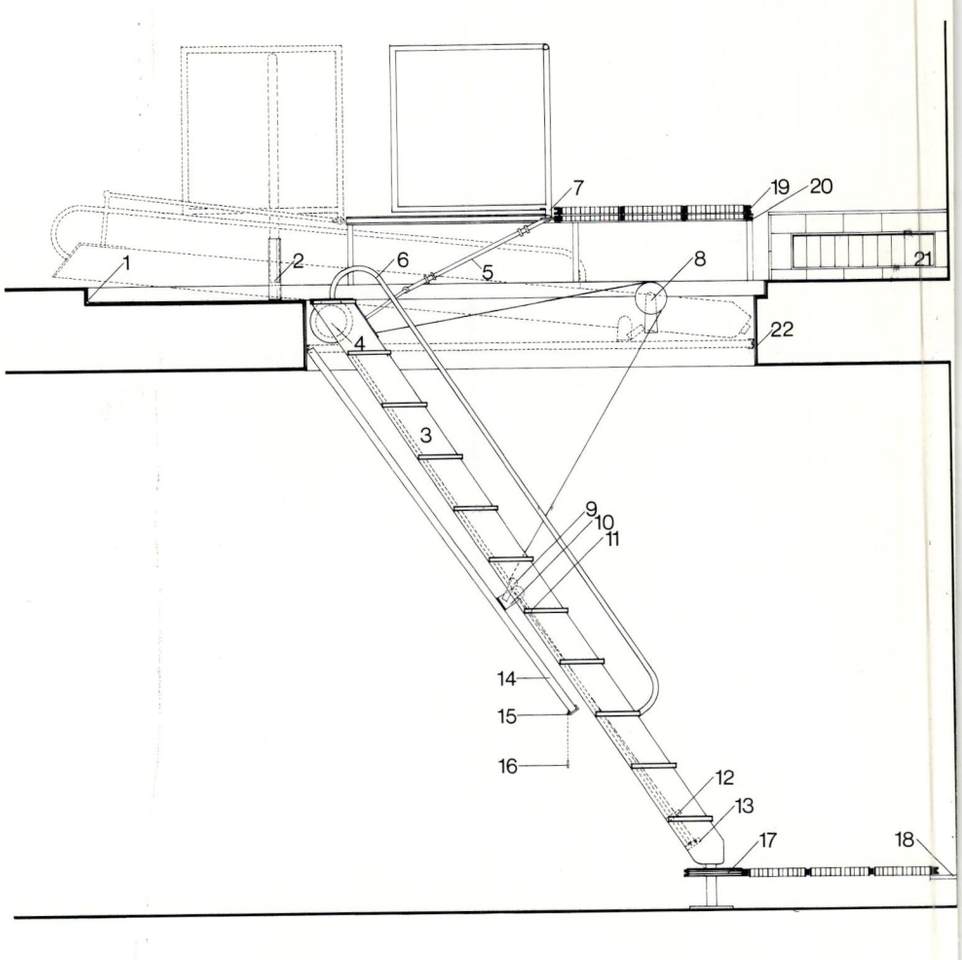
102. General view of Madame Dalsace's day room. See drawing for details of retractable stair to bedroom above.

99



100





01

2

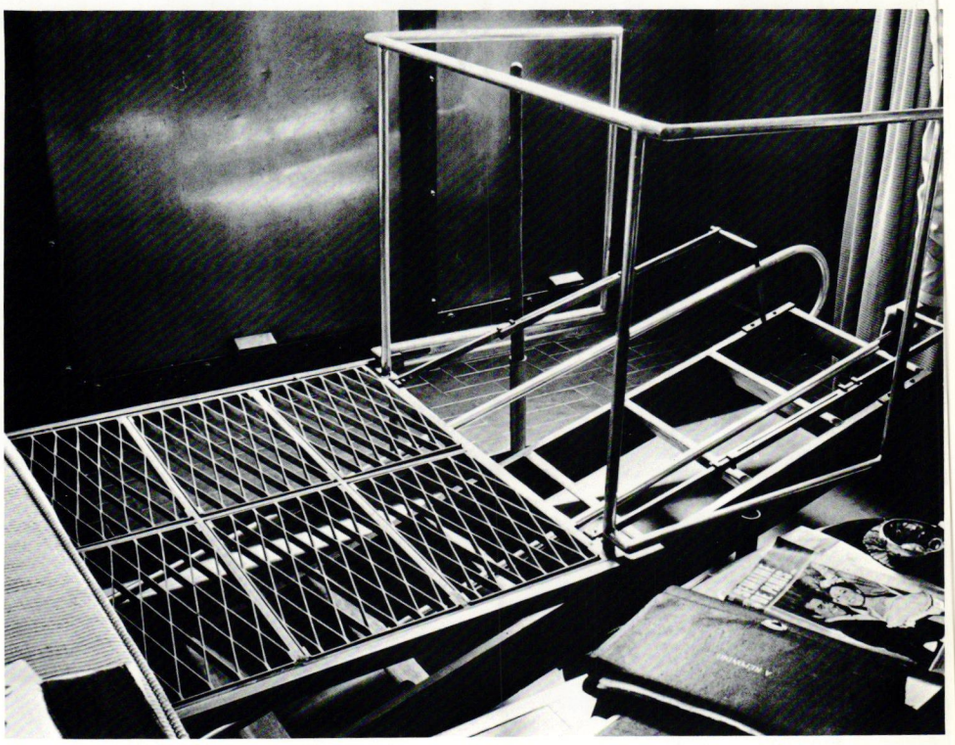
103. Interior detail: guest bathroom. Signal light and tube light mounted on vertical conduit.

104 and 105. In master bedroom: detail views of retractable stair. In the master bedroom, note in addition detailing of "curtain wall" panelling to garden facade. Any condensation accumulating in the panel may drain out via gargoyles into an interior gutter built into the edge of the tiled floor.

106. The master bedroom looking towards the storage wall. See axonometric of the whole house.

107. The master bedroom looking towards the curtain wall with the retractable stair in the rearground.

Second Floor



06

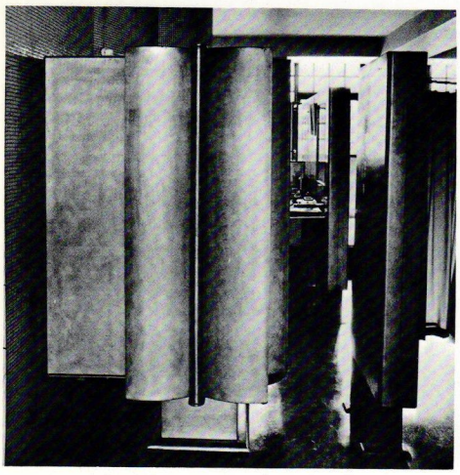
07

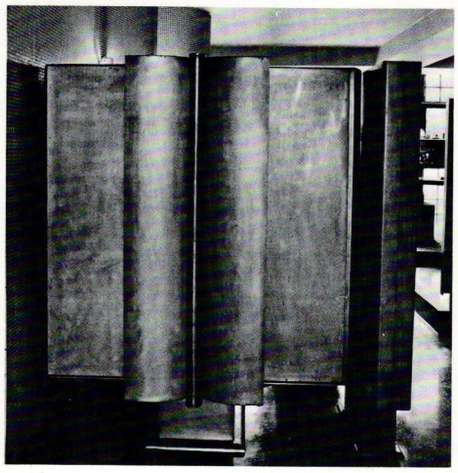
108 and 109. Free standing duraluminum storage pass through entry unit to bathroom area. Shown open and closed is the pivoting butterfly storage unit.

110. Inner area of the master bedroom with pivoting storage unit of bent duraluminum. The shower fittings are to the extreme right.

111. Axonometric of master bathroom. The floor is divided by a 29 cm step up. The upper level is rubber tiled, the lower finished in terrazzo. The walls of bath and shower, the main walls and freestanding columns are all faced in white 2 cm x 2 cm square mosaic. The drying cabinets and storage units are all made out of bent aluminum.

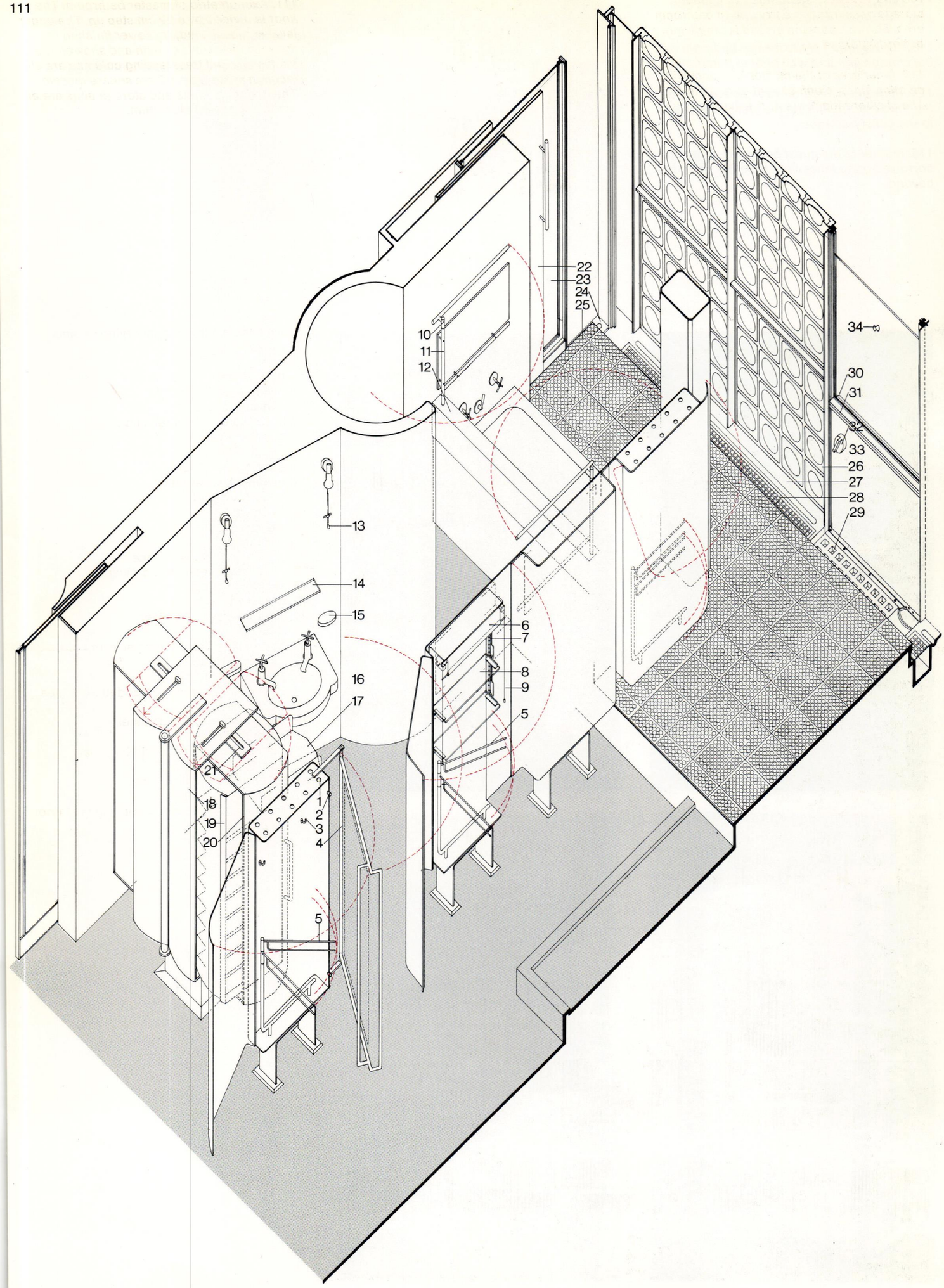
108





110

1. vent holes to aluminum drying cabinet
2. rubber stop
3. hook
4. tubular steel curtain gate
5. pivoting drying racks
6. canvas screen
7. adjustable metal shelf supports
8. glass shelves
9. guide wire
10. pivoting towel rail
11. pivoting bath screen
12. brass bath shelf
13. switch pull
14. shelf
15. soap dish
16. shower wall/mosaic face
17. perforated metal shirt drawer
18. aluminum storage unit
19. rotating draw stack
20. pivoting stack container
21. slide
22. metal faced solid sliding screen
23. steel framed glass sliding door
24. wooden guide track
25. 25 cm x 25 cm rubber studded floor tiles
26. glass lenses
27. slate condensation channel
28. metal radiator grill
29. 3.6 cm wooden deck grid to gutter
30. steel flashing
31. 4.5 cm x 1.2 cm teak trim
32. brass door handle
33. brass panelled/steel framed terrace door
34. chrome stud in window


22
23
24
25
10
11
12
34
30
31
32
33
26
27
28
29
13
14
15
6
7
8
9
16
17
5
21
18
19
20
1
2
3
4
5

112. Detail of the pivoting storage unit. See axonometric drawing on page 123.

113. "Outer area" of the master bedroom with the storage unit and wall of bent duralumin.

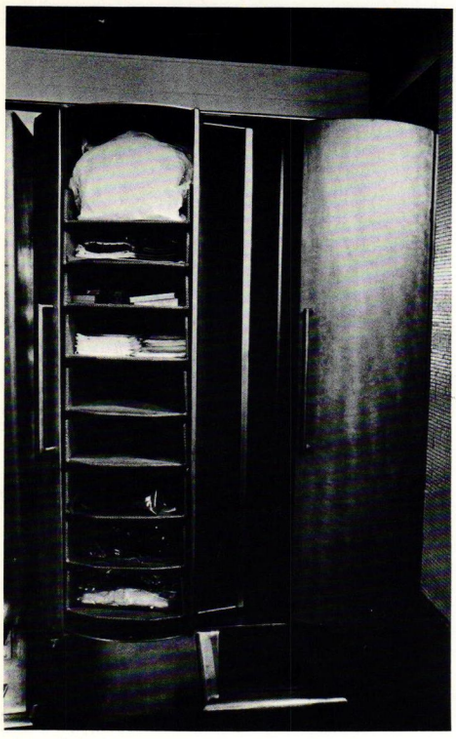
114. Perforated metal storage unit and bath in the third bedroom. Note the glass lense light to the guest bathroom.

115. Interior of the guest bathroom. Note the borrowed glass lense light from the bedroom beyond.

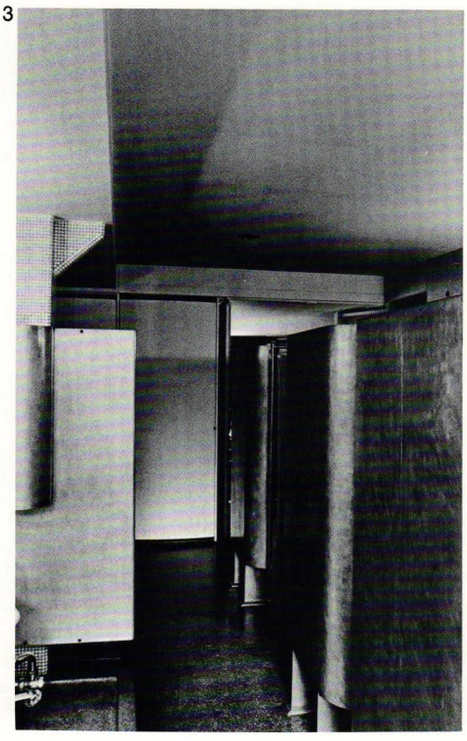
116. The third bedroom with a screened toilet unit. The entrance in the storage wall gives on to the main salon gallery beyond.

117. The second floor bedroom with its screened toilet unit.

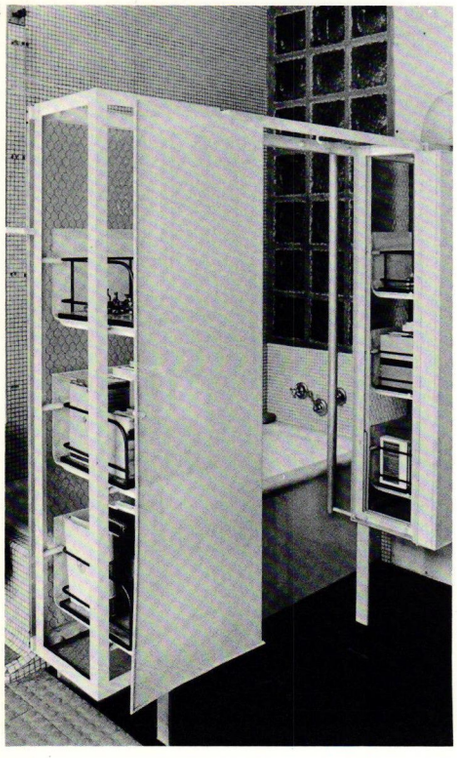
112



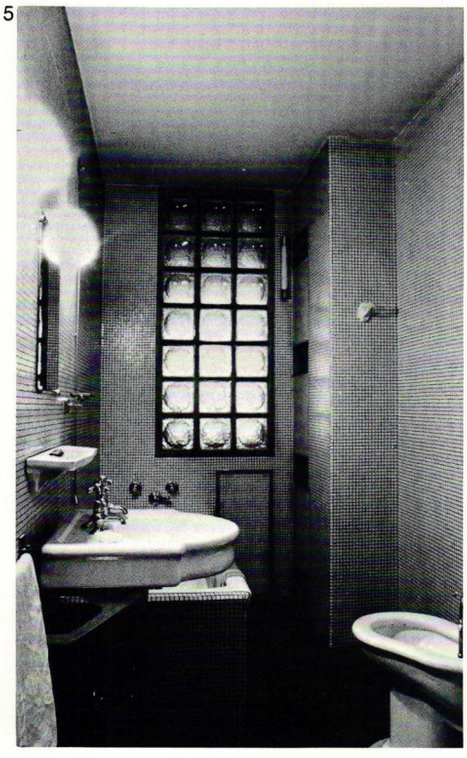
113



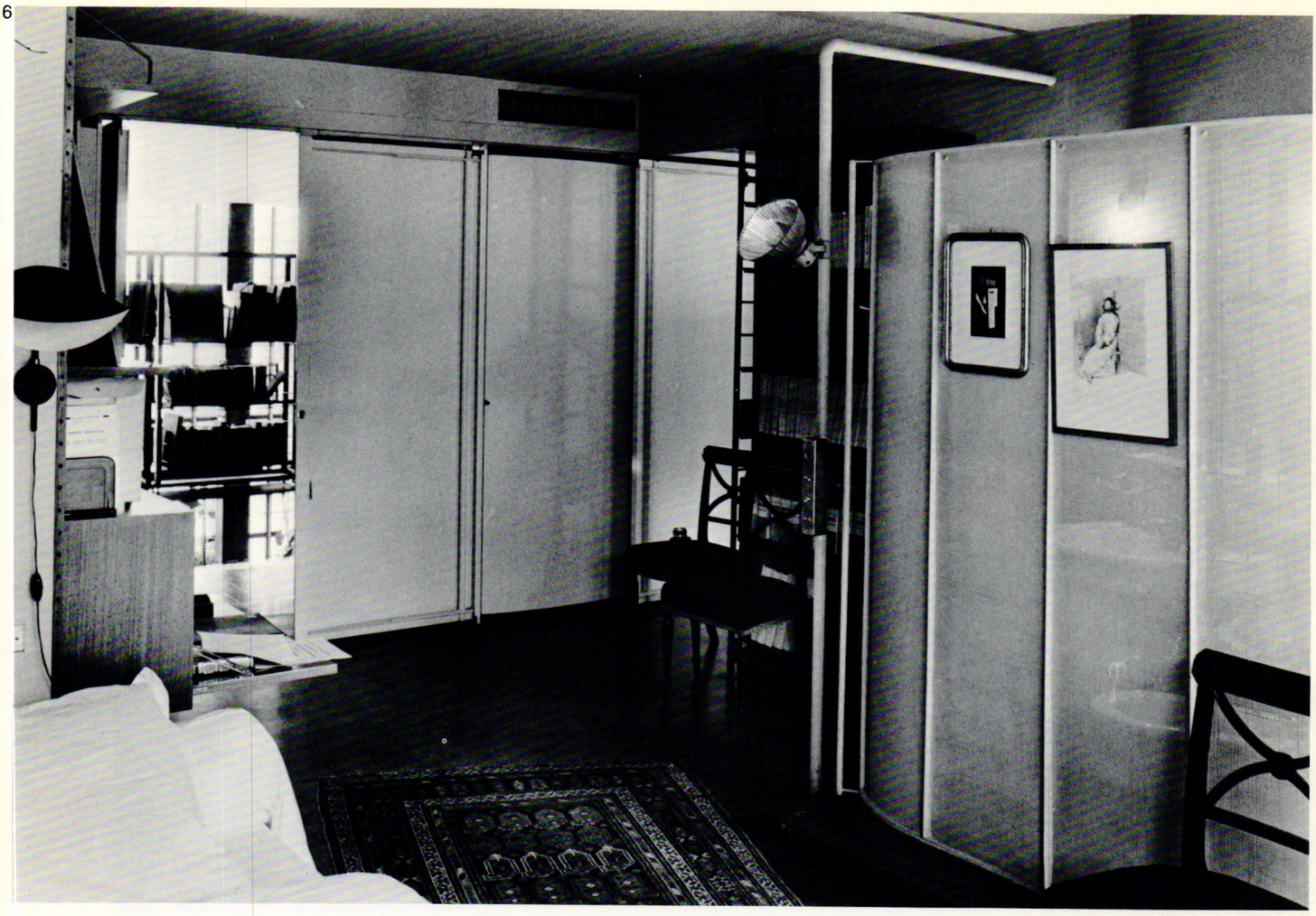
114



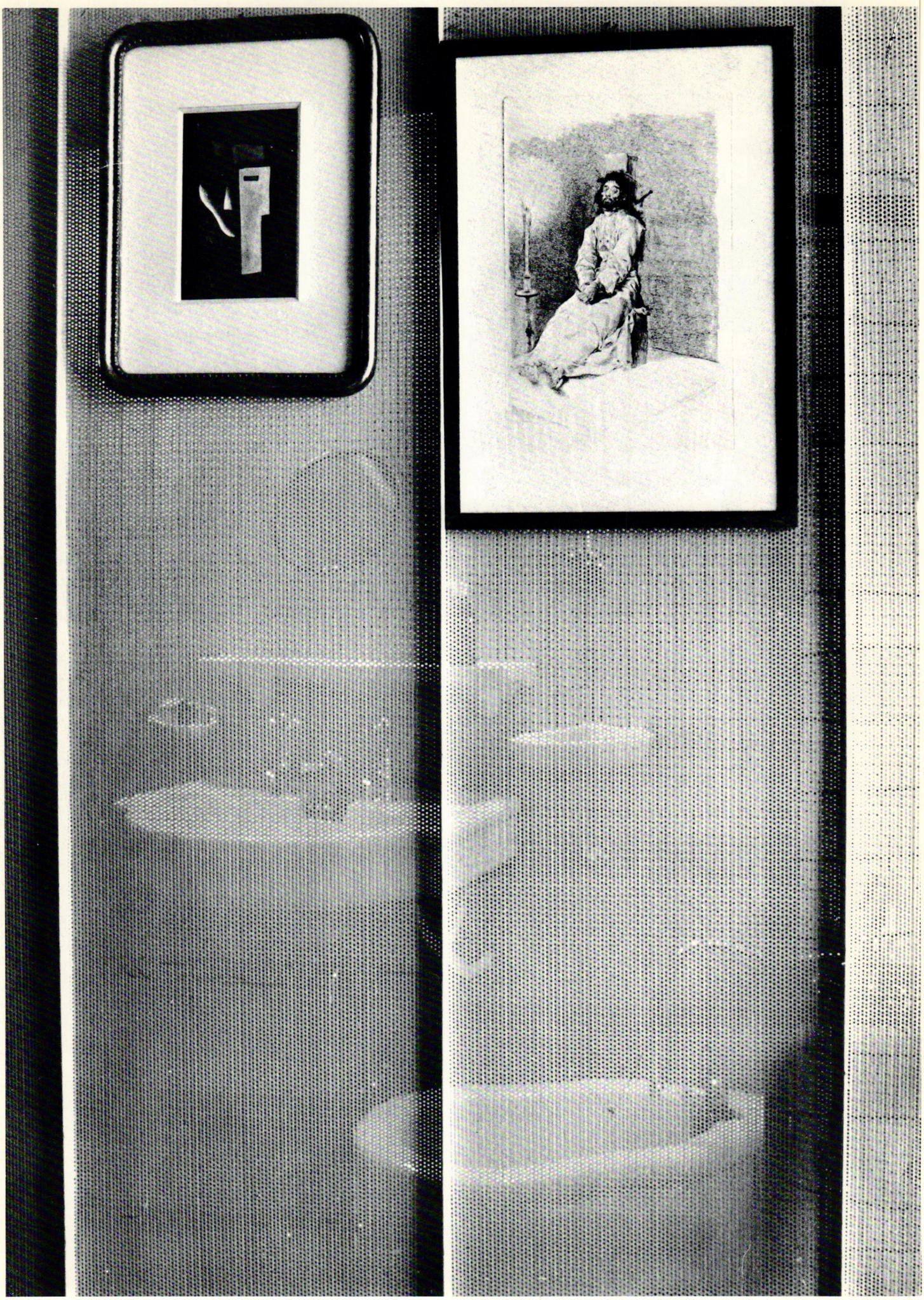
115



116



117



UNITED STATES PATENT OFFICE.

J.V. LAFFERTY.

JAMES V. LAFFERTY, OF PHILADELPHIA, PENNSYLVANIA.

No. 268,503. BUILDING. Patented Dec. 5, 1882.

SPECIFICATION forming part of Letters Patent No. 268,503, dated December 5, 1882.

Application filed June 3, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES V. LAFFERTY, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Buildings, which improvement is fully set forth in the following specification and accompanying drawings, in which —

Figure 1 is a side elevation of the building embodying my invention. Fig. 2 is a horizontal section thereof in line *x x*, Fig. 1. Fig. 3 is a horizontal section in line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of a building in the form of an animal, the body of which is floored and divided into rooms, closets, &c., and the legs contain the stairs which lead to the body, said legs being hollow, so as to be of increased strength for properly supporting the body, and the elevation of the body permitting the circulation of air below the same, the entire device presenting a unique appearance and producing a building which is well ventilated and lighted.

Referring to the drawings, A represents a building which is of the form of an animal — in the present case that of an elephant — the body B and legs C of which are hollow, the body being essentially supported on said legs, and, if desired, by means of suitable trusses within the same, and otherwise strengthened. The body is properly floored, as shown by the dotted lines *a*, Fig. 1, furnished with windows, doors, &c., and divided into apartments or rooms, closets, &c., and in the legs C are stairs D, which lead to the floor *a*, so that access is had to the body B from the ground, the legs having doors E for evident purposes, each leg, if desired, containing a flight of stairs, although for ordinary purposes the hind legs only are provided with stairs.

F represents a chute, which communicates with the front of the body A and extends to the ground, where it may be connected with a sewer or other conduit for conveying slops, ashes, &c., to the sewer or conduit, said chute being of the form of the trunk of the elephant and containing trussing *b* (shown in dotted lines) for supporting the front of the body, said trussing being concealed by the covering or wall of the trunk. The lower end of the chute enters or is connected with a box, G, around which is a set, H, said box resting on the ground, or proper supports thereon, and concealing said lower end of the chute and its connection with the conduit, and in the present case presenting the appearance of a trough from which the animal is feeding or drinking.

An upper story, J, may be supported on the body B, access whereto is had from the floor *a* by means of stairs *c*, which are properly located in the walls of the body B and sustained in position, said story J being in the form of a howdah, which, completing the semblance of a bedecked elephant, acts as the observatory of the building. It will be seen that the structure is novel and unique. The body is supported on hollow legs, which are strong and enabled to endure the great weight superimposed upon them. The elevation of the body permits the circulation of air beneath it and removes it from the dampness and moisture of the ground, the advantages whereof are evident. Furthermore, the body is exposed to light and air on all sides, wherefore it provides a healthy and suitable place of occupancy for invalids and others.

The building may be of the form of any other animal than an elephant, as that of a fish, fowl, &c.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent is, —

1. A building having the form of an animal, the body of which is constructed with floors divided into apartments, provided with windows and stairs, and supported on hollow legs, which afford access to the body, substantially as set forth.

2. A building of the form of an animal, having a body which is supported on hollow legs, one or all of which contain stairs which lead to the body, substantially as and for the purpose set forth.

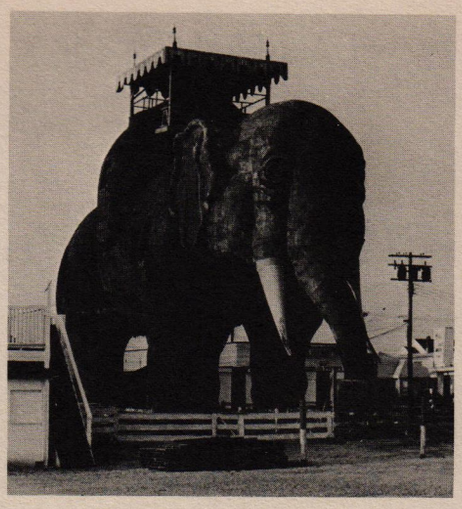
3. A building for human occupancy, having the form of an animal and having a chute which extends down through a member of said animal and communicates with the interior of the body, substantially as set forth.

4. The chute F, in combination with the trussing *b* and the body B, substantially as and for the purpose set forth.

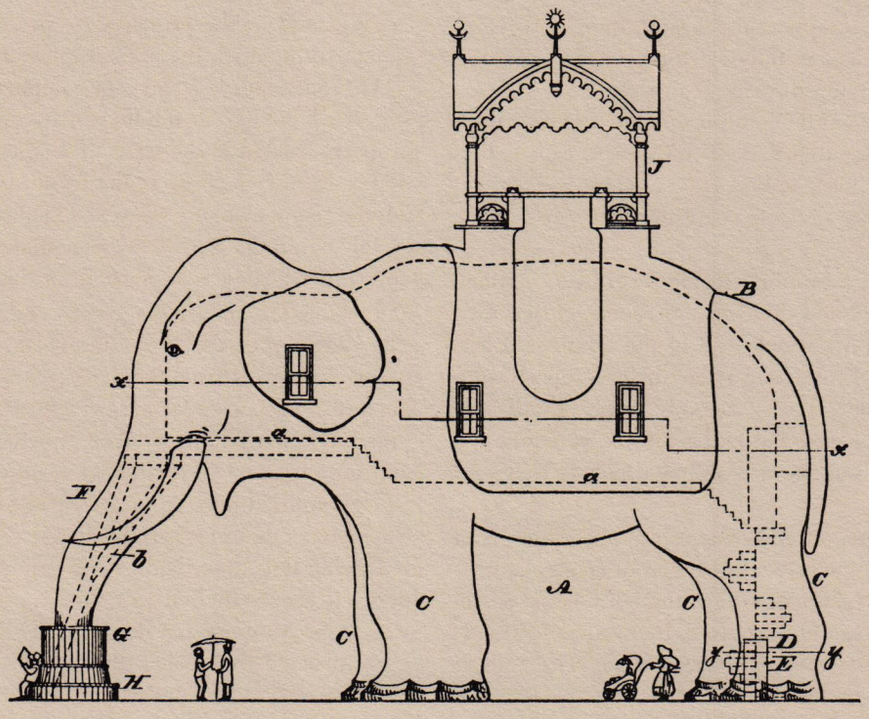
5. The body B and chute F, in combination with the box G, substantially as and for the purpose set forth.

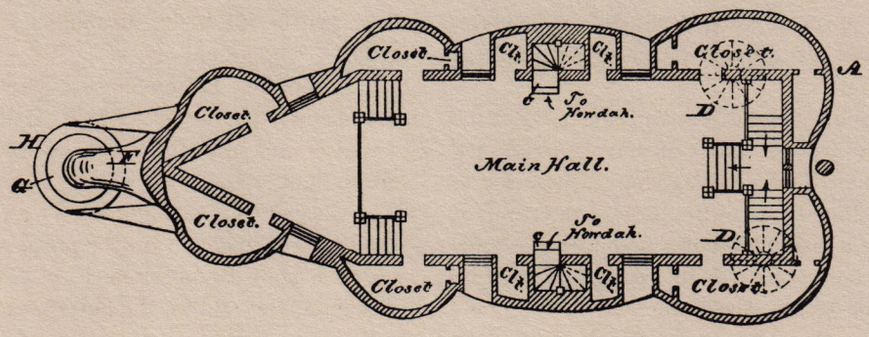
Winesses: JAMES V. LAFFERTY,
JOHN A. WIEDERSHEIM,
A. P. GRANT.

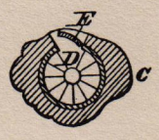
James V. Lafferty,
John A. Wiedersheim.
A. P. Grant,



No. 268,503. BUILDING. Patented Dec. 5, 1882.







(No Model.)

Allan Greenberg

Lutyens' Architecture Restudied

Allan Greenberg, a South African architect now resident in New Haven, received his B.Arch. in Johannesburg in 1960. After two years of private practice, he left to spend three years in Scandinavia before attending Yale for a M.Arch. in 1965. At present he is developing a long-range building program for the Judicial Department of the State of Connecticut.

Sir Edwin Landseer Lutyens, 1869-1944.

The life and buildings of Sir Edwin Lutyens have been described in two major works, the *Lutyens Memorial Volumes*[1] of 1950, and Lawrence Weaver's *Houses and Gardens of Sir Edwin Lutyens* of 1913. It is perplexing to discover that while, on the one hand, the tone of these monographs is eulogistic and that they claim for Lutyens a niche alongside the greatest names in English architecture, his work has been disregarded for the past 50 years by most architects, historians and critics. Henry Russell Hitchcock is the only historian to have included his work in a general volume,[2] and except for an essay by Goodhart-Rendel,[3] and one by Pevsner,[4] little relevant has been written about Lutyens. It is, therefore, ironic to find that Lutyens' achievement was clearly recognized by the two great masters of the modern movement, Frank Lloyd Wright and Le Corbusier. "Lutyens was probably the only contemporary architect whom Wright really admired, and the four volumes of Lutyens' work were constantly referred to during discussions with students . . ."[5] Le Corbusier introduces his work at Chandigarh with a tribute to Lutyens. "New Delhi, the capital of Imperial India, was built by Lutyens over 30 years ago with extreme care, great talent and true success. The critics may rant as they will but the accomplishment of such an undertaking earns respect."[6] Indeed a rare statement of praise from Le Corbusier, and one which is difficult to account for, as Lutyens' architecture has little in common with modern architecture, and his building programmes are no longer relevant.

Both the monographs on Lutyens present extensive coverage of his buildings, but their essential scope is descriptive, and two crucial aspects of his work, which would assist the arrival at a more balanced assessment of its significance, remain unexplored. The first concerns the physical form of the houses, which, aside from their mastery of style, display a breathtaking range of spatial experience. These buildings (and the Viceroy's House is included in this category) have not been fully analysed, and the various methods Lutyens developed to manipulate and articulate his plans and sections, remain undefined. A similar analysis of Lutyens' garden layouts and the plan for New Delhi will provide the frame of reference for the second concern, which is the delineation, within the realm of ideas, of the concepts which underly and unify the diverse experiences of these different fields. It will then be possible to trace the relationship of the work of Frank Lloyd Wright, in particular the houses designed at the turn of the century in the Chicago area, and Le Corbusier's recent work at Chandigarh, to Lutyens' work, and to postulate some of the reasons for their interest in it.

The Houses

Lutyens' career as an architect extended from 1888 until his death in 1944. The majority of his houses were built prior to the first World War, but the ideas embodied in them are also typical of his later work. (**1-5**) illustrate the plans of five houses: Heathcote (1906), the Salutation (1911), Papillon Hall (1903), Nashdom (1905) and Little Thakeham (1902), and the following characteristics are common to each plan.

1. There is an almost symmetrical disposition of rooms within a square or a symmetrical H plan. This order is emphasized by the symmetry of the exterior massing, the fenestration, and the placement of the chimneys and entrance. Some of the plans have a "tail" of servant accommodation, differentiated by height and often by materials, appended to the main mass.

2. The crossing of the main axes is occupied by a solid mass. A fireplace is at the center of the plan at Heathcote, a stair at the Salutation, a combination stair-fireplace at Papillon Hall, a wall at Little Thakeham and a "void" at Nashdom (solid in this case in the sense of not being usable for circulation).

3. Superimposed on this plan and symmetrical system of axes is an independent and circumambulatory circulation pattern. The solid mass at the crossing dislocates movement from the axes, and separates guests and servants on either side of itself. The entrance door is invariably on the main axis, but movement is deflected off axis, often in seemingly arbitrary fashion, in the vestibule, and it continues to weave alternately on and off the axes of both the building mass and the various rooms of the house. At Heathcote, for example, the main axis is expressed by the symmetry of the

[1] Christopher Hussey, *The Life of Sir Edwin Lutyens,* A.S.G. Butler and others, *The Architecture of Sir Edwin Lutyens,* 3 vols: (London and New York, 1950).

[2] Henry Russell Hitchcock, *Modern Architecture-Romanticism and Reintegration* (New York, 1929), pp. 87.

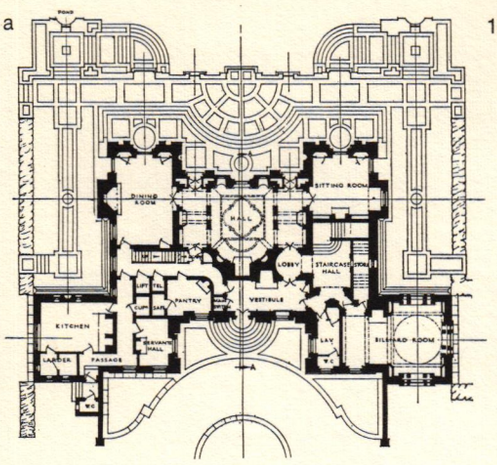
[3] H.S. Goodhart-Rendel, *The Work of the Late Sir Edwin Lutyens,* R.I.B.A. Journal, March 1945, pp. 123-9.

[4] Nikolaus Pevsner, *Building With Wit,* Architectural Review, April 1951, pp. 217-225.

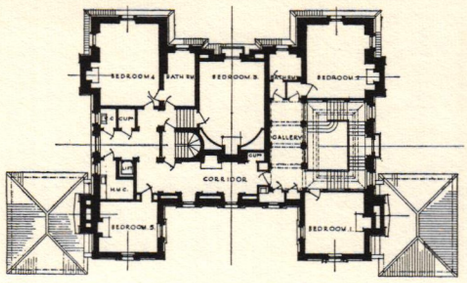
[5] Peter Collins, *The Form Givers,* Perspecta 7 — The Yale Journal of Architecture, p. 92.

[6] Le Corbusier, *Oeuvre Complete 1952-1957,* (Zurich 1957) p. 92.

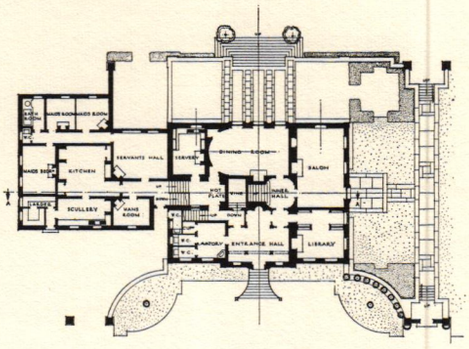
1a



1b



2



entrance and garden elevations, and the cross axis is indicated by the large windows which light the two stair halls (**1, 6**). Movement in the vestibule, or from the Hall to the dining room, sitting room or the garden, is off axis. Similarly at the Salutation (**2**), or Papillon Hall (**3**), the entrance is the only door on a major axis.

4. Neither the formal and symmetrical massing, nor the elevations express the intricacy of the interior plan.

Almost all of Lutyens' houses conform to this scheme.[7] The plan of the Viceroy's House, for example, is a variation of that of Nashdom (**30a, 4**). The portico and Durbar Hall are enlarged and domed versions of the latter's entrance porch and circular courtyard. The "void" has similarly to be circumambulated, off axis, to reach the main rooms which are located en-suite behind the garden facade. This framework is extended into the wings by a system of corridors, and it is by a process of addition, — of suites rather than single rooms, — and by the enlargement of scale, that the Viceroy's House differentiates itself from its prototype. Movement detaches itself from the axes at the gates to the forecourt where vehicles move onto the two side roads which lead to the North and South Courts (**30a, 46**), and also at the other entrances to the house in the North Administration wing and Lower West Garden Loggia (**29b**). Within the House suites of rooms in the wings relate to axes, but the corridors are independent. The unified exterior wall encloses a number of independent functions, isolated in either plan or section. These include a "country house on four floors",[8] an administrative office, a printing press, the State rooms, guest suites, and in the basement the service accommodation. (**31**)

This system of organization is, however, only an aspect of Lutyens' buildings, a basic structure which he developed to articulate those aspects of architectural experience that dominated his thinking. These can be grouped under three headings: *movement, accommodation* and *paradox*. The terms are intimately related but, because architecture is always experienced as a totality, they are somewhat unstable in isolation. The first, *movement,* is clearly evident from the general structure of the plans. Lutyens was interested in movement through a sequence of closed spaces, each separate and distinct. But it was a more complex amalgam than the regular spaces and unbroken axes of the Beaux Arts, or the looser organization and flowing spaces of an open plan. The interplay of axes and the independent circulation system implies that movement itself, as distinct from axial or visual linkages, is the main element of continuity. The primary problem then becomes the provision of the impulsion to move. These forces must operate in the general context of a group of sequentially related spaces, but also focus on the joints in the circulation, those transitory spaces which connect interior and exterior, room and room, or a group of rooms and the remainder of the house. Where required they must also reflect a multiple choice of movements.

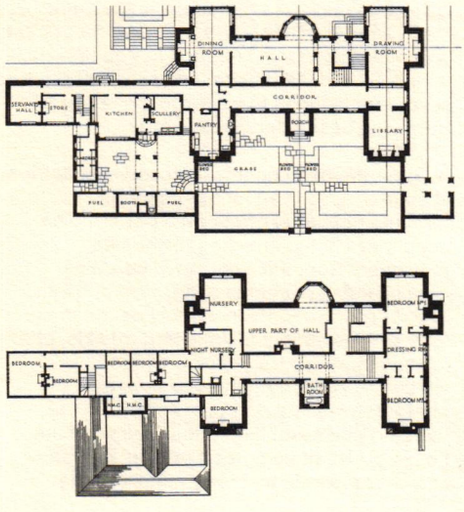
Luigi Moretti stated that "internal volumetric values have a concrete presence in themselves independent of the characteristics of the materials which enclose it."[9] He categorized some of the fundamental qualities of spatial sequences, three of which are relevant to Lutyens' houses. These are *variations of geometric* form or shape, *changes in volume* (volumetric quantity of space) and *changes of light intensity,* to which a fourth, *axial complexities,* may be added. Lutyens used *variations of geometric form* in a number of different ways. At Papillon Hall (**3**) the entire ground floor is articulated into a vivid sequence of spaces of circular, square, cruciform and rectangular shapes. A group of spaces can also form a unit within the whole. The living rooms at Nashdom, which overlook the garden, are united by an axis but differentiated from each other by the use of circular geometry (**4**). Other examples include the abrupt sequence of three spaces between the portico and Durbar Hall, and the suites of square bedrooms and loggias which are grouped about circular and cruciform anterooms in the south-west and north-west wings at the Viceroy's House (**30a**), the upper hall and dining room at Whalton Manor (**27**), and the corridor and living room at Grey Walls. An isolated aberration of geometric form within an otherwise unified plan can be used to emphasize a focal point or a transitional space. This occurs at a major scale in the Viceroy's House where the curved and spherical geometry of the Durbar Hall contrasts with the rectangularity of the remainder of the house, and at a minor scale in the curved area of the vestibule at Middleton Park (**7**), the entrance to Folly Farm (**8**), and the inner hall at the Salutation (**3**). The variation can also be motival — the use of the semi-circle in the stairhall and staircase at Fullbrook (**64**) — or vestigial —

[7]The only notable exceptions are Gledstone Hall, which has no central mass, and Castle Drogo where the programme and the resultant plan are unique.

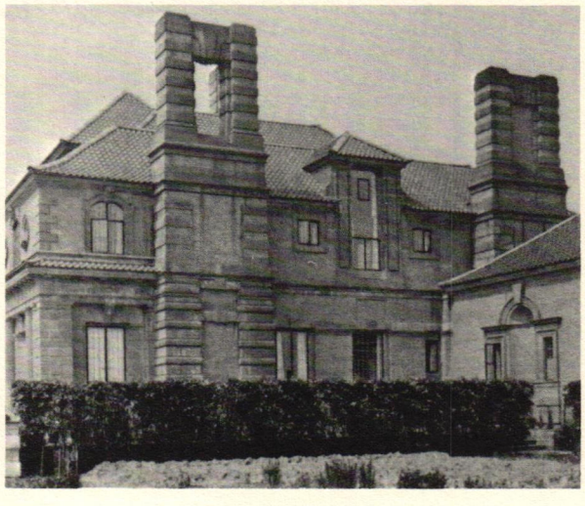
[8]Hussey, The Life, p. 510.

[9]Luigi Moretti, *Strutture e Sequenze di Spazio,* Spazio, no. 7, pp. 9-20.

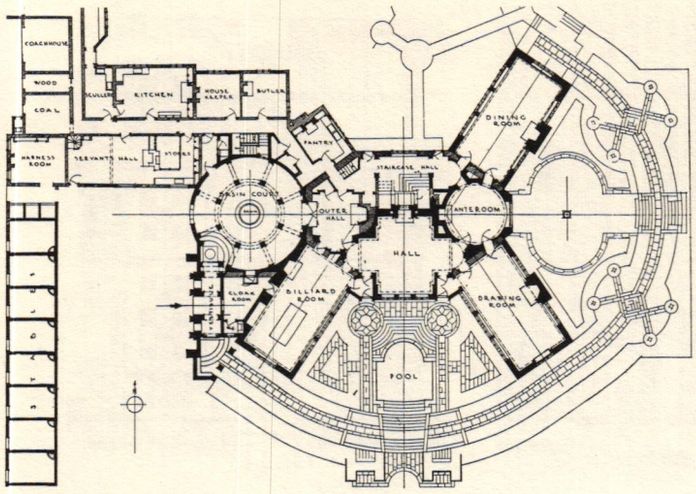
5



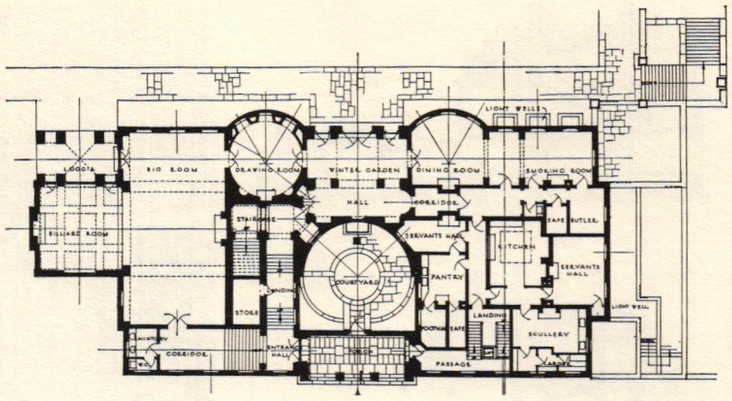
6



3



4



1a. Heathcote, Ilkley, 1906, ground floor plan.

1b. Heathcote, first floor plan.

2. The Salutation, Sandwich, 1911, ground floor plan.

3. Papillon Hall, Leicestershire, 1903, ground floor plan.

4. Nashdom, Taplow, 1905, ground floor plan.

5a. Little Thakeham, Sussex, 1902, ground floor plan.

5b. Little Thakeham, first floor plan.

6. Side elevation of Heathcote.

7. Middleton Park, Bicester, 1935, ground floor plan.

8. Folly Farm, 1911, ground floor plan.

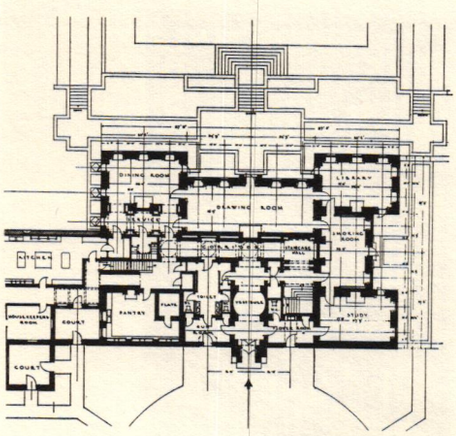
9. Marshcourt, 1901, dining room.

the recessed circular ceiling in the square dining room at Marshcourt (**9**).

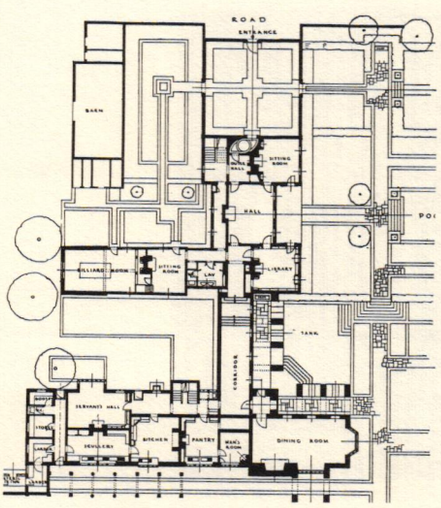
Variation of the volumetric quantity of space may be either subtly graded into increments, or sharp and sudden. At the Salutation (**2**), the main rooms all share a 16′ width, with changes in length only; the library, dining room, salon, and entrance measure respectively 16′x16′, 16′x19′ (+ 7′ for the exedrae = 26′), 16′x26′ and 16′x19′. The entrance is further articulated by the two 7′x7′ lobbies and a lower ceiling (**13**). In the Viceroy's House the group of axially related State rooms which overlook the garden share a common width — except for the ballroom which is twice as wide — but different lengths (**30a**). A similar but less dramatic sequence occurs below this in the Viceroy's private suite (**29b**). More dramatic changes are effected by the variation of the ceiling height in almost every room at Little Thakeham (**5**). The porch and corridor have 8′ ceilings, the space under the stair and behind the screens 7′4″, the Hall 18′, and the drawing and dining rooms 12′. *Variations of light intensity* articulate the sequence of spaces at the Salutation, where the inner hall is surprisingly and brightly lit by the large windows in the recess cut into the first and second floors of the side elevation (**10, 23**). An enlarged version of this can be seen in the Viceroy's House, where the North and South courts are overlooked by the large windows above the two main staircases (**29b, 30b**). At Middleton Park the changes are more frequent but are less dramatic. The vestibule has high windows over the roofs of the gun and flower rooms, the staircase hall is artificially lit from behind a show cabinet, the stair landing is overlooked by large windows, and the first floor corridor is punctuated by the light well and top lit center stair (**7, 11**). The long corridors of the Viceroy's House are flooded with pools of light from the loggias and light wells which occur at regular intervals (**30a**).

The principle of compelling movement either on or off an axis (*axial complexities*) is almost always used to articulate transitional areas, and is related to particular circumstances in each plan. Axial contradictions in the Hall at Heathcote detract from the importance of the room's cross axis by inserting two columns in the center span of the side arcades (**1, 12**). The seemingly minor axis which leads to the dining and drawing room is emphasized by huge fireplaces whose chimneys are important exterior elements. This corresponds to the secondary importance of the hall with respect to the other rooms. A lost axis occurs at Little Thakeham where the corridor wall is unrelated to the main axis of the entrance and bay window (**5**). It occurs twice at the Viceroy's House, where the entrance from the garden through the west garden loggia leads to a blank wall in the corridor, and the monumental exterior stair of the north facade leads to a small waiting room which is off the axis (**29b**). Axial ambiguity is used in the entrance hall at the Salutation (**13**). The two minor axes are expressed by the two 7′x7′ lobbies with glazed doors. But the side light of the lobby which leads to the central staircase is filled with glass, and its opposite has a mirror. This idea is also used in the Viceroy's House where the Durbar Hall can be circumambulated on either side (**30a**). The hall at Little Thakeham (**14, 5**) contains a powerful example of axial conflict. The room is designed to respond to two different scales. The fireplace, and balcony above, at first seem to express the main axis. This is emphasized by the stone dado which rises to

7

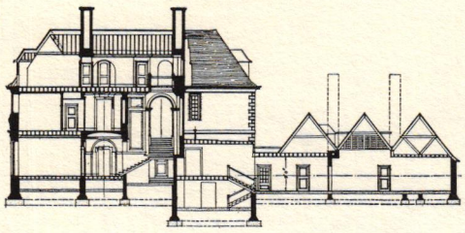


8

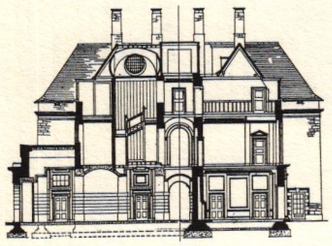


9

10

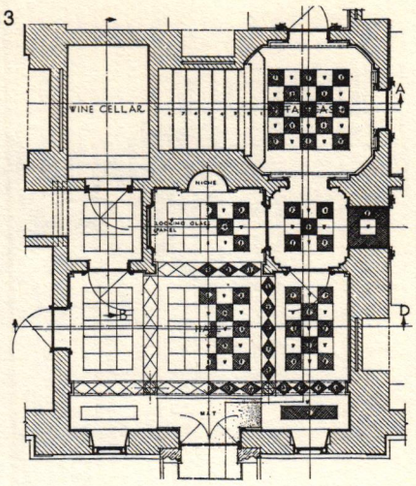


11



12

13



the height of the stair landing and balcony balustrade, and defines the lower portion of the room. But the upper third of the wall is plastered, and extends the length of the room over the stair to the drawing room wall. At this scale, which relates to the main axis of the house, the stair becomes an object in the room, the bay window defines the axis, and the fireplace and door to the corridor merely trisect the north wall of the hall. Neither reading dominates, and attention constantly oscillates between the two. The conflict is further strengthened by the stone walling which is carried up the full height of the room on the kitchen side of the fireplace, and visually frames the plaster strip. The juxtaposition of axes of different scales in the staircase hall at Heathcote, contrasts the major cross axis, expressed by the large window above the stair, with the minor axis of the lobby and the small opening in the wall under the stair. Similarly on the east side, the major axis, which is expressed by a large window projecting above the eaves, coincides with the minor axis of the service stair (**1, 6**). In the Viceroy's House the landing of the open staircase on the west side of the upper basement level coincides with the major axis of the House expressed by the dome towering immediately overhead (**29b, 31a**), and in the north wing the small loggia on the axis of the Fountain Court, which lights the two waiting rooms, coincides with the major cross axis of the House (**30a, 31b**).

But invariably it is the vertical joint, the stair, on which Lutyens lavishes his virtuosity. Whether a minor addition (Ashwell Bury), a modest house (Homewood, **15**), a cramped location (Ashby St. Ledger), or the monumental Gledstone Hall (**16**), the stair is located with care and ingeniously related to the plan. Colour, light, rich materials and pattern are used to maximum effect, and surprise (Salutation), wit (the disappearing chimney at Papillon Hall, **3, 17**), or the sheer delight of the brilliant spaces at Castle Drogo, the result.

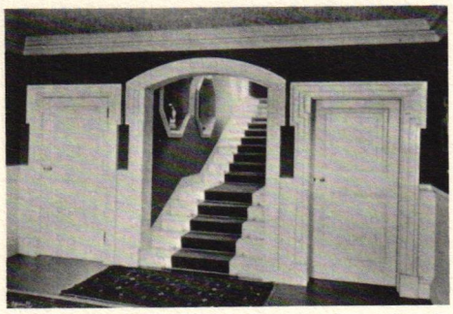
Movement in Lutyens' houses is articulated within the context of two basic plan types. On the one hand, the principle rooms form a picturesque group of (generally) axially related spaces. This is combined with more intricate planning in the transitory spaces, to form a single and almost uninterrupted sequence of spaces. Nashdom (**4**), Marshcourt, Papillon Hall (**2**, although its spaces are not axially related they form a continuous sequence), Gledstone (**22**), and the addition at Whalton Manor (**27**) are the best examples. The alternative plan type can be seen at Heathcote (**1**), Little Thakeham (**5**) and Middleton Park (**7**), where the drawing and dining rooms open off either side of the Hall, and the other living rooms off the corridor. But the circulation is to each room, to a series of destinations rather than a single sequence. The focus is on controlling the more intricate and specific movements, and the transitory spaces of these houses are usually more interesting than the main rooms.

The second major characteristic of Lutyens' houses is *accommodation.*[10] This is the expanding of an idea or principle to relate to something outside of its own nature without completely compromising its integrity. Lutyens would accommodate the plan to deal with both interior functional needs, and exterior environmental conditions. His work abounds with examples. The gun and flower rooms at Middleton Park (**7, 11**) have minimum ceiling heights which permit high windows to light the vestibule. The low crawling windows in the third floor nurseries cut into the exterior cornice, and contradict the scale of the garden elevation (**18**). The roof gutter (**18**) runs across the front of the dormer windows whose sills drop below the roofline. The outer hall at Papillon Hall (**3**) is not symmetrical in order to accommodate the connection to the existing service wing (and as a result emphasizes the direction of movement). The rooms behind the two bay windows at Nashdom have different plans (**4**), and the entrance to Folly Farm (**8**) adjusts both to the symmetry of the exterior court and interior layout. The interior of the drawing room at Homewood is compromised to facilitate the symmetry of the garden elevation (**25**). In the Viceroy's House the walls of the State and Private dining rooms have been hollowed out for service areas, and the apse of the North Court is inconspicuously absorbed into the plan by poché (**29b, 30a**). The square light well adjacent to the Fountain Court has been adjusted to the change in function which necessitated a bend in the corridor (**30a**). The base of the fountain in the South Court has been lowered to permit the introduction of clerestory windows to light the larder and confectionary in the lower basement (**29a, 31b**).

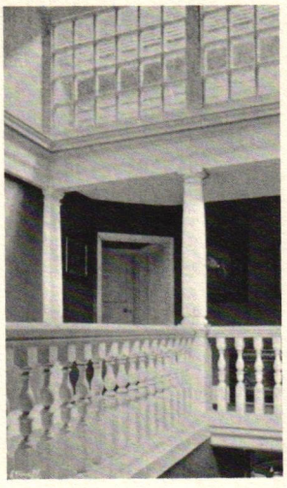
Lutyens also uses accommodation as an organizational device. This can be seen at Grey Walls where the main building has a simple H plan (**19**), but the exterior facade responds to the direction of the driveway and

[10]For a more general definition of accommodation and examples of its wider application, see: Robert Venturi, *Complexity and Contradiction in Architecture,* (New York, 1966), pp. 53-9.

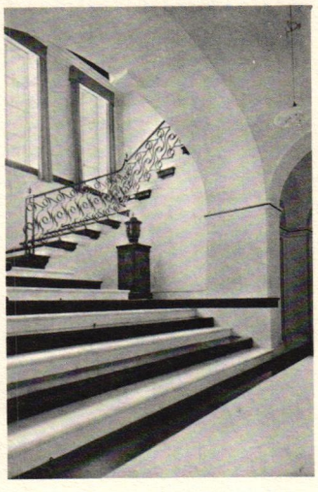
15a



15b

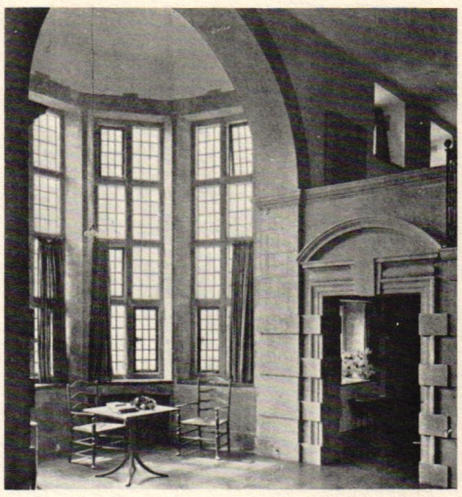


16



14a

14b



10. The Salutation, section through inner hall and stair.

11. Middleton Park, section through vestibule and drawing room.

12. The hall at Heathcote.

13. The entrance hall at the Salutation.

14a. The hall at Little Thakeham.

14b. The hall at Little Thakeham.

15a. The stair at Homewood, 1901, hall.

15b. The stair at Homewood, first floor landing.

16. The stair at Gledstone Hall.

17. Papillon Hall, first floor plan.

the shape of the entrance court, or Papillon Hall whose splayed plan may well have been suggested by the old foundations. The fireplace in the Hall at Little Thakeham was moved off the main axis where it would have been too near the door to be useful, generating the axial conflict (**5**). The plan of the Viceroy's House is penetrated by loggias and interior light courts which descend to the basement levels, and provide light, ventilation and sun protection. Almost 40% of the plan is taken up by these openings whose shape and position is accommodated to the interior organization. The loggias are also used as a lining. The columns and deep shadows relate to the major scale of the exterior, and permit the smaller windows of the bedrooms and offices to be located with greater freedom in the walls behind (**20**).

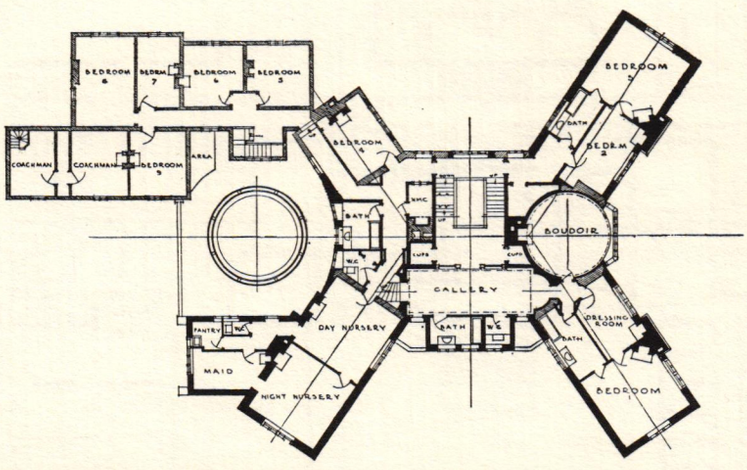
Accommodation can be applied at an even more elementary level. The basic functional relationships between the different parts of each house seldom varies (**21**). The entrance vestibule connects with the Hall, on either side of which are the dining and drawing rooms. At the rear of these rooms, connected to the vestibule, are respectively the kitchen and the library or billiard room. This symmetrical disposition of rooms was easily adapted to the H plan, and it is used with unremitting ingenuity in houses as different as Little Thakeham (**5**), Heathcote (**1**), Gledstone (**22**), Abbey House, Middleton Park (**7**) and Nashdom (**4**). In these houses the sense of symmetry is never lost, despite the accommodation of interior and exterior conditions. The best example is the plan of Heathcote in which the need for kitchen space has compressed the second staircase and passage, and pushed the vestibule off axis. The same quality can be observed at Gledstone Hall where the passage on one side of the house has been forced out of alignment by the stair, at Little Thakeham, despite the eccentric position of the hall fireplace and stair, or at Middleton Park with its complex service areas on either side of the vestibule.

A secondary effect of accommodation is the heightening of the sense of the original idea. The cubic mass of Salutation (**23**) is set into sharper relief by the deep recess cut into the north facade to light the stair. The first floor corridor to the studio at Nashdom (**24**) is taken around the lightwell. The natural light introduced into the interior is a surprise, and the contrast between the intricate circulation and the formal, massive exterior is emphasized.

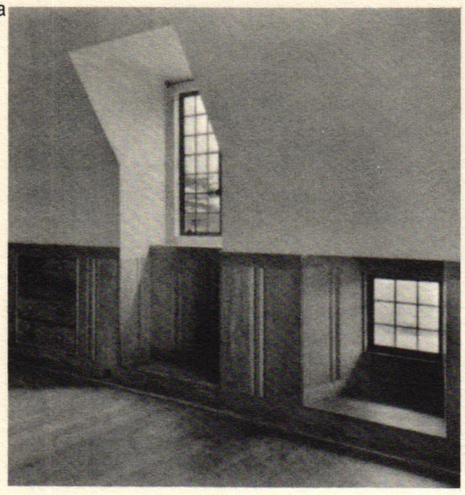
Expediency and ambiguity are also aspects of accommodation. The square plan of Homewood is distorted by the need for larder and scullery space (**25**). But this expedient is ambiguous as it also permits the symmetry of the entrance elevation. The duality of the garden elevation at Nashdom expresses the rooflight over the double volume wintergarden. It weakens the elevation, but the resultant contrast between the solidity and bulk of each side, and the weak center, magnifies the almost overpowering mass of the house (**26**). The South Court at the Viceroy's House is different from the North Court due to Lutyens' desire to maintain the maximum possible horizontal extension of the front facade.

Perhaps the best illustration of Lutyens' flexibility is the wonderful addition at Whalton Manor (**27**). The exterior curves in response to the existing buildings and entrance, but a lining of cupboards and poché permits the

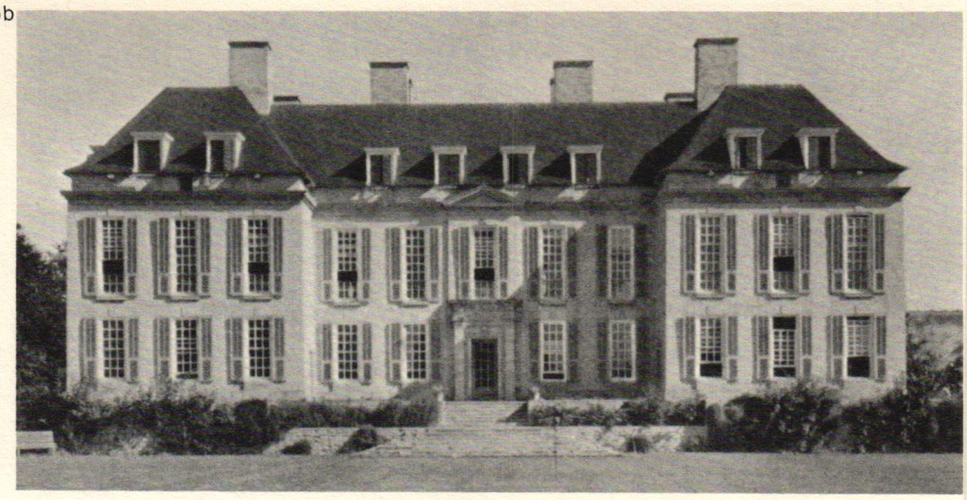
17



18a



18b



interior rooms to assume their own form. The stairs respond to both the exterior symmetry of the driveway and the interior requirement of a dumbwaiter, and both the dining room and the fireplace in the hall steal space from the passages. This inclusive attitude largely accounts for Lutyens' genius in handling additions and renovations, as the work at Lambay and Lindesfarne Castle eloquently demonstrates.

Finally it is from the realm of ideas that the third and the most basic characteristic of Lutyens' work springs. In his review of the *Memorial Volumes,* Sir John Summerson pointed out that, "Lutyens loved paradox."[11] The love of paradox, of the sense of seemingly arbitrarily bringing together two contradictory ideas pervades his architecture, both conceptually and in the details.

In Lutyens' houses the cross axis, the focal point of an H or square plan, is occupied, by a solid and functional mass. The paradox is further developed, for the central mass could disappear on the next floor, and is seldom expressed on the exterior, except by the chimney of a fireplace. By virtue of its location at the crossing, movement and axes are pushed apart, and a meaningful relationship between interior and exterior is made difficult, as no room or group of rooms can extend through the plan. The result is an asymmetrical circulation pattern within a symmetrical form, and intricate and circuitous movements in a plan whose elements are symmetrically disposed and axially related. Furthermore, within the rigid and largely preconceived basic form, minor interior needs are permitted to distort the plan. Even the Durbar Hall itself is only meaningful if the building is entered through the seldom used Portico, for its importance is not reflected or felt in the rest of the plan. The other entrances, whether from the garden, or through the administration wing or carriageways, all enable the center to be short circuited. This further emphasizes the independence of the interior plan from the exterior skin, which in the extreme case of the Viceroy's House, is unified, boldly formed to the scale of the surrounding city, and may be said to contain not a single building, but a group of buildings.

Lutyens' houses are seldom pompous. Both the notion of paradox and his method – the stating of an idea which is then immediately contradicted – preclude it. For example the formal entrance is contradicted by the abrupt termination of the axis in the vestibule, the core of a cubic mass is flooded with daylight, or the separation of the interior and exterior is exaggerated by the use of a thick lining. The same spirit is found in the details. The scale of an elevation will be contradicted by a group of windows or the placement of a door, the "Vignolasque paradox of the Doric Pilaster sunk in a rusticated wall,"[12] animate a facade, a window appears over a fireplace, rustication on an interior wall, and minor axes lead to the important rooms. No detail better illustrates Lutyens' wit than the grotto fountain in the North Fort of the Viceroy's garden at New Delhi. A stair descends directly into the grotto where a fountain turgidly churns the water of the pool into which it falls, but is surrounded by four strips of water, mirror-like in their stillness (**28**).

Lutyens' architecture recognizes that monumentality, or the magnification of scale, is merely relative to both the surroundings, and the elements of the building itself. It acknowledges incongruities and accommodation, and is based on the conviction that "architecture is necessarily complex and contradictory in its very inclusion of the traditional Vitruvian elements of commodity, firmness and delight."[13] The spectator walking through a Lutyens' house finds his senses held in a constant state of flux, and surprise, wit, anti-climax, conflict, ambiguity or sheer delight wait at the end of each turn. If one of the measures of an architect's success is clients who return again and again for additions, renovations and new houses, this delight clearly moved his clients. The contradictions in Lutyens' buildings, the juxtapositions of the formal and the functional, order and accommodation, the predetermined and the whimsical, symmetry of form and asymmetry of movement etc., which are the basis of his architectural vocabulary, are not unlike the 18th century conception of a Palladian villa set in an English Garden. It is based on a similar polarization of two extremes, the "repressive discipline of classical purism"[14] and, to use Shaftesbury's phrase, the "genuine order of nature."[14] The resolution, which in Lutyens' case takes place within the house itself, is perfectly described by Alexander Pope's epistle on the ideal garden:

Let not each beauty everywhere be espied
When half the skill is decently to hide.

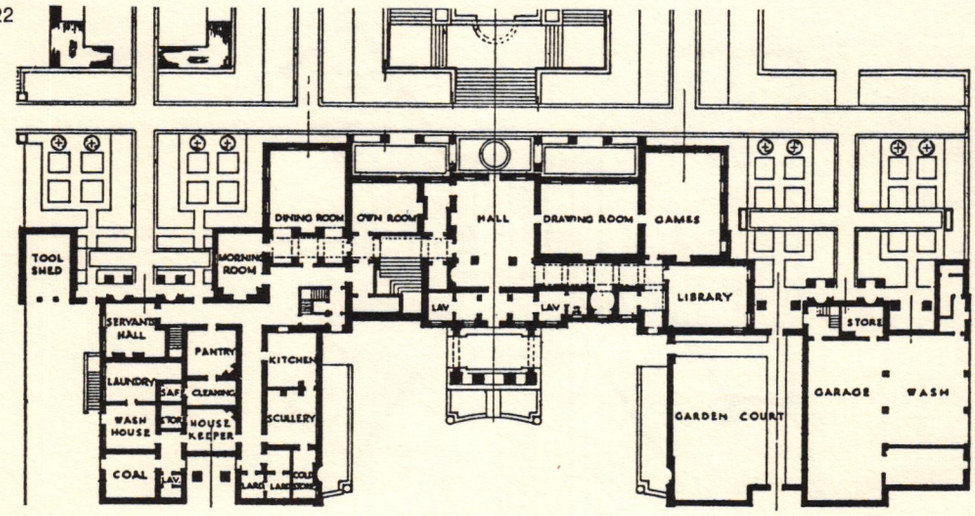
[11] John Summerson, *The Lutyens Memorial Volumes* (reviewed by), R.I.B.A. Journal, August, 1951, pp. 381-2.

[12] Summerson, *Lutyens Memorial Volumes*, p. 382.

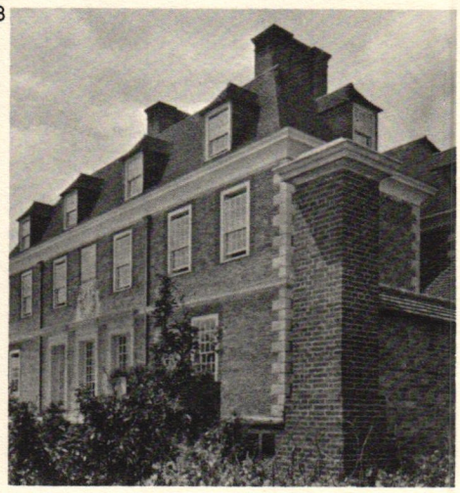
[13] Venturi, *Complexity and Contradiction in Architecture*, p. 22.

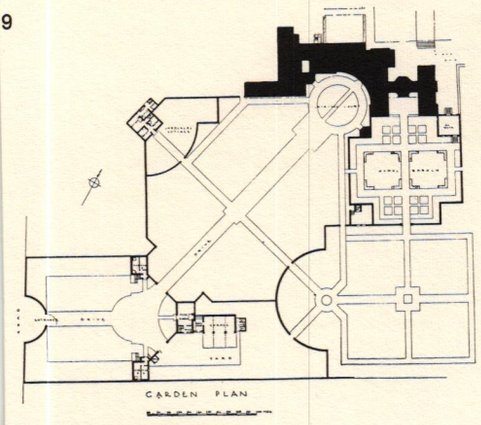
[14] John Summerson, *Architecture in Britain 1530-1830*, (Harmondsworth 1963) p. 204.

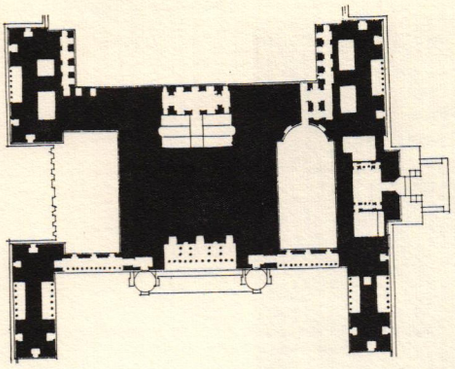
22

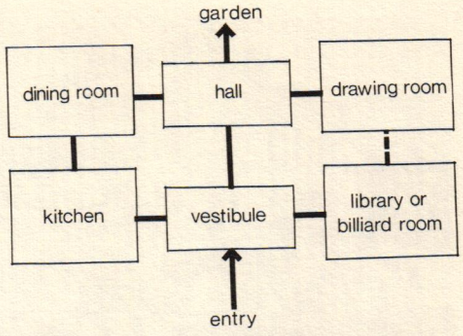


23









18a. Middleton Park, crawling windows in the second floor nursery.

18b. Middleton Park, garden elevation.

19. Grey Walls, 1901, site plan.

20. Viceroy's House, block plan at upper basement level.

21. Circulation diagram.

22. Gledstone, 1923, ground floor.

23. The Salutation, side elevation.

24. Nashdom, first floor plan.

25a. Homewood, 1901, ground floor plan.

25b. Homewood, entrance elevation.

He gains all points who pleasingly confounds,
Surprises, varies and conceals the bounds.[15]

The Gardens

This analogy is by no means far fetched, for Lutyens' first application of this juxtaposition of the "classical" and the "natural" occurs in his garden layouts. For example, in 1890 the walkway at Woodside which links the house to the river, introduces a "strong symmetrical element into a setting as natural as any . . . the landscape school could have wished."[16] (**32**). At this time Lutyens' houses have asymmetrical plans and irregular silhouettes, in the Surrey vernacular of Shaw or the drawings of Randolph Caldecott. A decade later his larger scheme at Ammerdown House (1902) contrasts a highly artificial sequence of geometric spaces, which are hollowed out of a solid rectangle of yews, with a "natural" park that surrounds it on three sides, but also accommodates the oblique axis of the existing Orangery (**33, 34**). Even from within the center of the Italian Garden, the random growth of trees in the park can be seen lurking above the wall of yews. At Hestercombe (1904), Lutyens' most important garden layout, a symmetrical composition of parterre with diagonal axes and intermediate platforms on four sides (**35, 36**), is also sited at the edge of a park. The bold simplicity of the whole is complemented by the richly planted herbaceous borders, but as soon as viewing becomes moving, an intricate system of stairs, landings and intermediate platforms transforms what initially appeared as three levels into nine (**37**). The many directional changes, the interplay between the paths and axes and the counterpointed changes of materials, focuses attention on to an endless succession of vivid details. For example, the broad curve of the stone stairs in the corners of the Great Plat is met by the counter curve of the stone flags which surround the grass walks (**37**). A series of intersecting diagonal paths and flower beds attract attention from the anti-climactic stone vase and pedestal at the center (**35**). The plan also balances the Rose Garden with the Rotunda in order to accommodate the oblique connection to the Orangery, which screens a row of older service buildings (**38**). The view from the park up to the house does not rely on contrast, and screens the formality and symmetry of the parterre with a border of rich planting.

The careful articulation of movement and its interplay with the axes, the use of accommodation, and paradox, in the garden layouts precede their use in the house plan by almost a decade. In the work after 1900 there is clearly an interplay of ideas from both fields, but the importance of Lutyens' experience as a landscape architect goes beyond the houses, for it played a crucial role in the development of the plan for the new capital of India at Delhi.

New Delhi

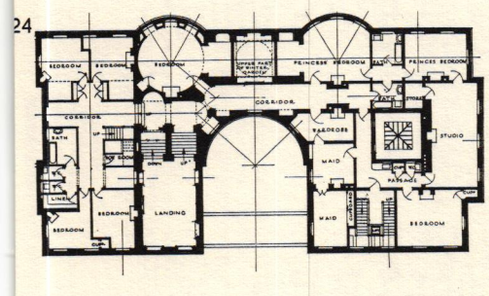
"the brain should excite the senses to appreciation rather than allow the senses and their attendant phrases to placate the mind." (Sir Edwin Lutyens)[17]

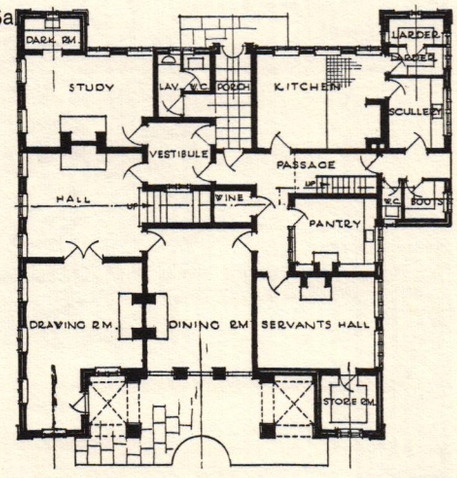
India's two great ventures in city planning, the creation of the cities of New Delhi and Chandigahr, are separated by less than forty

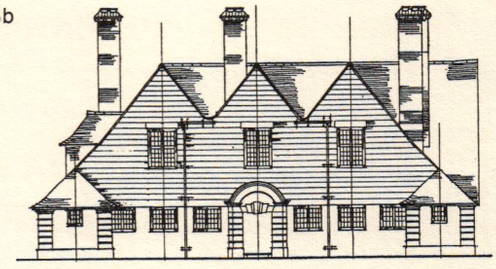
[15]Quoted from, Nikolaus Pevsner, *The Englishness of English Art* (Peregrine Books 1964), p. 174.

[16]Butler, *The Architecture*, vol. 2, p. 11.

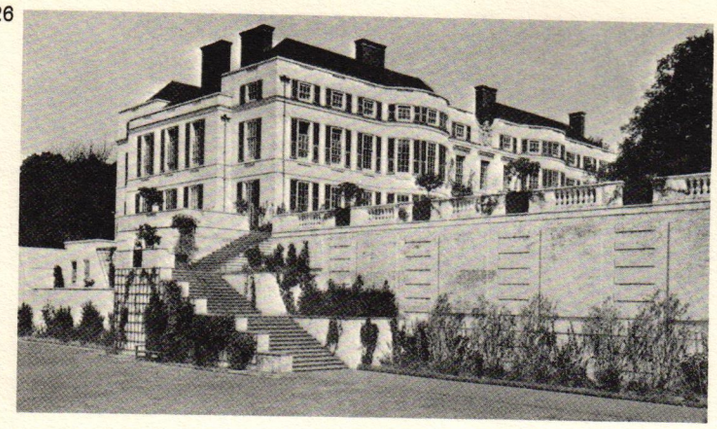
[17]Hussey, *The Life*, p. 526.



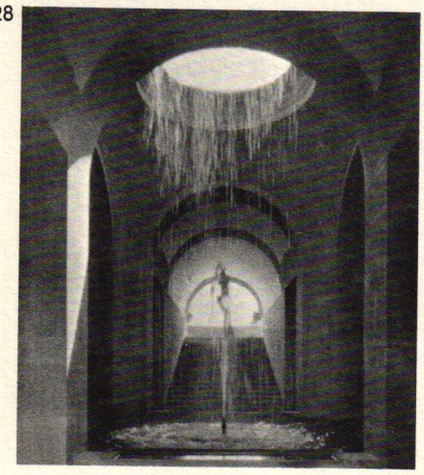




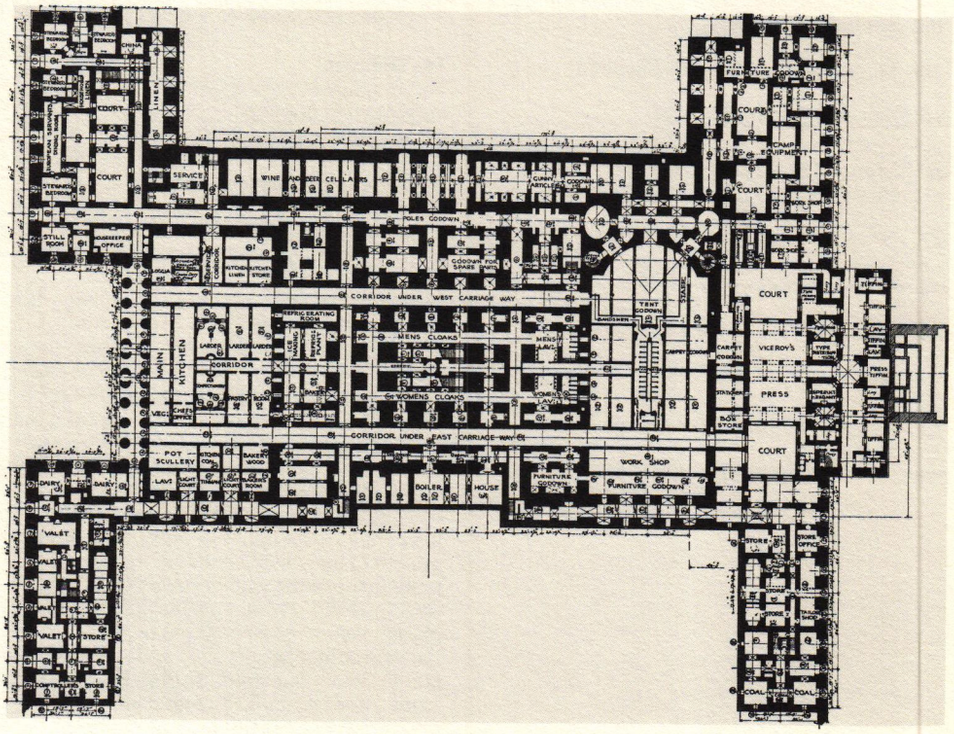
26



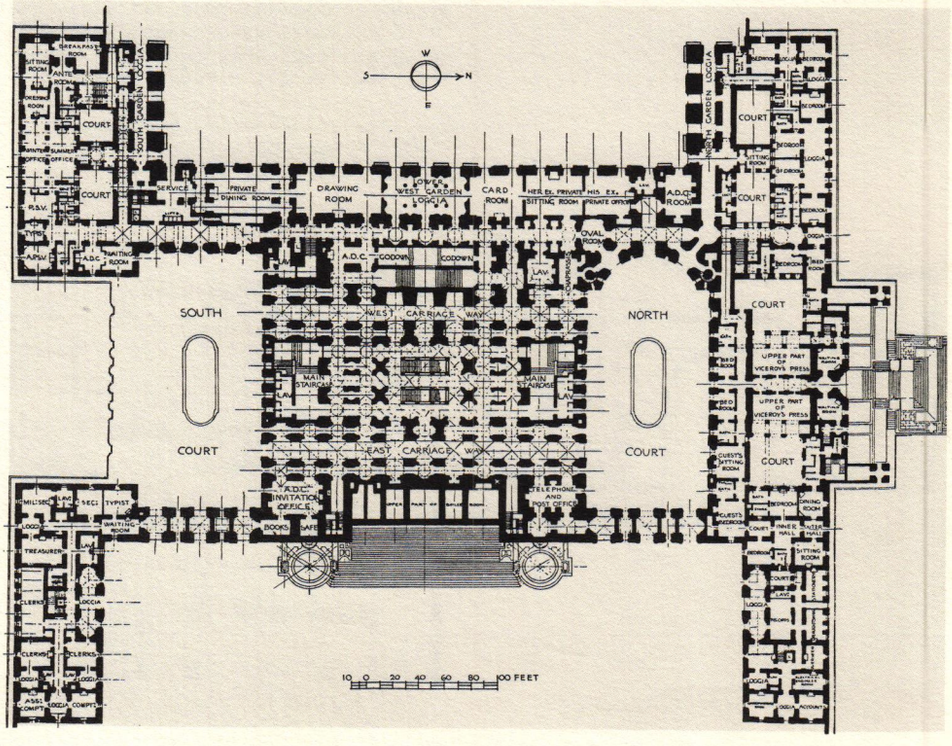
28



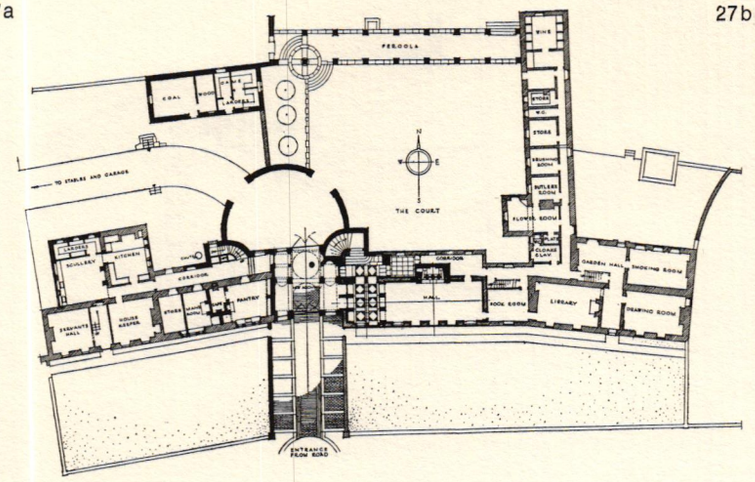
29a


CORRIDOR UNDER WEST CARRIAGE WAY
CORRIDOR UNDER EAST CARRIAGE WAY
MAIN KITCHEN
CORRIDOR
MENS CLOAKS
WOMENS CLOAKS
POT SCULLERY
WORK SHOP
FURNITURE GODOWN
BOILER HOUSE
VICEROY'S PRESS
COURT
VALET
STORE
COAL

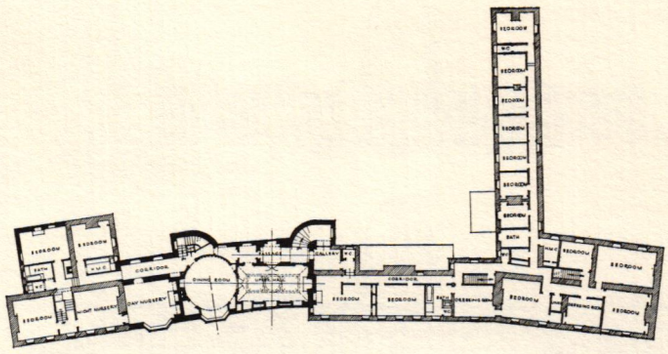
29b


SOUTH COURT
NORTH COURT
WEST CARRIAGE WAY
EAST CARRIAGE WAY
DRAWING ROOM
CARD ROOM
A.D.C. ROOM
A.D.C. GODOWN
MAIN STAIRCASE
A.D.C. INVITATION OFFICE
TELEPHONE AND POST OFFICE
UPPER PART OF VICEROY'S PRESS
COURT
10 0 20 40 60 80 100 FEET

7a



27b



26. Nashdom, view from the garden

27a. Whalton Manor, 1908, ground floor plan.

27b. Whalton Manor, first floor plan.

28. The fountain in the grotto of the North Fort at New Delhi.

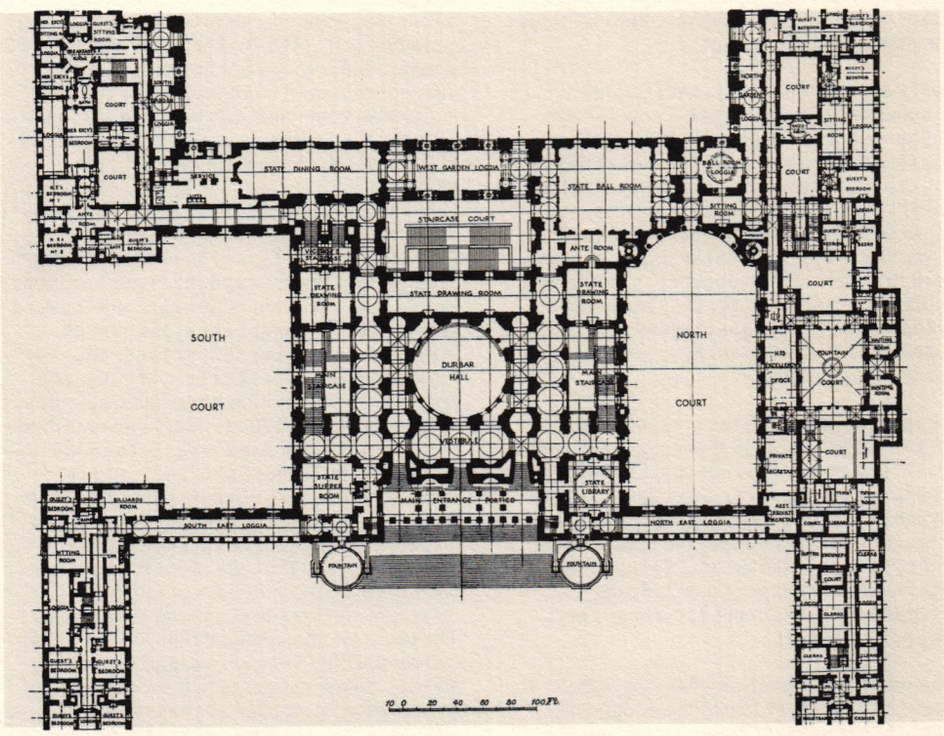
29a. Viceroy's House, New Delhi, lower basement floor plan.

29b. Viceroy's House, upper basement floor plan.

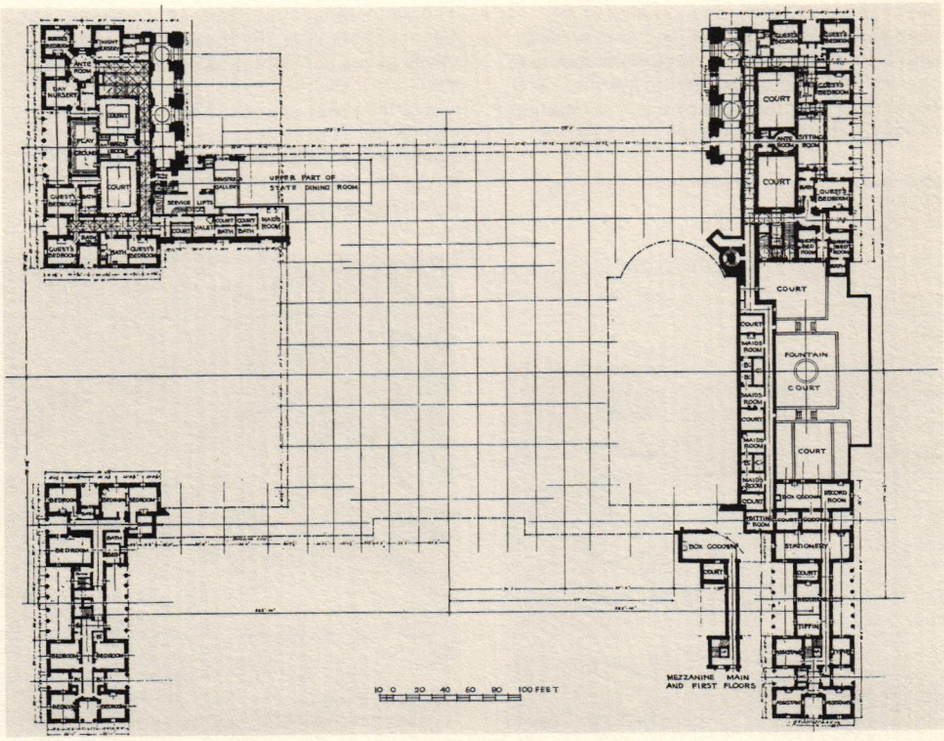
30a. Viceroy's House, first floor plan.

30b. Viceroy's House, second floor plan

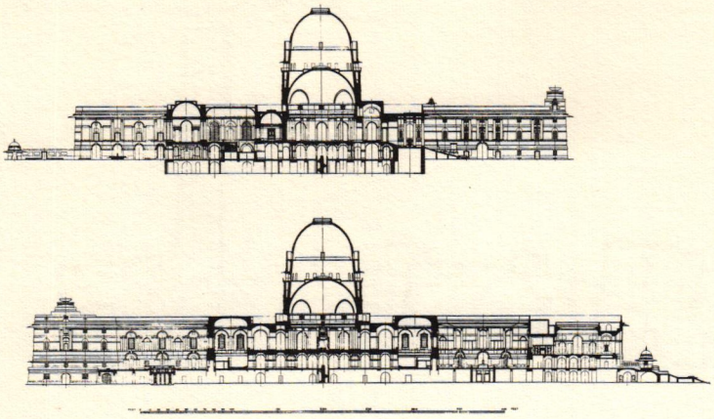
30a



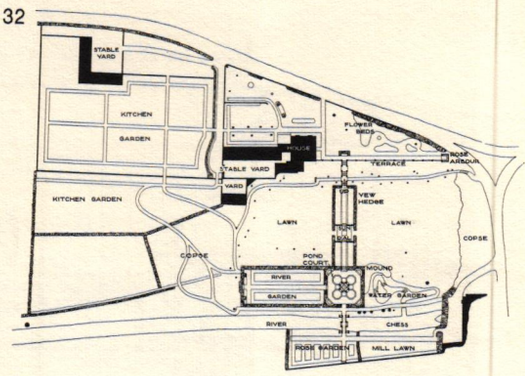
30b



31



32



years. The two architects chosen to realise these ambitious achievements were Sir Edwin Lutyens and Le Corbusier.

On December 11th, 1911, King George V proclaimed the transfer of his capital from Calcutta to Delhi, the site of the capitals of the Moghul Emperors. This was destined to be the greatest architectural undertaking of the British Empire. In commissioning the new city the King desired a great capital that British sovereignty overseas might "move in a setting of proper magnificence, and that in India the temporal power shall be hedged with the divinity of earthly splendor".[18] It was also hoped that this gesture would unite the unsettled dominion.

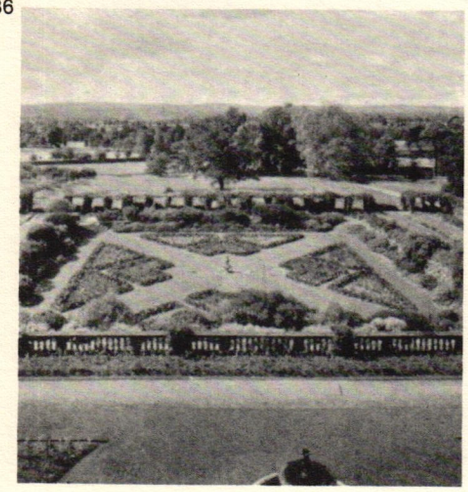
Work on the basic planning began almost immediately. The Delhi Planning Commission, consisting of three members, one of whom was Lutyens, was created to select the site. By early 1913 this was finalized and Lutyens instructed to proceed with the design of the central building, the Viceroy's House. Herbert Baker was commissioned, at Lutyens' instigation, to design the Secretariats and Council Chambers.

The site chosen for the eighth city of Delhi was the plain which lies to the south of the old City, between the River Jumna and the low foothills of the Deccan in the west. It is filled with the ruins and monuments of the seven earlier cities (**39, 40**). The plan of New Delhi is formed by the superimposition of two separate and distinct geometric systems. The one, a narrow rectangular grid is monumental, and relates to the major scale of the region and government buildings. The other, an hexagonal system, is local and devoted to the residential city (**41a, b**). The outer limits of the symmetrical plan are defined by the two overlapping major hexagons. Their points of intersection coincide with the main east-west axis, the King's Way, and also locate the sites of the War Memorial in the east, and the Secretariats in the west. This axis, the central spine of the plan, comprises a grid formed by the two roads on either side of, and parallel to the King's Way — Queen Victoria Road and King George Road — and the numerous cross roads. The main north-south axis, the Queen's Way, bisects the major hexagons, and its intersections with the northernmost one, locates the site of the Connaught Place (the shopping area), and the proposed Cathedral. King George's and Queen Mary's Avenue and North and South Avenues are respectively on the cross axes of the Secretariats and the Viceroy's House. The duality of the hexagons, their overlapping and consequent sense of incompleteness, ensures the dominance of the central grid. The latter is distorted at its two intersections with the hexagons, inflections to the primacy of the King's Way. The two major hexagons define the residential city. They are subdivided into smaller hexagons which, in turn, are reduced to triangular components. These are further subdivided by roads following no pattern that are arbitrarily curved, cul de sac, serpentine, or parallel to an outer road. This makes for an hierarchy of roads, the highest components of which are the Delhi-Muttra highway to the east of the Memorial Arch, and its principle link to the new capital, the King's Way. The hexagonal road system is distorted and the symmetry of the plan qualified by the need to relate the city's streets to both the surrounding region and the old City. Two major roads form an equilateral triangle using the King's Way as a base. They are unrelated to the hexagonal system except at the apices. Parliament Street and Curzon Road (which changes name to Great College Street) respectively connect the governmental precinct and Delhi-Muttra highway (via the Memorial Arch) to the Connaught Place, the main traffic collector outside the gates of the old City. The streets in the northeast and northwest sectors of the plan are adjusted to distribute traffic to the various city gates. Streets are also bent to accommodate vistas to monuments on the surrounding plain which provide peripheral points of reference (Tomb of Safdar Jang), or curved about those within the city (the Jantar Mantar).

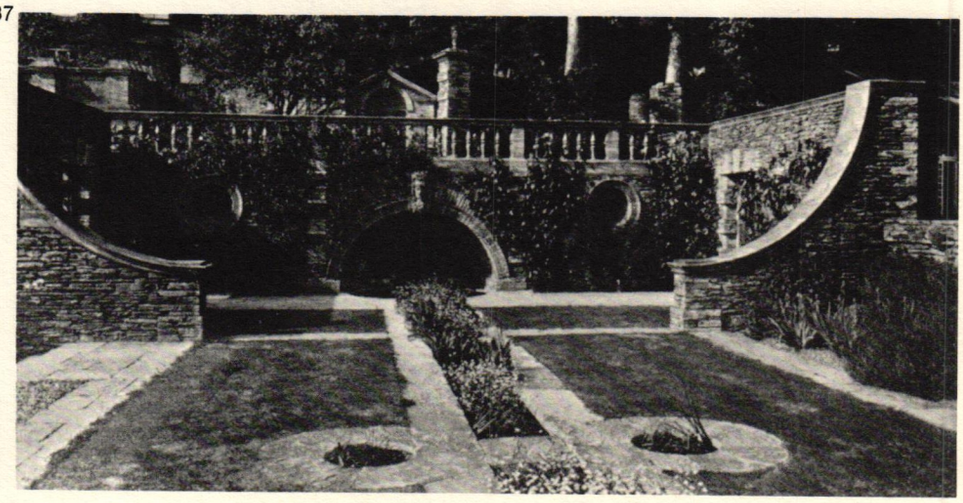
The government buildings, the Viceroy's House and the two Secretariats are raised up on a plateau, some 17 feet above the level of the surrounding plain, and dominate the city (**42**). The Viceroy's House is set back 1200 feet from the Secretariats, its position locked by the intersection of the axes of the two wings of service and staff quarters planned at sixty degrees to the main axis, and the wide tree lined cross axis formed by North and South Avenues. The circular Council Chamber is positioned on one side of the Great Place (the plaza at the base of the plateau) on the axis of Parliament Street and Connaught Place. Although Parliament Street provides a direct link to the government precinct, the ceremonial route to the new capital from the old City, begins at the base of the King Edward Memorial at the south gate of the Fort. It extends down the Delhi-Muttra highway, turning at the Memorial Arch on to the King's Way. A vivid account of this drive was recorded by Robert Byron in 1931:

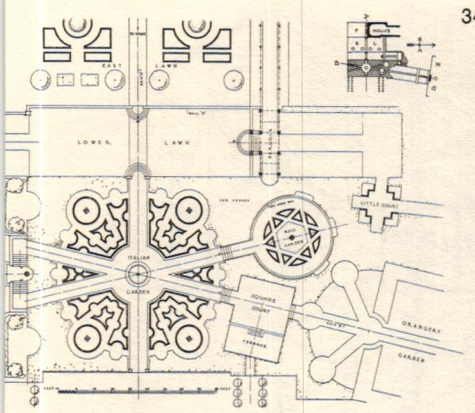
[18]Robert Byron, *New Delhi*, The Architectural Review, Jan. 1931, p. 1.

36



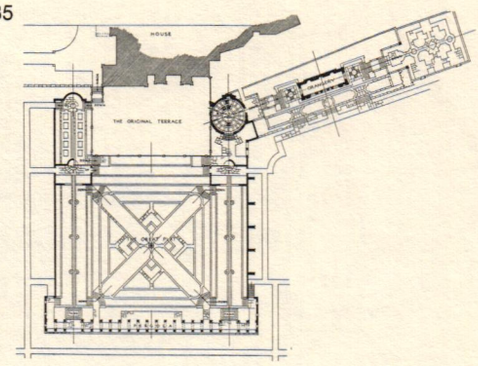
37





34

35



31a. Viceroy's House, section on west-east axis looking north.

31b. Viceroy's House, section on south-north axis looking west.

32. The garden layout at Woodside, 1892.

33. The garden layout at Ammerdown House, 1902.

34. Ammerdown House, view from the house to the Italian Garden.

35. The garden layout at Hestercombe, 1904.

36. Hestercombe, the view from the original terrace to the Great Plat and the Park beyond.

37. Hestercombe, the iris channel in the West Water Garden looking up to the Rose Garden.

38. Hestercombe, view from the Park up to the Orangery and the House.

39. The site selected for New Delhi.

40. New Delhi, the sites of the former capitals and surrounding mosques and shrines.

"The traveller drives out of Old Delhi, past the Pearl Mosque (Jama Masjid) and the Fort. A flat country – brown – scrubby and broken, – lies on either side. This country has been compared with the Roman Campagna: at every hand tombs and mosques from Mogul times and earlier, weathered to the colour of the earth, bear witness to former Empires. The road describes a curve and embarks imperceptibly on a gradient. Suddenly, on the right, a scape of towers and domes is lifted from the horizon, sunlit pink and cream dancing against the blue sky, fresh as a cup of milk, grand as Rome. Close at hand the foreground discloses a white arch. The motor turns off the arterial avenue, and skirting the low red base of the gigantic monument, comes to a stop (**43**). The traveller heaves a breath. Before his eyes, sloping gently upward, runs a gravel way of such infinite perspective as to suggest the intervention of a diminishing glass; at whose end, reared above the green tree tops, glitters the seat of government, the eighth Delhi, four square upon an eminence – dome, tower, dome, tower, dome, red, pink, cream, and white washed gold and flashing in the morning sun."[19]

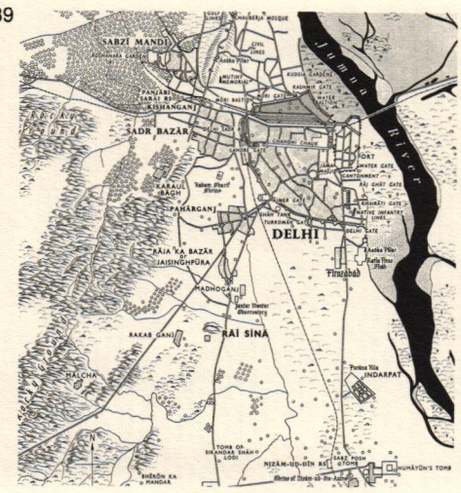
The broad axis of the King's Way is formed by canals and strips of grass, parks and trees, on either side of the roadway. The axis extends to the Great Place at the foot of the Plateau 1¼ miles away. The halfway mark, the cross axis of the Queen's Way, was to have been defined by a group of four buildings, of which only one, the Records Office, was realised. Even from a great distance the basic details of the main composition at the end of the axis are evident (**43**). The red sandstone retaining wall of the Plateau is pierced by an asphalt ramp between the two Secretariats (**44**). Set far back on the Plateau a white column of marble stands out against the darker background of the colonnade and dome of the Viceroy's House. The whole is framed by the converging perspective of the two Secretariats and the duality of their east facades. Off to the side the great bulk of the Council Chamber looms above the trees. As the observer approaches the Great Place the gradient of the ramp is steep enough to cut the colonnade and the base of the dome from view (**45**). This was a major point of contention between Lutyens and Baker. Lutyens wanted the gradient reduced in order that the colonnade might remain visible, framed by the side walls of the ramp. This gradual reduction of the *frame* surrounding the Viceroy's House and dome began with the first view, between the piers of the Memorial Arch at the beginning of the axis. As a prelude to the drama about to unfold on the Plateau it would have been more appropriate than Baker's conception of a "prospect which for part of the distance hides then reveals itself again."[20]

The ramp reaches the level of the Plateau opposite the center of the Secretariats. Gardens and fountains are laid out on either side of the roadway until it reaches the Viceroy's Court, an immense open space between the Secretariats and the Viceroy's House (**46**). In the center of the space stands the white marble pillar, the Jaipur Column, and the open sides draw the eye to views of the surrounding city and countryside below. The Viceroy's House is the climax of the

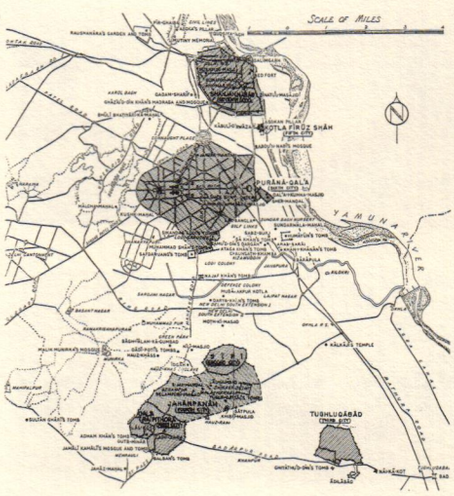
[19]Byron, *New Delhi*, p. 2.

[20]Sir Herbert Baker, quoted by C.M. Chipkin, *New Delhi*, The South African Architectural Record, Nov. 1958, p. 23.

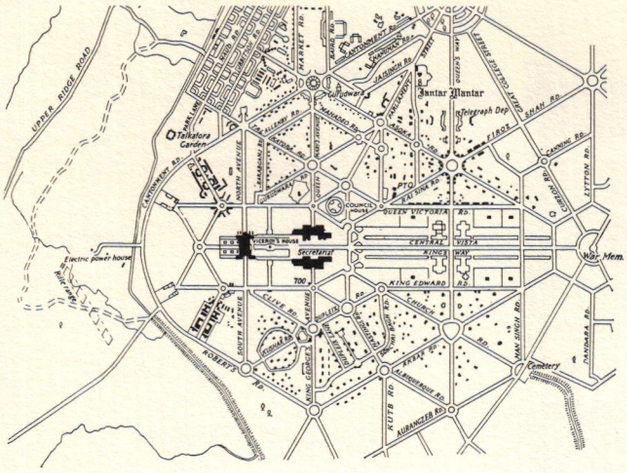
39



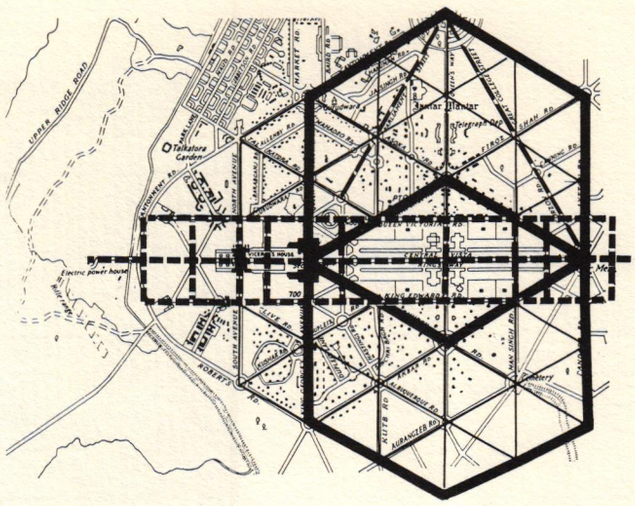
40



41a



41b



King's Way, and the huge pyramidal flight of stairs leads directly to the Durbar Hall. It contains within its walls a compressed energy which animates the main axial forces of the city's plan. The Plateau seems to be projected into space by the House, which straddles and contains it within its outer walls (**42, 47**). This is effected by the planar and directional continuity of the red sandstone retaining walls of the Viceroy's Court and basement walls of the House. It is further emphasized by the change of colour and plane, and the deep shadow which separates the cream sandstone superstructure from the lower wall (**48, 49**). This differentiation also expresses the *layering* of the cross axes, by which the major axis of the King's Way on the Plateau is superimposed above the cross axis of North and South Avenues on the plain. It also corresponds to the zoning of functions in section within the House. The lower basement, at the level of the plain, contains the service areas. These are served by North and South Avenues and the two roads parallel to the retaining walls of the Viceroy's Court and Garden. South Avenue leads directly to the arcaded kitchen court, and North Avenue to the service road for the Viceroy's Press which penetrates under the projecting stair of the north Administration Wing (**49, 48**). The upper basement level is contiguous with the Plateau and garden, and the main part of the floor is devoted to vehicular access. The ceremonial entrance is restricted to high dignitaries, and other guests use the two roads which branch off the King's Way at the gates to the Viceroy's Court and lead directly to the North and South Courts on either side of the Durbar Hall (**42, 29b**). These in turn are connected by the east and west carriageways, and guests disembark opposite the two main staircases which provided access to the Main Floor (**29b, 30a**). In addition there is a private stair for the Viceroy and an open staircase on the west side of the dome. A central stair directly under the Durbar Hall leads to the cloakrooms at lower basement level.

The *layering* of axes is repeated at a reduced scale throughout the house. The east and west carriageways are at right angles to the axis of the portico and Durbar Hall, the passage to the cloakroom at upper basement level is at right angles to the corridor above which overlooks the main stair, the service road under the monumental stair of the Administration wing is at right angles to the entrance above (**29b**), and the Northeast and Southeast loggias form a bridge over the gates to the North and South Courts (**30a**). The vehicular and pedestrian traffic is handled on three levels, and the different functions are grade separated and distinguished by axial orientation and elevational treatment. This complex interlocking of the building, the city plan and the traffic again reflects Lutyens' preoccupation with the articulation of movement. The garden in the west is an extension of the House. It descends in three stages to the level of the plain, and a circular pool ends the axis begun at the Memorial Arch. The intricate interweaving of canals, lawn and flower beds contrasts dramatically with the surrounding hills and plain below. The extensive use of water relates to the King's Way, and the pyramidal fountains echo the form of those on the roof of the House and around the Great Place (**47**).

Robert Byron's description of the city in 1931, when it could be seen more or less as Lutyens envisaged is important.

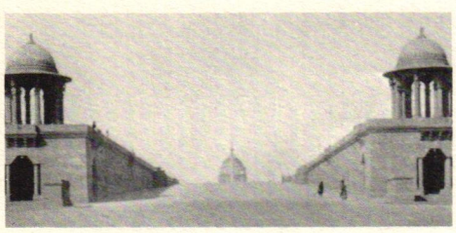
"Since first turning up the King's Way, the traveller has come two miles. Returning to the iron screen across the front of the courtyard, he can look back across the park and waterways to the great white arch in the distance. On all sides radiate the avenues of the new city, lined with bungalows in spacious woody gardens, and carved into merry-go-rounds at points of intersection (**49, 47**). Every thoroughfare conducts the eye to some more ancient monument, looming in grey silhouette from the horizon of the imperial plain. Even the Great Pearl Mosque, four miles off in the heart of the Old City, has its approach set at an angle of sixty degrees to the axis of the central design. Beyond the Arch a hump of walls proclaims the Old Fort (Purana Kila, the sixth city). A side avenue discloses the clustered domes of the tomb of Safdar Jang. Far away Q'tab is visible, an extravagant chimney on the south horizon.[21] The English Quarter presents the aspect of a forest. Each house is set in a compound of two to three acres, whose trees have matured in ten years and become enormous in twenty. At one or two points only are the buildings beginning to congregate in close formation."[22]

The plan of New Delhi is based on the dramatic juxtaposition of dissimilar ideas. The geometry suggests images of Haussmann's Paris or Burnham's Chicago (**50**), but New Delhi is only a garden city, slightly larger than the manufacturing section of Burley Griffin's plan for Canberra of 1911 (**51**). The plateau of monumental government buildings is surrounded by a subdivision, presenting in

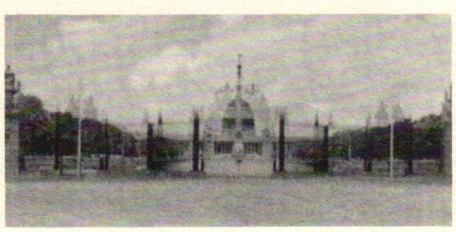
[21] Byron, *New Delhi*, pp. 11-12, 14.

[22] The design of the buildings outside of the government precinct was handled by the Public Works Department.

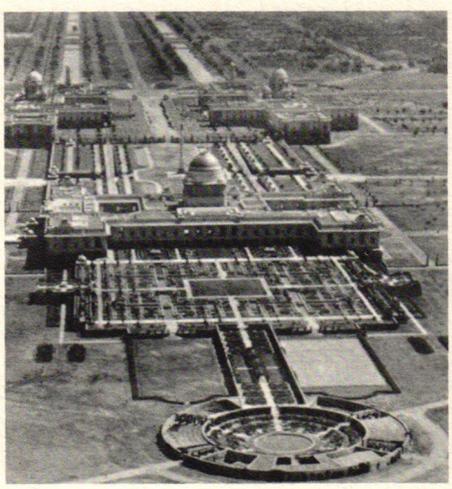
45



46



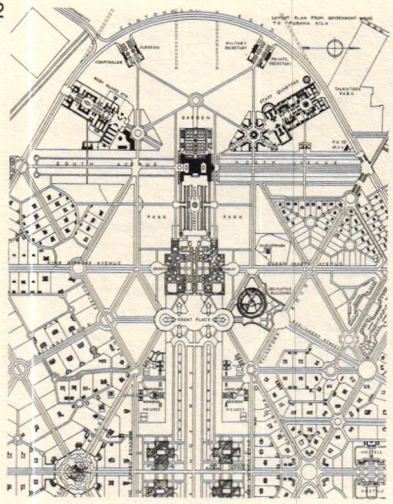
47



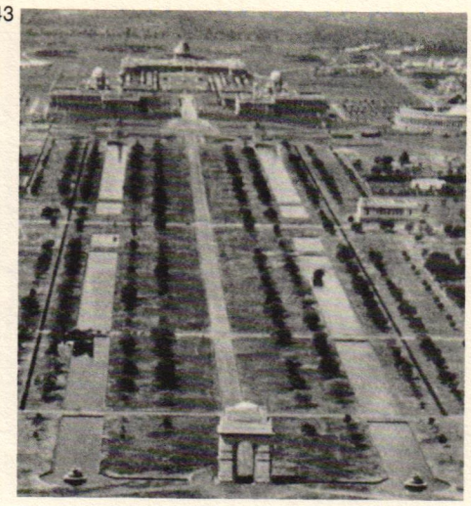
48

49

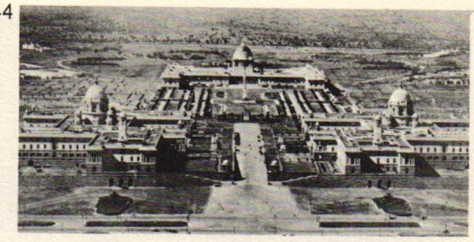
2



43



44



41a. Plan of New Delhi as carried out.

41b. The two geometric systems on which the plan of New Delhi was based.

42. Plan of Imperial Delhi.

43. The King's Way.

44. The Secretariats and Viceroy's House.

45. The ramp to the Plateau.

46. The Viceroy's Court.

47. The Viceroy's garden and King's Way.

48. The north facade (administration).

49. The cross axis of North and South Avenues.

50. The Civic Center, Burnam-Bennet Plan of Chicago.

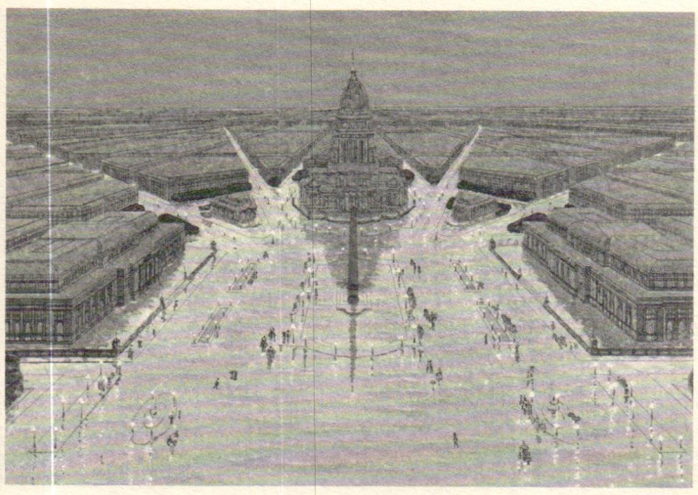
51. Plan of Canberra.

contrast "the aspect of a forest." The great boulevards and the intersections from which they radiate are merely lined with low bungalows set in the midst of large gardens. Even the King's Way is defined by trees and not buildings. The process by which Lutyens resolved these incongruities is described by Colin Rowe in an essay, "The Architecture of Utopia." He writes: "Utopia and the image of the city are inseparable, – there is an element of irony which attaches itself to the realisation of any utopian vision. Transcending reality as it does, transforming it as it may, the utopia becomes increasingly compromised as it becomes increasingly acceptable." Irony in this sense can be defined as a "device for the definition of attitude by qualification,"[23] or "the kind of qualification various elements in a context receive from the context."[24]

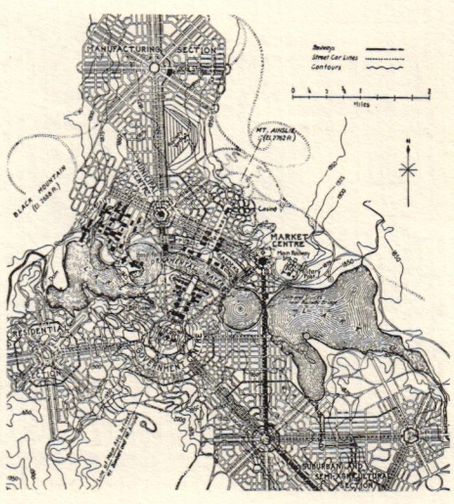
The division of the plan into two components not only emphasizes the contradictions, but denotes acceptance of the limitations imposed by the site and programme. The King's Way and government buildings form the monumental central axis. The residential area is secondary, and independently organized on the hexagonal module. The preconceived geometry is distorted, and the symmetry of the plan qualified by the presence of Old Delhi, existing regional roads, the old monuments and mosques, and the arbitrary design of the roads lowest in the hierarchy, within the triangular blocks. The two systems can be likened to the interwoven axes and circulation of a Lutyens' house, and driving on the streets of the city, the "lines of force" extending out from the King's Way and its cross axes are always present. Movement in plan is articulated with great care. The King's Way is the main circulation route but also an extension and component of the Viceroy's House. The ceremonial route from Old Delhi has two components. The first is the north-south road stretching from Old Delhi, past Kohla Firuz Shah (the fifth city) with the Asokan Pillar at its center, and Purana Q'ala (the sixth city), to Humayan's Tomb which would be seen first if the city were approached from the south. The open space and ruins are followed by the King's Way, precisely lined with trees, grass and water, the ramp between the Secretariats, and the Viceroy's Court which both ends the axis and diverts attention to the plain below. The major vistas all relate either to the King's Way and its cross axes – Queen's Way which links the Cathedral site and Connaught Place, King George and Queen Mary Avenues and North and South Avenues on the cross axes of the Secretariats and Viceroy's House – or the diagonals, which focus both on the central group and the peripheral tombs and ruins. This careful articulation of movement is one of the salient characteristics which differentiates New Delhi from the contemporaneous work of Walter Burley Griffin or Daniel Burnham. The *particularity* of Lutyens' plan has little in common with the mechanical system of nodes and radiating avenues at Canberra (**51**), or the diagonal grid Burnham superimposed over Chicago. In Burnham's plan for the Summer Capital of the Philippine Islands at Baguio of 1905, the cross axial boulevards and diagonals are not important circulation routes, and have little meaning except as formal and visual devices (**52**). The street which forms the northeast

[23]Cleanth Brooks, *The Well Wrought Urn*, (New York, 1947) p. 257.

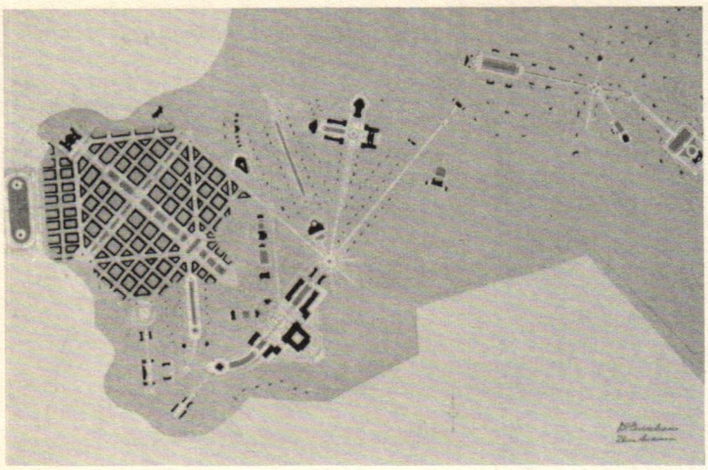
[24]Brooks, *The Well Wrought Urn*, p. 209.



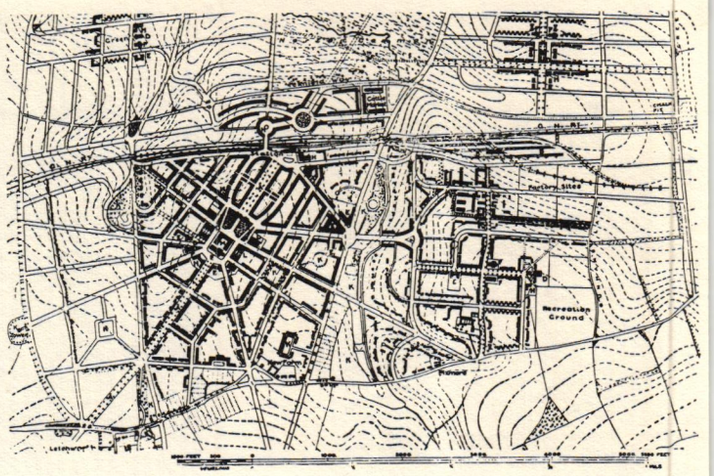
51



52



53



edge of the city provides the main traffic connection with the Capital buildings. Similarly the mall at Canberra (or Washington, D.C.) is lined with buildings, but is not a circulation route and is merely used to unify the government precinct. Neither the colossal dome Burnham planned for the center of Chicago, nor the simpler axial relationships at Baguio, Canberra or Washington, D.C., have the visual and the functional complexity of the King's Way and the buildings on the Plateau. Lutyens formed the Plateau and the lower levels of the House into a multi-level traffic terminal, similar, though smaller in scale, to the projects developed by the Italian Futurists at this time. He also used it as an instrument to formally bind the building to the axes of the city's plan. At New Delhi the grouping of the government buildings is based on Wren's composition at Greenwich, where the duality of the Royal Hospital, and the inflection of the two domes frame the Queen's House. The Viceroy's House is similarly set too far back to dominate the composition, and it is the duality of the Secretariats and the presence of a third dome on the main axis, which suggest the only partially visible climax. This is further complicated by the Jaipur Column which splits the view of the Dome for almost the entire length of the King's Way. This implication of a *qualified monumentality* would have been too enigmatic for most Beaux Arts architects. Monumentality, in the sense of a magnification of scale, need not refer only to physical dimension. Although many architects accepted the limited definitions of Boulle, who praised "the colossal monument – whose proportions dwarf everything around it"[25] and Gilly who eulogized "reverential size which removes all exuberant voluptuousness",[26] Lutyens scorned the idea of mere "sterile stability."[27]

But New Delhi is only an aspect of Lutyens' overall plan for the area. It is a crucial part of the magnificent paradox by which he transforms the plain, the low foothills of the Deccan, the river, Old Delhi and the surrounding ruins and tombs into a single great composition, a vast landscaped park, part natural and part man-made. This stretches from the Roshanara Gardens and Tomb in the north, to the ruins of Tughluqabad, the third city in the south (**39, 40**). New Delhi is the center of the composition, and the King's Way and its landscaped cross axis, which intersect at the site of the Viceroy's House, the focus. But the axes are muted by the trees that define them, and the geometry of the hexagons is blurred by the continuity of the landscape, which forms a blanket of green over the city. The central group of government buildings, the tombs, and the remains of the earlier cities then become isolated pavilions in this vast park which encompasses both the geographical extent and the history of the eight cities of Delhi. This is the ultimate development of Lutyens' fascination with the resolution of seemingly incongruous ideas, with that juxtaposition of the "classical" and the "natural" which was first evidenced in the garden at Woodside in 1890. Articulation of movement, accommodation, and conceptual contradictions, the stuff of Lutyens' domestic architecture formed the plan of New Delhi out of the initial "utopian" diagram. The irony of a qualified monumentality enabled Lutyens to simultaneously imply greatness yet accept the mundane, to use monumental forms which, despite alternation of scale and context, retain the sense of the prototype, and to conceive a national capital which is also a garden city. He avoided the excesses of the "purely colossal," the false simplicity of the diagrammatic, and the bombast that is characteristic of much of the monumental architecture of the twentieth century.

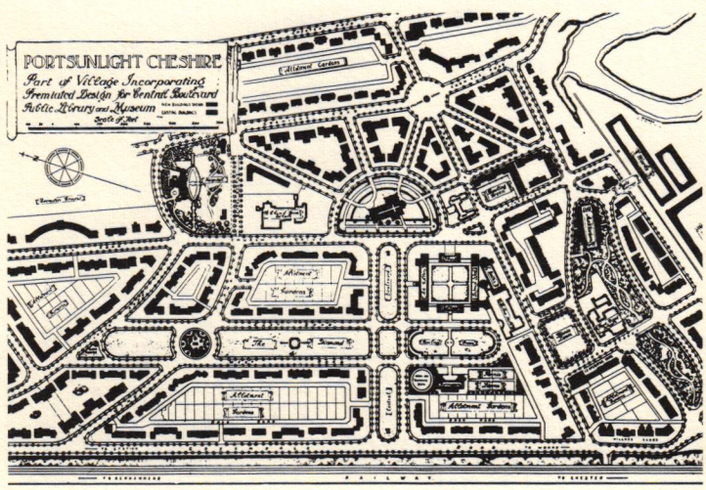
Lutyens' interest in the idea of a *qualified monumentality* is bound up with his decision to build a garden city rather than a Beaux Arts capital. This is not surprising for prior to the appointment to the Delhi Planning Commission Lutyens' most important experience in town planning was as an associate of Raymond Unwin. This occurred in 1906 when Lutyens was appointed a consulting architect to Unwin and Barry Parker at Hampstead Garden Suburb, where he later designed the Central Square. At this time the Unwin-Parker plan for Letchworth, the first garden city, was under construction, and Unwin who was preparing his book, *Town Planning in Practice,* was the most progressive figure in his field in England. His work is characterized by a reverence for the landscape and a carefully wrought balance between architecture and nature. He was conversant with both Beaux Arts planning and the contemporary German interest in medieval cities, but believed that "we need not so much to decide between them as to seek for some third course, not exactly a *via media* but perhaps a *via latior* which shall embrace what is valuable in the aims and methods of each."[28] The "theories of formalism and informalism have been allowed

[25]Quoted from Elizabeth Gilmore Holt, *From the Classicists to the Impressionists,* (New York, 1966), p. 256.

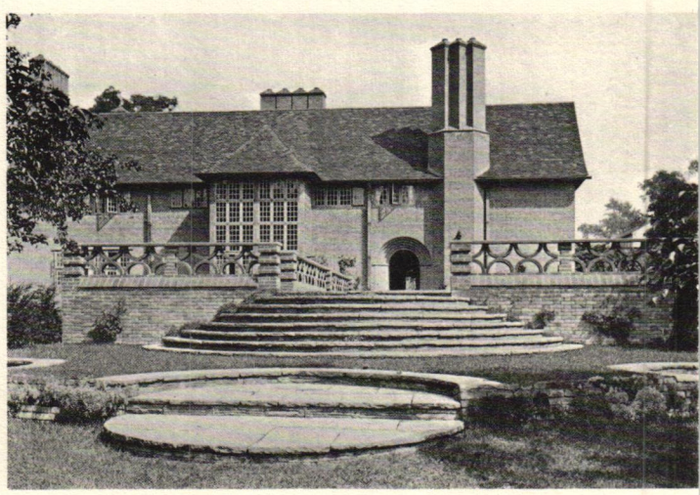
[26]Holt, *From the Classicists to the Impressionists,* p. 258.

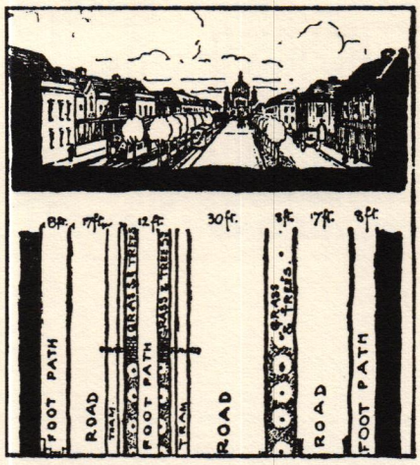
[27]Hussey, *The Life,* p. 281.

55



56





4a

54b

52. Burnham plan for a summer capital of the Philippine Islands, at Baguio, 1905.

53. Parker and Unwin's original plan of Letchworth, 1903.

54a. Designs for Broadway, Garden City, Letchworth.

54b. Rushby Mead, Letchworth.

55. Thomas Mawson's revised plan of Port Sunlight, incorporating the premiated plan of Ernest Prestwich.

56. Deanery Gardens, 1900, garden elevation.

57. Moor Crag, Windermere (C.A.F. Voysey).

58a. Ward W. Willitts House, 1901, ground floor plan.

58b. Ward W. Willitts House, garden elevation.

59. Avery Coonley House, view to the living room from the stair landing.

to develop into prejudices without real appreciation of the true relationship of formality of design and informality of site."[29]

This synthesis is expressed in the 1903 plan of Letchworth (**53**). The underlying structure is a simple, symmetrical plan with radial avenues focusing on the town center. The plan is bisected by the main street, the Broadway (**54**), which joins the center and railway station. But this order is accommodated to relate to the existing roads, the landscape and the programme. The circumferential streets joining the radials are irregular, and the radials themselves located to vary the inward "street picture",[30] rather than focus on a single monument. With this in mind Unwin planned his center with two foci – the municipal office and the church – and partially closed it off with an arcade.[31] The urbanity of the center is then contrasted with the rurality of the radial views out to the open countryside. The heavily planted streets are defined by low, small, freestanding domestic buildings which permit the interpenetration of the landscape, and the observer's attention is compelled to focus on the balance between solid and void, architecture and nature. Each street has a rhythm of its own which depends on the modelling of the individual structures, and the variety of setbacks and distances between buildings. The curves and bends in the roads are used to build elaborate "street pictures", composed of houses, sited to catch the sun and view, trees and hedges (**54b**). The result is the destruction of both the traditional urban street, and the Beaux Arts contrast between space positive streets and mass positive monuments or buildings at important intersections (**50**). Unwin realised that the classical manner of, say, Burnham, and the medieval manner of Camillo Sitte are not necessarily antithetical. Both men were building "street pictures", and it was not so much the method as the composition that differed.

By the end of the decade Unwin had become the dominant figure in English town planning. His influence can be seen in the Thomas Mawson-Ernest Prestwich plan of 1910 for the extension of Port Sunlight, despite the frankly monumental intent of the planners (**55**). It is the first expression in England of the American City Beautiful Movement, but the excessive width of the cross axial boulevards, the shortness of the radials behind the church, the low free standing residential buildings, and the abundant landscaping counters any sense of grandeur or perspective. Six years later Mawson, now completely under the sway of Burnham, noted ruefully that, "Do what we will we cannot express any sense of civic ideal in terms of cottages."[32]

This is precisely the incongruity which appealed to Unwin and to Lutyens. It is therefore not surprising to find that the main characteristics of the plan of Letchworth – the grand approach which bisects the symmetrical plan, and connects the center to the regional transportation route, the

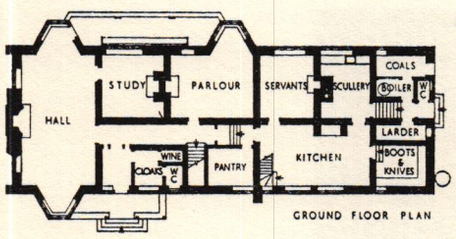
[28]Raymond Unwin, *Town Planning in Practice,* (London 1919) p. 215.

[29]Unwin, *Town Planning in Practice,* p. xlv.

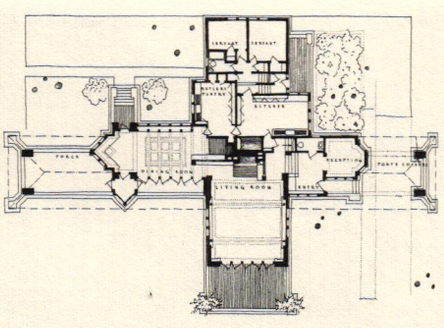
[30]This phrase is used by Unwin in the book.

[31]The town center was not realised as Unwin envisaged.

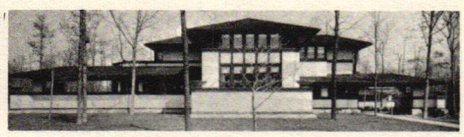
[32]Thomas Mawson, *Bolton as It Is* and as It Might Be, (Bolton, 1916), p. 14.



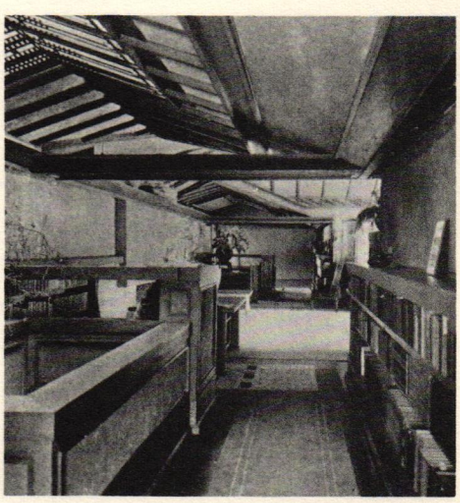
57



58a

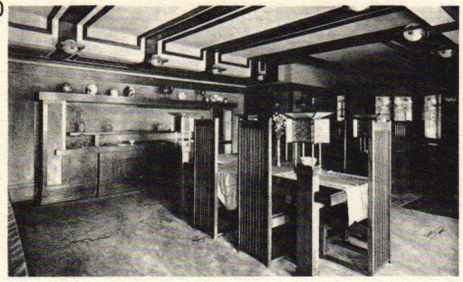


58b

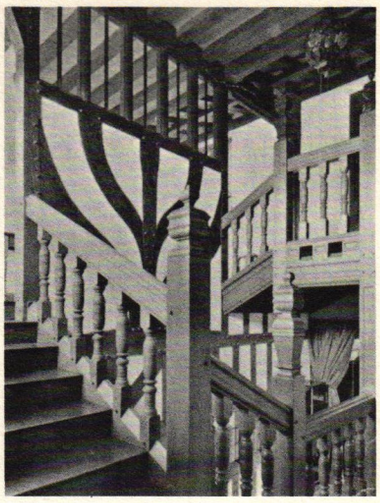


59

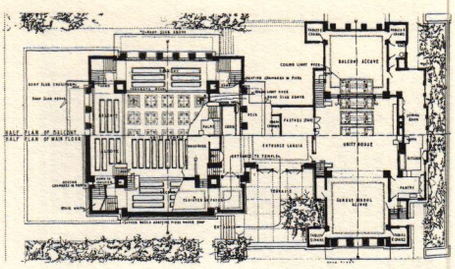
60



61



62



"monumental" center and "rural" city, the variety of vista, and the interpenetration of the landscape and city — were used by Lutyens as the basis of the plan of New Delhi. This two-faced aspect of New Delhi has not been recognized. While on the one hand it is an Imperial fiat-city, it is considerably smaller than both Washington D.C. or Canberra,[33] and its distinguishing features are those which root it in the new town movement which began at Saltaire and Letchworth.[34] Unwin's *via latior* also attempted to resolve in terms of town planning, precisely the problem which Lutyens set himself in both his house architecture and garden layouts. This juxtaposition of the *monumental* and the *picturesque* (in the Repton sense of the word), the *formal* and the *natural,* and their paradoxical resolution, all have a root in the English landscape tradition. These are ideas which have long found application in English architecture and town planning, in the work of the Elizabethan and Baroque architects, the Adam brothers, the Woods at Bath and Sir John Soane.[35]

Lutyens and Frank Lloyd Wright

A connection between Lutyens and the Modern Movement was first noted by Henry Russell Hitchcock. In *Modern Architecture* he wrote:

"His houses of the nineteenth century still kept close to traditional formulas. But the inherited detail was of slight importance and seemed inherently associated with craftsmanship . . . At Orchards, Godalming, of 1899 there was already no direct reminiscence of the past except in the mouldings about the entrance door. The general massing and the use of varied materials was nevertheless very suggestive of old work. In Deanery Gardens, Sonning (**56**) built in 1900, Lutyens may almost be said to have built all unwittingly the finest house of the New Tradition. It surely is one of the finest pieces of traditional craftsmanship produced in the twentieth century. The quality of the plain oak beams at the great bay window, the fine balance of the irregular masses, skill displayed at the entrance arch of many brick orders, an architectural feature suggestive but not imitative of the past, the perfect adaption of the plan to contemporary life have hardly been equalled."[36]

Hitchcock places Lutyens in the same category as Voysey, who despite his distaste for modern architecture was hailed as one of its important precursors. Both men were interested in a traditional, handcrafted, vernacular architecture and it was only the latter's bold details – the simple window section, whitewashed brickwork, natural materials, etc. – that attracted the attention of younger architects.[37]

Wright's interest in Lutyens' architecture was more basic. The clue to this link is the importance of the plan in the design of their buildings. This is unusual in the work of an English or European architect at this time. Voysey's plans (**57**) have none of the tension or purposeful articulation of a Shingle Style or Wright house plan, and are merely rooms, each beautifully detailed, grouped about a corridor. The importance of a Behrens, Hoffman, Horta, or Mackintosh building does not reside in the plan.

In order to assess the implications of this preoccupation with the plan, the form characteristics of a typical Wright house, the Ward Willitts house of 1902, should be compared with those of Lutyens' houses. In this context attention must also be given to those houses embodying ideas that are exceptional in Wright's work, ideas infrequently used or rejected, which indicate not only the scope of his thinking but help focus more intensely on those ideas that stirred his imagination. Both the differences and similarities between Lutyens' and Wright's architecture must be stressed for the real nature of their relationship to emerge. The following characteristics are derived from the Ward Willitts house (**58**) but are common to the majority of the Prairie Houses:

1. There is an almost symmetrical disposition of rooms within a cruciform plan. The massing is expressed as a group of interlocking blocks, but the broad unbroken planes of the roof reflect the basic order of the plan.

2. The crossing of the main axis is occupied by a solid mass, a fireplace (a stair-fireplace in the Robie house) and the main space are organized peripherally about this core. The

[33]Hitchcock in *Architecture: Nineteenth and Twentieth Centuries* stated that "not since Washington, D.C. has a fiat city of such amplitude and grandeur been conceived." (p. 405). However, it must be noted that New Delhi is approximately one-third the area of Washington, D.C. It could be comfortably accommodated into the area north of the Mall between Georgetown and the Capitol.

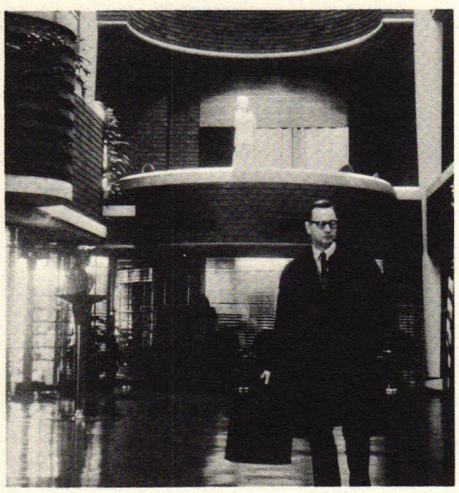
[34]Writing of Lutyens' contribution to this movement at Hampstead Hitchcock states: His work here certainly set a pace of coherence and urbanity that was unfortunately not maintained in the later Garden Cities. *Architecture 19th and 20th Centuries* (Baltimore, 1963), p. 405.

[35]Pevsner, *The Englishness of English Art,* pp. 175-6.

[36]H.R. Hitchcock, *Modern Architecture,* p. 87.

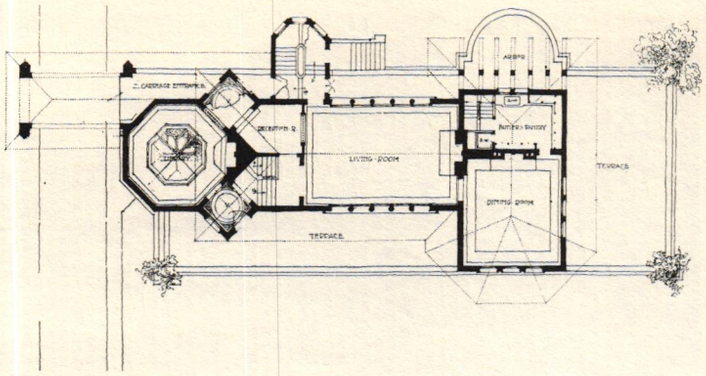
[37]This was noted by Lionel Brett, *The Cyma and the Hollyhock,* Architectural Review, March 1943, pp. 80-1.

64b

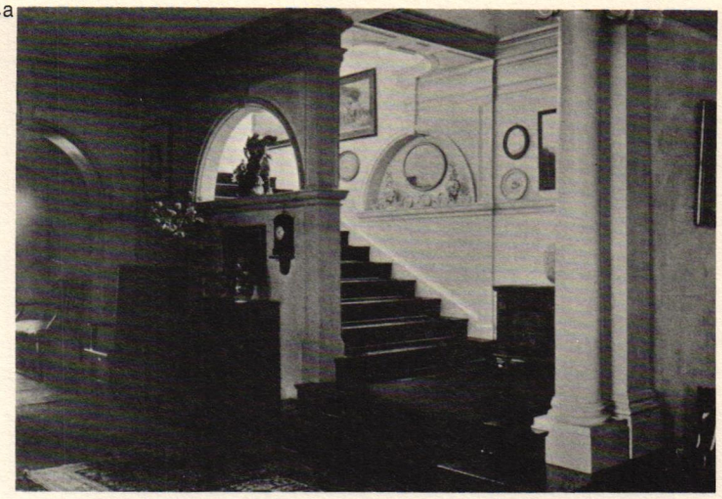


65

63



64a



60. Robie House, dining room.

61. Overstrand Hall, staircase.

62. Unity Church, 1904, first floor plan.

63. C. H. McAfee House (project).

64a. Fullbrook House, 1897, hall and stair.

64b. S. C. Johnson and Sons, entrance to the administration building.

65. Fullbrook House, south front.

66. Miller House and garden.

67. W. H. Winslow House, 1893.

chimney is an important exterior feature.
3. Superimposed on this cross axial plan is a circulation system which is circumambulatory about the core. The radial axes are clearly expressed by the core, the roof and the fenestration, but the circulation is interwoven such that hardly a single movement is on an axis. It is a juxtaposition of two independent systems. (An important consequence is the difficulty locating the entrance to a Wright house which is seldom on an axis.)

4. The exterior massing is a compound of interlocking blocks which reflect the interior organization of rooms. The building – to use Wright's biological analogy – grows from the inside out.

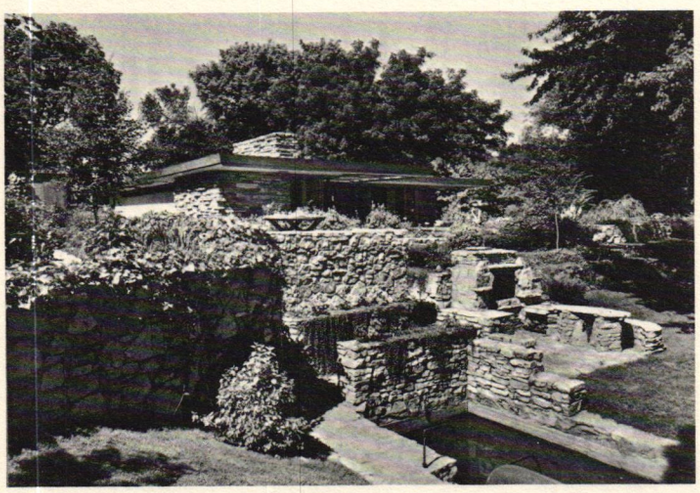
The similarity to the organization of Lutyens' plans is startling. The use of a preconceived geometric plan form, cross axes occupied by a solid mass, asymmetrical circulation within a plan of symmetrically disposed rooms, the interweaving of circulation and axes, and the development of sequences of spaces. The differences stem from Wright's preference for the cruciform plan, one room thick, which allows a direct interior to exterior relationship. The circumferential circulation can then be tied to the core and complemented by the radial vistas out on the axes to the exterior.

Movement through a sequence of spaces is the basis of both Wright's and Lutyens' planning. But Wright's space is continuous and flowing, moving peripherally about the core. No door is permitted to interrupt the flow from the entrance to the dining and bedrooms. Continuity of space is enhanced by continuity of surface. Wood trim is applied to all vertical and horizontal surfaces, furniture and fittings and the continuity of the linear patterns and motifs compel "the ceilings and floors and enclosing screens to flow into each other as one large enclosure of space with minor subdivisions only."[38] The unity is based on motifs that change scale – from the minor scale of leaded windows and furniture, to walls and ceilings, to the adjacent space and by the constant assertion of a continuity beyond the field of vision to the major scale of house. The continuous horizontal lines of the plinth, sills, eaves, balustrades and strip windows of the Robie house not only carry the eye from surface to surface but insinuate an extension into the environs. The linear motifs and decorative patterns in the corridor and living room of the Coonley house (**59**) draw the eye to the next space. Two surfaces at right angles complete a geometric motif on the ceiling of the Robie house dining room (**60**) and the exterior corner of the Hoyt house. The cut away corner of the upper floor of the Ward Willitts house draws the eye around the corner (**58**).

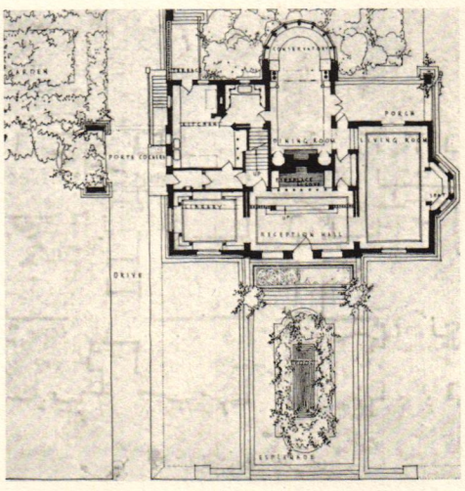
Lutyens seldom planned continuous spaces or used surface articulation to achieve movement, but he was aware of the potential. At Deanery Gardens glazed partitions between rooms promotes visual continuity. In the staircases and passages of the early houses it is effected by the linear patterns of wood beams and trim (**61**). The marble floor patterns at Whalton Manor, Gledstone Hall and Middleton Park unify the circulation spaces. The stair tread at Gledstone which becomes a dado is a rare example of Lutyens extending a surface relationship to embrace a larger space, but unlike Wright, it is a finite space (**16**).

[38]Edgar Kaufman and Ben Raeburn, *Frank Lloyd Wright, Writings and Buildings* (New York, 1960), p. 43.

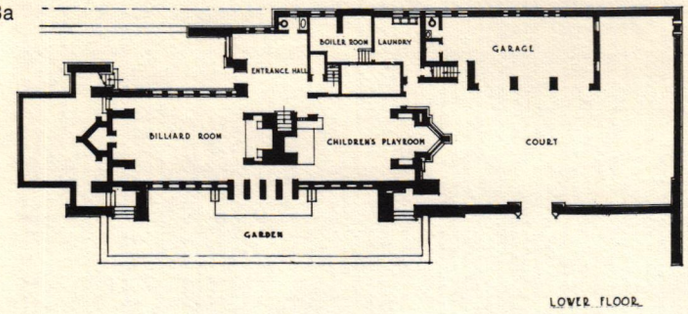
66



67

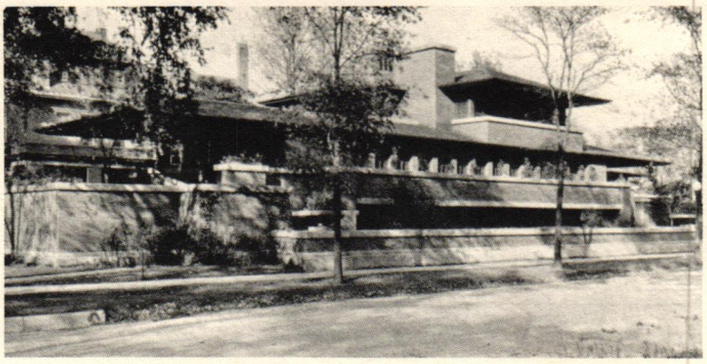


68a



LOWER FLOOR

68b



All of the four methods Lutyens used to relate plan and movement are found in Wright's work, but only one, variation of volume, is important. In the Ward Willitts house the continuity of space between the major rooms is punctuated by changes in volume which occur at the core. A constriction in the flow of space is formed between the screens projecting out from the fireplace and the exterior walls. The stair is split into four flights to extend the continuity to the upper floor and the narrowness of the main flight is a constriction in the sequence (**58**). A double volume living room with a balcony over the fireplace at the Baker and Roberts houses accomplishes both change in volume and vertical continuity. This variation of volume is developed into a system of transitory spaces at Unity Temple (1904) (**62**). The corner spaces house the stairs that connect the different functions, each of which is on a different level. This rhythm of compressed spaces between rooms is comparable to Lutyens' intricately planned circulation spaces between the formal entry and the main rooms, or to the plan at Papillon Hall where variations of geometric form punctuate the movement between rectangular living rooms (**3**).

Axial complexities occur less frequently than in Lutyens' plans where movement and axes coincide more often. But in the Ward Willitts house the axis of the porch and roof are separate from the axis of the dining room and core. A similar axial ambiguity occurs at the Robie house, where due to the narrowness of the site the cross axis is more implied than actual. On the lower floors it is indicated by the core and piers, but on the exterior the third floor bedroom has a separate axis. The massive chimney increases the drama by indicating the duality of the spaces below (**68**).

Wright also experimented with variation of geometric shape. His Studio of 1895, and the McAfee and Devin house projects of 1900 combine squares, rectangles, octagons and triangles. But this tended to interrupt continuity and imply separate volumes. In the McAfee house Wright attempted to counter this by perforations in the walls between rooms (**63**).

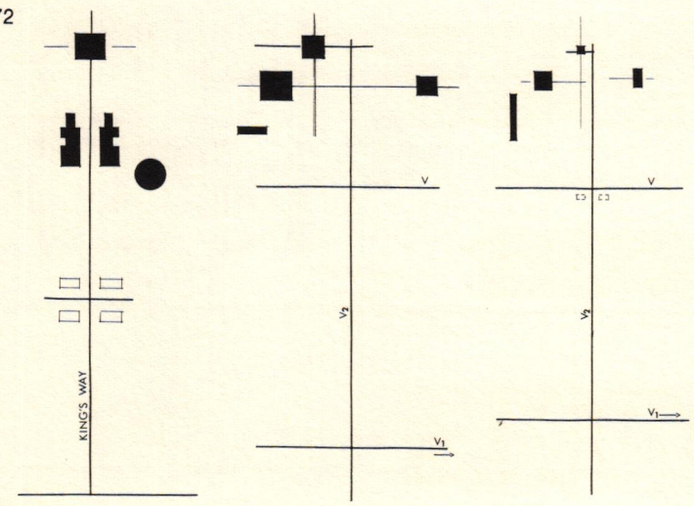
Dramatic changes in the light intensity also interrupted continuity. The predominant brown colour of the interiors, the roof overhang and the strip windows made for a constant level of interior illumination with only subtle variations. At the Coonley house the brighter light in the living room acts as a gentle magnet when seen from the open stair and passage (**59**).

Wright's continuity, whether ornamental or spatial, is punctuated by an even, steady rhythm. None of Lutyens' surprises, anti-climaxes or ambiguities are permitted to distract from the compulsive flow of space. Accommodation involving a clash of two ideas would interrupt the unity or "integrity" of the whole. The need for extra kitchen space at the Ward Willitts house is absorbed by the interlocking blocks of the exterior massing and not by an expedient such as Lutyens used at Homewood (**25, 58**). Lutyens' semi-circular motif at Fullbrook is merely an aspect of a different whole, but the curves of the Johnson's Wax building are part of a similar whole (**64a, b**). The retaining wall and stair at Nashdom dramatises the siting and bulk of the house, but are separate elements. At the Miller house they become an extension of the building merging it into the garden (**26, 66**). The verandah at Fullbrook is accommodated, the great wooden brackets are expedients, and the balconies and recesses within the openings are at a smaller scale and read like furniture in a void (**65**). Wright's interlocking cubes move freely under the roof, and verandahs extend through the plan blurring the distinction between interior and exterior space (**68**). His sideboard in the Robie house dining room (**60**) is part of an active series of planes each of which relate to an adjacent surface. Lutyens' fireplace at Little Thakeham is quite static (**14**).

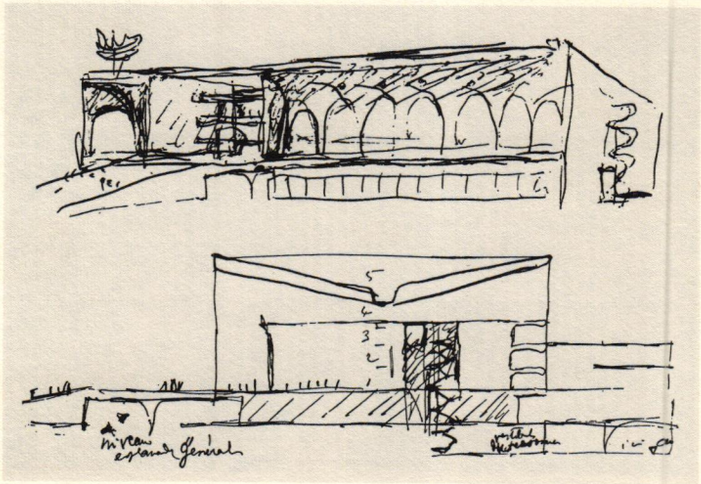
In this context it is important to note Wright's use of the square plan in three important houses — Winslow (1893), Heurtly (1902), and Cheney (1904). The Winslow house is the most interesting (**67**). Its entrance is axial and bold, and there is a double layer of space about the central core at the crossing, and a symmetrical distribution of rooms. But the necessity of planning within a cubic shell, which forecloses the possibility of developing either a direct correspondence between the interior plan and exterior massing, or a compulsive flow of space about the core, accounts for the infrequent use of the parti. The extreme horizontality characteristic of Wright's work is difficult to achieve and there is no meaningful relationship between the upper and lower levels. Lutyens solved the problem of vertical continuity by hollowing out the central core at the Salutation and Homewood (**10, 15**), but this was too paradoxical a solution for Wright. It was to avoid these problems — the very ones that intrigued Lutyens — that he devised the one room deep cruciform plan.

Wright strove for an all-enveloping unity in which "the motif is adhered to throughout so that each building aesthetically is cut from one piece of goods and consistently hangs

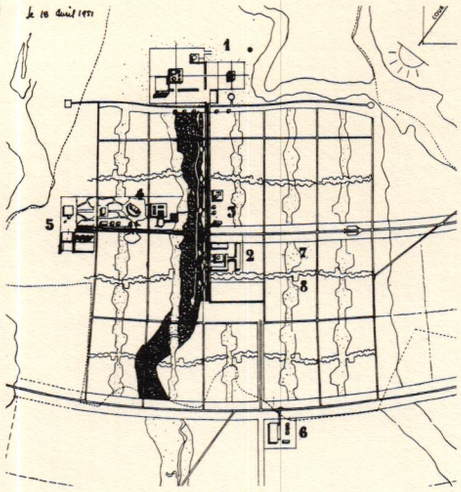
72



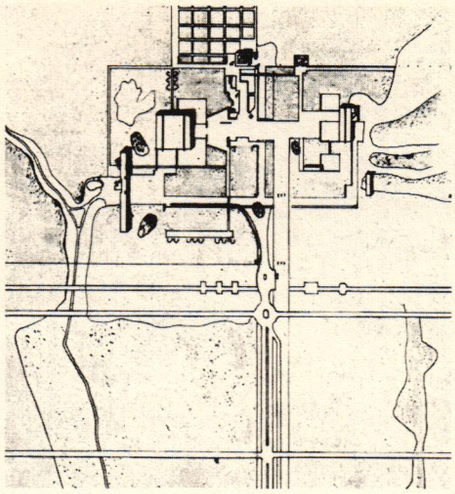
73



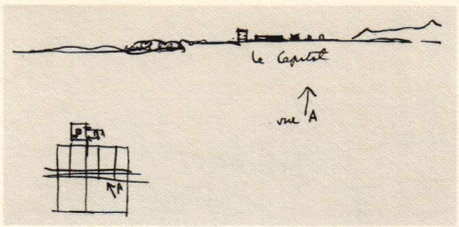
69



70



71



68a. Robie House , ground floor plan.

68b. Robie House, exterior.

69. The April 18, 1951, site plan.

70. The final site plan of the Capital.

71. Le Corbusier's early sketch of the Capital skyline.

72a. New Delhi and Chandigarh drawn to the same scale: plan of New Delhi.

72b. April 18 plan of the Capital.

72c. Final plan of the Capital.

73. Sketches done in April 1951 for the High Court.

74. Early sketch for the Governor's Palace.

75. Early elevations of the Parliament.

together with an integrity otherwise impossible."[39] Paradox has no place in his vision, and although contradictions are evident in both his plans and concepts, he always attempted to mask and absorb them into the fabric of the building. For example the solid core in the crossing is a foreign element introduced into the cruciform plan. The axial ambiguity at the Ward Willitts house makes it appear both in the crossing and as part of the rear exterior wall of the porch and reception room. At the Martin and Coonley houses it is not in the crossing but is pulled back and integrated with the structure, and in the Barton and Glassner houses the core is dispensed with and the fireplace located on an exterior wall. Finally at the Robie house the cross axis is only implied and the core divides the main space in half. At the conceptual level the separation of the axes and circulation pattern is so total that the resultant sensation is often of an order independent of the user, and at odds with Wright's desire to absorb him into the life of the building.

Wright and Lutyens stem from a common tradition that goes back to Richard Norman Shaw and further to the Romantic Naturalism of the late eighteenth century.[40] But, like Shaw, they absorbed the lessons of classical architecture,[41] and their work combines aspects of both traditions. An obsession with geometry, both in the plan form and the massing, the almost symmetrical disposition of elements in plan, the clear indication of the axes and the sense of a classical whole are integrated with Laugier's primitive considerations — the independent circulation pattern, interest in the programme, natural materials, Wright's expression of the interior organization on the exterior, modelling with light and shadow, absorption of the service elements into the plan, and Lutyens' accommodation.

Neither man was influenced by the other. Most of the buildings illustrated were built contemporaneously, and prior to the publication of either the Weaver (1913) or the Wasmuth (1910) monographs. For Wright, Lutyens was above all a measure of his own stature. As an architect he had no peer in the United States, and the work of his disciples, whether the Prairie School or the later apprentices, or even at one remove, European architects like Breuer, was never comparable to his own and held no interest for him. In Lutyens he found a great mind grappling with related problems, and using similar organizational principles, but separated physically by an ocean, and intellectually by another social system and the different terms by which the principles were applied.

Le Corbusier

"the materials of city planning are sky, spaces, trees, steel, cement in this order and this hierarchy." (Le Corbusier)[42]

Le Corbusier began the planning of Chandigarh in February 1951, and needed

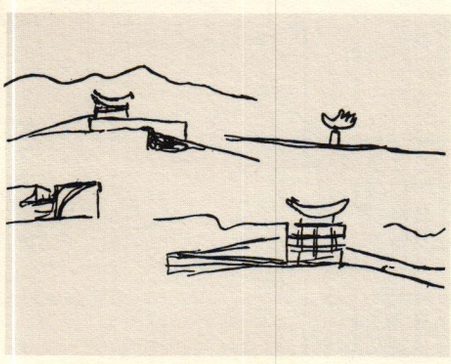
[39]Edgar Kaufman, *Frank Lloyd Wright — An American Architecture*, (New York, 1955) p. 53.

[40]See: Goodhart-Rendel, *The Work of the late Sir Edwin Lutyens*, and Vincent Scully, *The Shingle Style*, (New Haven, 1955).

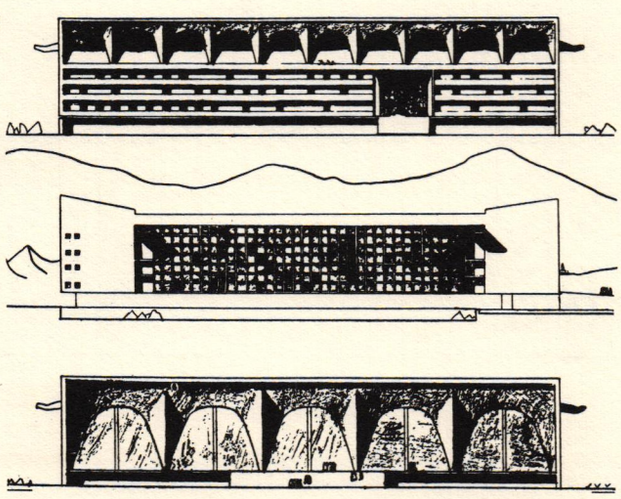
[41]H. R. Hitchcock, *Frank Lloyd Wright and the Academic Tradition*, Journal of the Warburg and Courtauld Institutes, no. 7, 1944, pp. 46-63.

[42]Architectural Forum, *What Has Corbu Been Up To?* Sept., 1943, p. 144.

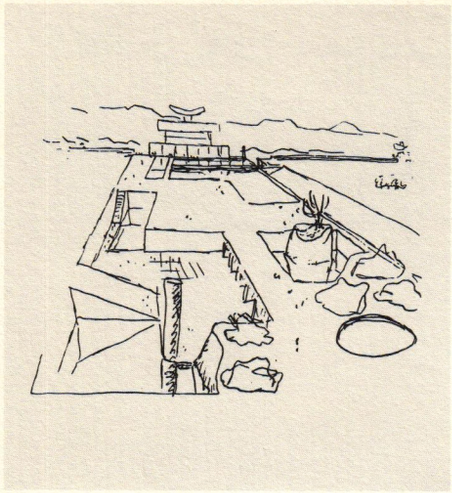
74



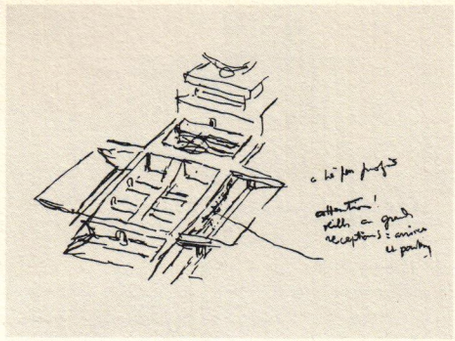
75



76a



76b



only six weeks to arrive at a preliminary layout. This document is dated 18th April, 1951, and formed the basis of the final plan (**69**). It shows the city planned within a square and subdivided by a major grid of streets into sectors, each of which is further subdivided by a minor grid of shopping streets and greenways. The government buildings are grouped into a self-contained precinct — the Capital — at the head of the plan, and separated from the city by a canal. The main route to the regional highway bisects the lower city, and is connected, at right angles, to the Capital by a "great avenue 100 meters wide"[43] which bisects the upper half of the plan. This central axis was subsequently expanded to include a monumental, 50 yard wide, pedestrian mall, punctuated by rows of pylons and the two ministerial houses located at the edge of the city,[44] on either side of the roadway (**70**).

The relationship between the Capital, the regional road, and the "great avenue" is so similar to the disposition of their counterparts at New Delhi that Le Corbusier's early study for the Chandigarh skyline could easily double as an illustration for Robert Byron's description of the view from the Delhi-Muttra road to Lutyens' cluster of towers and domes (**71**). The essential ingredients are common — the picturesque skyline of government buildings, the flat intervening city, and the monumental connecting axis. Le Corbusier's initial conception of the avenue was as a processional way with pylons, a canal and a heroic scale. Its length is almost equal to that of the King's Way, and the two ministerial houses at the edge of the city recall both the group of four buildings which mark the cross axis of the Queen's Way and the duality of the Secretariats (**72**). The nature of the role New Delhi played in the formation of Le Corbusier's plan is illustrated, firstly by the similarity of the disposition and scale of the two groups of government buildings, and secondly by two of the modifications that Le Corbusier made to the 18th April plan. "The Palace of the Governor crowns the Capital,"[45] and the imperial ring of its name, the position at the head of the central axis, and the curve of the roof garden floating above the city, all recall the Viceroy's House. Both are also linked by a forecourt to a huge plaza which is bisected by the access road and defined by two large free standing buildings. The fourth building is asymmetrically positioned on one side, and differentiated from the cubic form of the other buildings (**72**). The later plans, drawn in response to a more definite programme, do not include the pylons or the minister's houses. The width of the mall, the distances between the buildings, and the cubage of each structure, were also drastically reduced. The second change disrupted the static balance of this Beaux Arts composition of parts and transformed it into an homogeneous De Style group. This was simply achieved, by moving the High Court out of its alignment with the Parliament. The severity of the area cutbacks and the untypically static plan suggests that the initial dimensions of the buildings, and the distances separating them, were visually approximated from Lutyens' complex. The example of New Delhi enabled Le Corbusier to rapidly define the scope of the problem and commit his thoughts to paper. The 18th April plan is merely an intermediate stepping stone, and when the particular problems at Chandigarh emerged, he assumed full control of the plan (**69, 70**).

This same process can be observed in the early sketches for each of the individual buildings of the Capital. For example the first drawings of the High Court show a four story building with a monumental ramp leading up to a raised main floor. The ramp projects out from the face of the building, and a tunnel, at right angles, which provides access to the ground floor, recalls the north stair at the Viceroy's House (**73, 48**). A similar arrangement was also considered for the Parliament and Governor's Palace (**74, 75**). This multilevel system was further developed by confining vehicular traffic to depressed channels which approach the individual buildings at right angles to their main axis, and provides direct access, under cover, to vertical circulation in the basement, without interfering with pedestrian movements at grade. The ramps and piano-nobile are not part of the final design, but these preoccupations, together with the differentiation of traffic by both grade and orientation, can be ascribed to Le Corbusier's contact with the Viceroy's House.

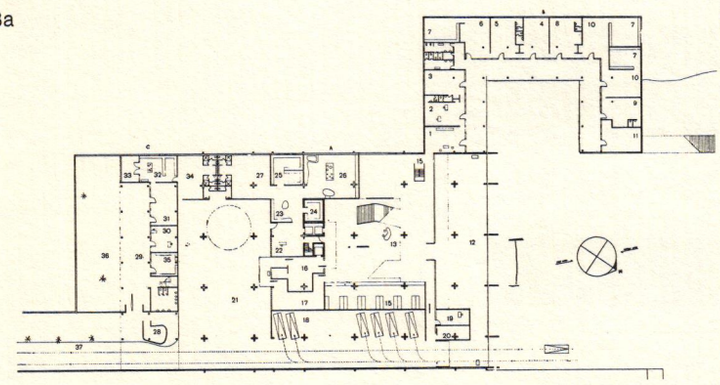
The powerful impact of this building is most clearly discernible in the planning of the Governor's Palace. The front garden, like the Viceroy's Court is a direct extension of the Palace, and projects the main axis to the plaza between the High Court and Parliament (**76a**). The correspondence is even more exact in an early sketch, in which the garden is contained within retaining walls which are a direct

[43] Le Corbusier, *Oeuvre Complete 1946-52*, (Zurich, 1953), p. 130.

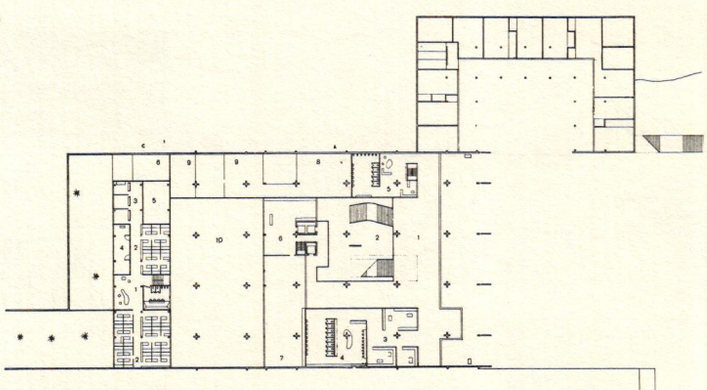
[44] See Le Corbusier's plan of Chandigarh, dated May 1952 in, *Oeuvre Complete 1946-1952*, (Zurich 1953) p. 146.

[45] Le Corbusier, *Oeuvre Complete 1952-57*, (Zurich, 1957), p. 102.

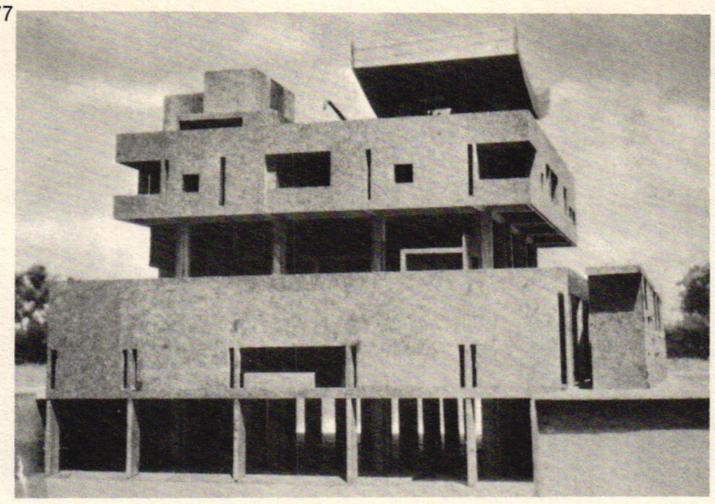
78a



78b



77



76a. Garden of the Governor's Palace.

76b. Early study of garden, reception entrance and highway.

77.Governor's Palace, side elevation.

78a. Governor's Palace, basement plan.

78b. Governor's Palace, mezzanine plan.

78c. Governor's Palace, main floor plan.

continuation of the basement walls of the Palace (**76b**). Sloping embankments (which recall the ramps on the cross axis of the Jaipur Column) are used to develop a cross axis, and a reception entrance is integrated into the structure. In the final plan the depressed road approaches the Palace on the main cross axis (**77, 78a**). The roadway forms a depressed channel over which the Palace seems to span. This is emphasized by the solid bridgelike wall over the void, and the continuity of the retaining walls of the road and the basement walls of the Palace. This channel is a negative version of the Plateau, which is similarly spanned and contained by the Viceroy's House. The superimposition of the main axis over the cross axis (which is repeated at a smaller scale by the mezzanine over the vestibule, and the orchestra balcony in the salle d'honneur), the main stair which serves the cloakrooms and state rooms, the combination of open and closed courts on either side of the carriageway under the building, and the vast rear garden which extends to the outer limits of the plan, also derive from precedents in the Viceroy's House (**70, 78**). Le Corbusier was clearly fascinated by Lutyens' multilevel service system. A comparison between the traffic organization in the 1945 plan for the reconstruction of St. Die, with its surface highways and parking lots, and raised pedestrian bridges, and the more sophisticated junction between buildings and vehicles at Chandigarh provides an accurate measure of New Delhi's impact (**79**).

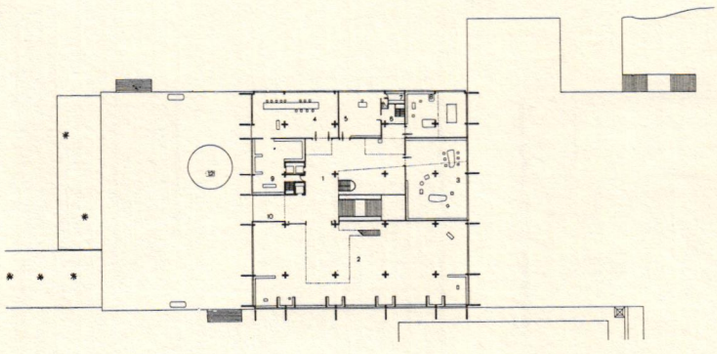
At Chandigarh the minor grid of greenways permits the surrounding landscape to penetrate through the plan maintaining an ambiguous balance between the idea of a "park in the city" and "city in the park." The monumental Capital and bold precision of the grid are contrasted with the meandering greenbelts and the seemingly random site planning in the sectors, each of which is planned with little regard for the definition of the major streets of the grid.[46] The "great avenue" is tentatively defined by a park on one side and a commercial belt on the other (whose site plan has never been published) and is focused on the landscape, the void between the Open Hand and Governor's Palace (**69, 70**). Although Le Corbusier frankly admired planning in the "grand manner",[47] and his love of geometry allowed him to equate the geometric with the rational,[48] the picturesque aspect (in Repton's sense of the word) of his work must not be overlooked. For example, the 1922 plan for "Une Ville Contemporaine" is a Beaux Arts exercise combining grids of different scales, diagonal avenues, elaborate intersections, pylons, triumphal arches and a cross axis (this despite its revolutionary programme), but it is also a classical composition of buildings set in an English Garden. The cruciform towers and surrounding *"lotissements à rendents"* are free standing, independent of the street and interwoven

[46]Christopher Rand commented that, 'Arriving at the center one cannot rid oneself of the sense of being forever on the outskirts of a town.' (*New Yorker*, April 30th, 1955, pp. 35-62). Le Corbusier himself proudly noted the fact that there are, '40 miles of roads without buildings facing them.' (Architectural Forum, Sept. 1953), p. 144.

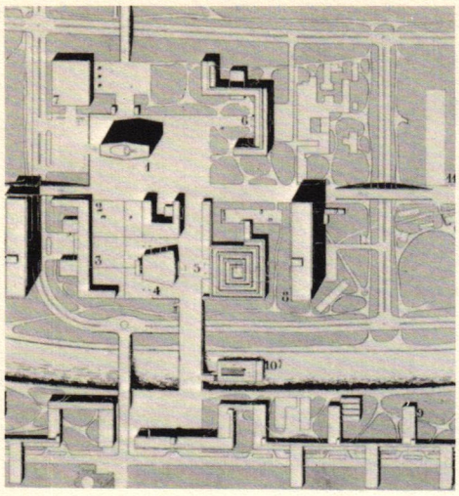
[47]In *The City of Tomorrow* (New York, 1929) Le Corbusier stated, 'The vital thing is to have an idea, a conception and a programme. (p. 154). He also called the plan of Washington, D.C. 'a work of the mind,' (p. 10), and the last plate in the book shows Louis XIV directing his architects.

[48]"The circulation of traffic demands a straight line," Le Corbusier, *The City of Tomorrow*, p. 110.

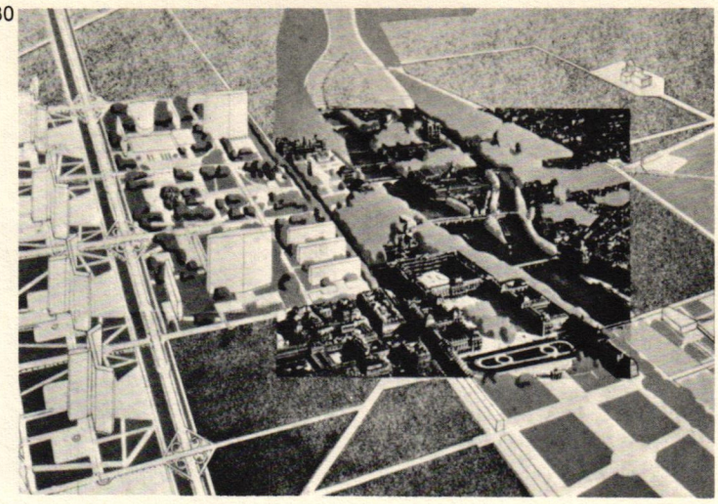
78c



79



80



with the landscape. The last vestige of traditional urbanism, the street defining *"immeubles villas"*, is undercut by the floating gardens around which each apartment is planned. This destroys the distinction between solid and street, garden and building (in this sense it is similar to the residential streets at Letchworth (**54b**). This paradox of the city in the park was most intensely developed in the Plan Voisin of 1925, and the Paris Plan of 1937 in which many of the old monuments were retained, but the urban context had disappeared, and they were transformed into separate pavilions in a landscape, garden follies dwarfed by the giant freestanding towers (**80**).

Le Corbusier demanded a more complex dialogue between landscape and building than either the Beaux Arts or Picturesque could provide. At New Delhi he found a combination of both that paralleled his own intentions. The Beaux Arts aspects of the plan are part of a witty juxtaposition of opposites, and the boulevards lined with bungalows, the monumental center surrounded by a sea of green, and a processional way defined by trees, have counterparts at Chandigarh. But it was the most profound aspect of Lutyens' plan, the great paradox of the Imperial capital which was also a pavilion in an English Garden, that Le Corbusier saluted as Lutyens' great achievement.

This congruity is not confined to their work in India, and many of the characteristics of Lutyens' houses are present in Le Corbusier's great houses of the twenties. The first clue is afforded by Le Corbusier's lecture "Le plan de la Maison Moderne",[49] of 1929, in which he synthesized his houses into four basic types, each typified by the villas at Auteuil, Garches, Carthage, and Poissy (**81**). The latter three are all examples of a predetermined cubic mass, whose symmetrical exterior envelop is not fully expressive of the intricate articulation of the interior plan. Le Corbusier defined the Villa at Garches in the following way: *"Le second type révèle la compression des organes à l'intérieur d'une enveloppe rigide, absolument pure."*[50] This quality is underlined by both the terrace overlooking the garden, and the front, third floor balcony (**82d**), which are not voids hollowed out of the cube, but areas from which the envelop has been removed in order to bare a portion of the complex interior mechanism. It is also apparent in the villa at Carthage where the envelop is *"transparente comme une résille"*,[50] and the villa at Poissy whose envelop contains both interior and exterior spaces.

In the case of the villas at Garches and Poissy the correspondence with Lutyens' houses is carried further. The Stein house has rooms symmetrically disposed within a rectangular plan, the facade is symmetrical, and the *a, b, a, b, a* and *c, b, a, b, c* grid of the structure express the cross axis (**82**). The crossing is not occupied by a solid, but the intrusion of the curved and angular wall of the dining room and stair, and the inflection of the shelf surrounding the void, which emphasizes the continuity of space as it flows to the partially hidden library, suggest that this central area is merely a residual and a transitional space. The cross axis has been further distorted into a *Z* configuration – the dining room, living room and library each occupying a leg – which subtly detaches the circulation pattern from the axes. This interaction begins with the duality of the exterior entrance doors. The axis of the hall is defined by the four columns and the reverse exedra, but the stairs and doors are off to the side. Similarly on the first floor the living room is on the main axis, but the stairs, doors and other rooms, are reached by independent movements. The cross axis is expressed by the windows and openings between the two piers of the side walls, but it never coincides with a line of movement. The Villa Savoye has four symmetrical elevations, and the entrance is axial (although the driveway is not), but the crossing is occupied by the ramp which ensures that all circulation is circumambulatory and never axial (**83**).

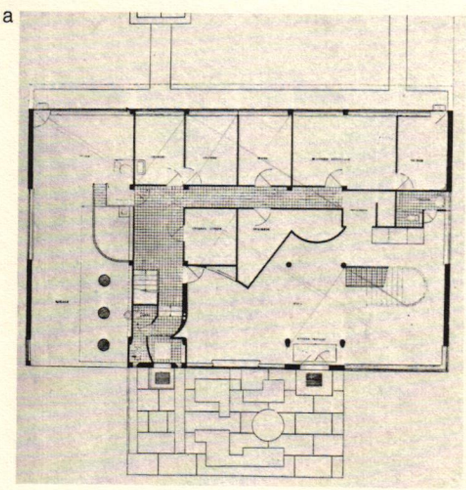
The drama of Le Corbusier's houses, like those of Lutyens, depends largely on movement through a sequence of volumes. These volumes are not separate and distinct, but rely on structure, free standing screens, shelves and chimneys, to partially assert the boundary of a space, while still permitting visual continuity. In the villa at Garches the library is partially defined by the implied continuity between the directional, free standing column, the shelf, and the wall between the living room and the terrace (**82**). The whole is further complicated by the "phenomenal transparency",[51] the "continuous dialectic" between the real depth of the space (from the front to the rear facade) and the insistent visual emphasis – both interior and exterior – on the five layers of space parallel to the main facades which also divide up the main floor. These conflicting

[49] Le Corbusier, *Precisions*, (Paris, 1960), pp. 123-139.

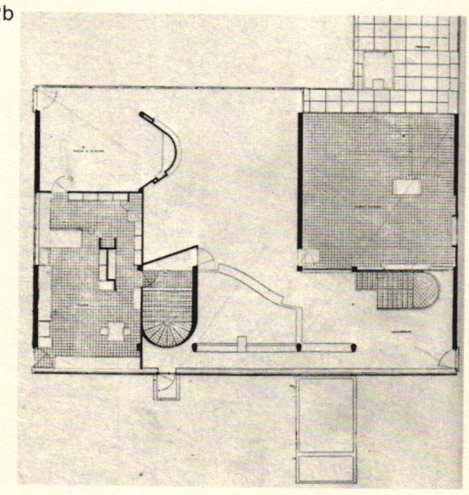
[50] Le Corbusier, *Precisions*, p. 134.

[51] For the most comprehensive and penetrating analysis of this house see: Colin Rowe and Robert Slutzky, *Transparency: Literal and Phenomenal*, Perspecta 8 — The Yale Journal of Architecture, pp. 45-54.

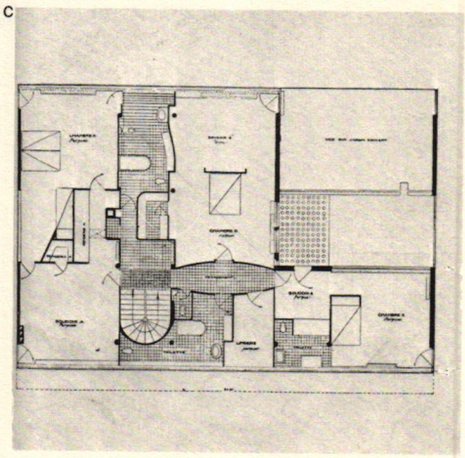
82a



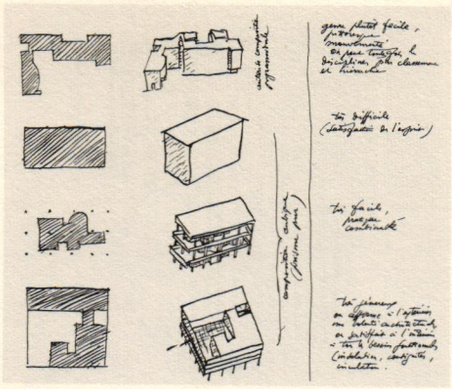
82b



82c



81



79. Reconstruction plan for St. Die.

80. 1937 plan for Paris.

81. Le Corbusier's four house types.

82a. Villa a Garches, 1927, ground floor plan.

82b. Villa a Garches, first floor plan.

82c. Villa a Garches, second floor plan.

82d. Villa a Garches, facade.

readings of space are used to generate the impulsion to move and enable Le Corbusier to dispense with the transitory spaces on which Lutyens lavished so much attention. However there are exceptions. The hall in the Maison La Roche (**84**) of 1925, is seemingly defined by the screens in front of the stair, but the extension of the ceiling above the stair, and the light from the windows above and behind, suggest that the stair is merely a sculptural object in a space which extends to the outside wall of the house. This sense of unsettled spatial activity, and the unresolved ambiguity of the screens which is both a wall and a part of the stair is strikingly similar to the hall at Little Thakeham (**14**). The four facades of the Villa Savoye are dualities, and a column stands in front of the entrance. This is resolved in the interior by breaking out of the grid and placing two columns on either side of the doorway (**83**).

Accommodation is also a major aspect of Le Corbusier's planning. Curved walls are used not only to indicate circulation but to minimize space borrowed to accommodate bathroom fixtures, cupboards, etc. and is especially important in smaller dwellings. At Garches examples include the staircase wall on the main floor which is angled to accommodate the void, the space which the second floor bathroom borrows from the bedroom to permit passage between the wall and bath, and the curved wall of the service entrance cloakroom (**82**). At Poissy the column grid is distorted to enable the cars to park and to articulate the entrance (**83**).

These similarities are not only confined to the houses of this period. For example the idea of de-emphasizing the central space or the crossing, recurs constantly in Le Corbusier's work. The main stair and a service stair occupy the central bay in the Governor's Palace, and in the museum at Tokyo and the circular embassy building at Brasilia it is a column. The first drawings for the Parliament indicate a monumental ramp on the main axis, but the interior Forum is occupied by the two free standing volumes of the Upper and Lower Houses, and is quite without focus. In the final plan the approach is still axial, but the door is slightly off center, and the circular interior of the hyperboloid (the lower house) has an axial plan.

Sir John Summerson was the first (again) to point out this element of "extravagant wit",[52] this "passion for opposites"[53] in Le Corbusier's work. Although he was primarily concerned with programmatic elements – the idea of the garden within the house, the town in the park, the free standing chimney, etc. – it is clear that the "passion for opposites" also permeates Le Corbusier's language of form. The devaluation of the cross axis, the asymmetrical circulation within a symmetrical form, the separation of movement and axes, the importance of accommodating minor elements within a rigid and largely preconceived form, etc. are also a part of Lutyens' grammar, but Le Corbusier combines them with the purely visual ambiguities of phenomenal transparencies.

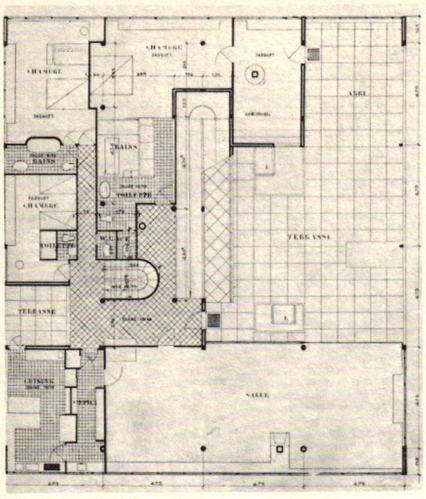
Architecture springs from the hand and the mind, combining the ability to manipulate forms in space and to relate them to the

[52] John Summerson, *Heavenly Mansions*, (New York, 1963), p. 194.

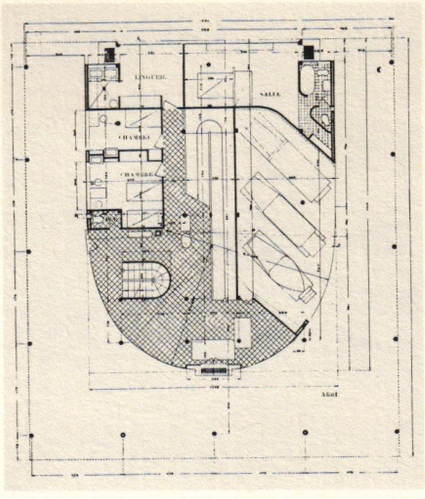
[53] Summerson, *Heavenly Mansions*, p. 191.

82d

83a



83b



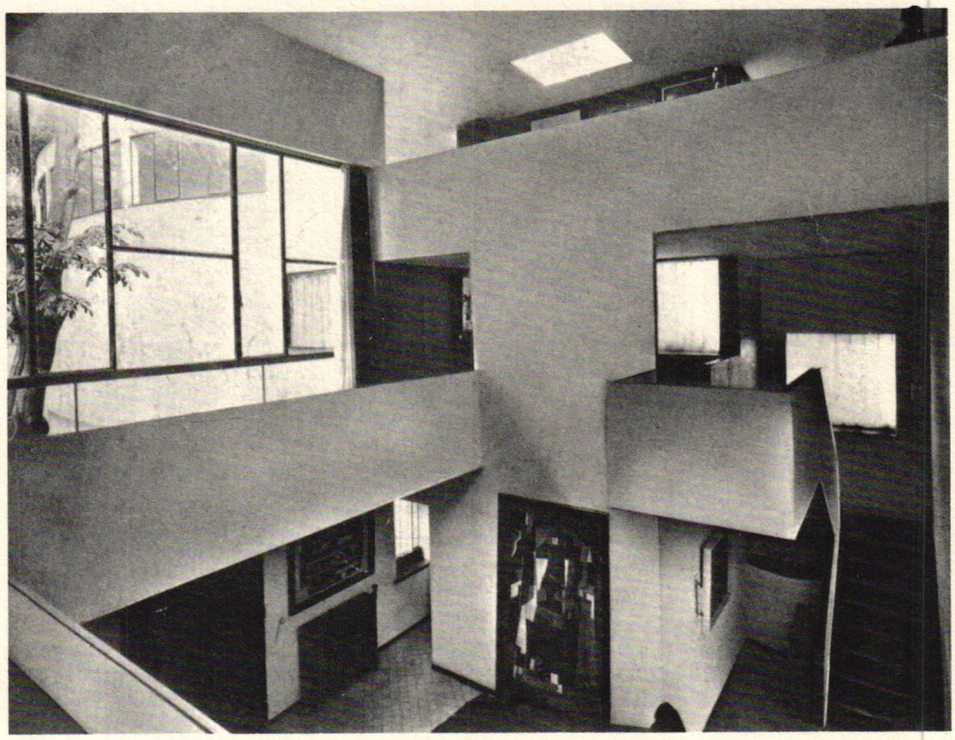
83a. Villa Savoye, first floor.

83b. Villa Savoye, ground floor.

84. Hall in the Maison La Roche, 1925.

world of ideas. As sculptors of architectural form Le Corbusier and Lutyens are probably without contemporary rivals. Their architecture is related by a mutual love of geometry and proportion, and by roots buried deep in the history of architecture; it is part of a continuous dialogue with and commentary on the past. It is ironic that these two men, one of whom was for so long the undisputed leader of the modern movement, while the other was a prime symbol of reaction, should share this great common legacy. It underlines the desperate need for a more comprehensive frame of reference to relate the architecture of the 19th and 20th centuries. Architectural history, working as it does with existing or recorded artifacts cannot afford to ignore an entire segment of experience. Hopefully the demise of the simplistic definitions, characteristic of the early years of the modern movement, and the reviving interest in Victorian and Beaux Arts architecture will achieve this end. Alan Colquhoun has clearly stated the problem: "It would seem that we ought to try to establish a value system which takes account of the forms and solutions of the past, if we are to gain control over concepts which will obtrude themselves into the creative process, whether we like it or not."[54]

84



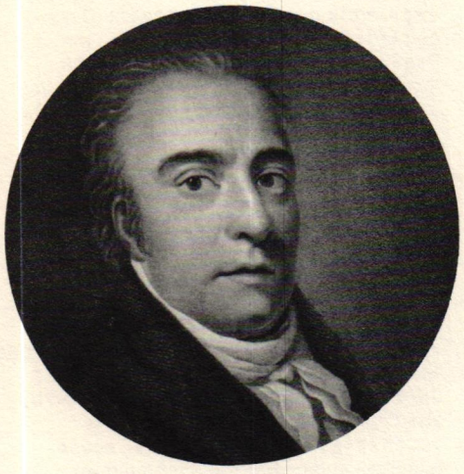
[54]Alan Colquhoun: *Typology and Design Method*, Arena June, 1967, p. 14.

Antonio Hernandez

J.N.L. Durand's Architectural Theory
A Study in the History of Rational Building Design

With a background in natural science, art history, classical archeology, and French literature, Dr. Hernandez's dissertation was "Fundamentals of a History of Ideas in French Architectural Theory, 1560-1800." From 1956-1968 he was Research Assistant at the Gewerbemuseum, Basel and presently is Lecturer in the history of architecture and painting at the Kunstgewerbeschule, Basel. He is also Editor of the newsletter SWB-Kommentare *of the Schweizerischen Werkbund.*

This essay is the revised version of a lecture, which the author delivered in December, 1967, as part of a symposium on architectural theory at the Technischen Universität in Berlin. It treats a theme which is the subject of a comprehensive work now in preparation. Translated by Mrs. Charles W. Talbot.



Jean Nicholas Louis Durand, 1760-1834.

In the domain of architectural history, architectural theory occupies its own peripheral position, respected and uncomfortable. The historian makes use of it as a source for his research; as he perhaps seeks in the theories evidence and commentaries on the work of an architect – similarly, as one seeks in Van Gogh's letters a clearer explanation of his paintings. Thus architectural theory performs the task of documenting executed architecture. On the other hand, the theory is often consciously set apart from architecture; it does not aim directly at the construction itself, but stands at a distance from it, in order to account for the laws of this activity. In its "great periods" architectural theory was always more than an interlocutory companion; it was not only *adjunct* to construction but, insofar as it constituted an effort to establish an aesthetic foundation, *essential.* The Renaissance offers here the most important examples. From the architectural treatises and commentaries on Vetruvius by such writers as Cesare Cesariano, Daniele Barbaro, Leon Battista Alberti, Palladio and many others, we gain a wealth of practice and technical information, the value of which, of course, varies according to writer. We also learn from these texts which are directly related to construction itself, essentials in iconology and symbolism of architectural forms, the cosmological meaning of number relationships; thus, things which are not derived from specific buildings, but which provide a conceptual basis for them. The artists and architects of the late 15th and the 16th centuries were *uomini universali.* They understood their creative function in the universal sense, and were no longer satisfied with the purely technical accomplishment of their projects.

The speculative element is accordingly very strongly defined in their writings.

Contemplation of the aesthetic bases of construction, of the essence of architecture, has philosophical rank and therefore represents a weighty contribution to the general intellectual history of the era.

The 17th and 18th centuries – both centuries of intensive theoretical argument about architecture – placed the emphasis differently. In a word, one could call the change in the theoretical concept of architecture an extended process of secularization. In this the French were leaders. Their architectural treatises strive for valid *rules;* the weight lies by turn with metaphysical, sociological, rational, and sensual criteria. The rules are first presented as universally valid, then dismissed by criticism and finally, as a whole placed in question as only relatively valid. In the end, all that was valid and binding was the taste of society which was modified by climate, habits, customs, and so on. Accordingly, the theoretical argument about architecture in the 18th century directed itself not only to architects but to society; architecture (like art and literature) became a matter of public interest, never had the "educated world" been so thoroughly involved with architecture as at that time. In the flood of writings, from all possible points of view, by architects, authors, dilettantes; those works which address themselves exclusively to the professional world understandably appear much more reasonable. Here aesthetic speculation withdraws; the "utopian" element shrinks to an infinitesimal minimum. Architectural theory retires to the confines of a stalwart *building theory.*

Handbooks of this sort are treated perfunctorily in art history. They are mentioned, at best, as a kind of recipe book (as the countless "books on columns" of the 16th-18th centuries had been) for the use of architects, but they are considered not particularly useful.

But precisely in such unspectacularly practical "cookbooks" for architects are contained new ideas which are enough to revolutionize the concepts of architecture. The main purpose of the books lay in making practicable for the student the state of knowledge at the time, much as a handbook in the style of "Neufert" does for us. This is often necessarily a dryly practical, didactically narrow presentation. With the authors of such handbooks belongs Jean-Nicolas-Louis Durand, of whom we began to take notice only a few years ago, after we had long neglected him as a tedious, unartistic rationalist. This was not always so. Durand is not prominent through his own buildings, his masterpiece is the handbook *Précis des leçons d'architecture données à l'Ecole polytechnique,* which appeared in 1802/05 in two volumes and from then until the 1830s came out repeatedly in new editions, among which was a German translation. By 1800 he had published for the use of students a vast, comparative illustrated work, in which the most important buildings in history up to that time were reproduced in equal scale (*Recueil et Parallèle des édifices en tout genre, anciens et modernes, Paris An IX*). It pretended to be no more than a useful, not too expensive compilation of many illustrated

works, in which the most important buildings were pictured.

More important for us is the *Précis,* the collection of his lectures at the Ecole Polytechnique condensed to a handbook. This was issued by the "Ecole centrale des Travaux publics," that is, by a school which dedicated itself to the training of *engineers.* The subject of this training was not so much fine architecture as large utilitarian buildings such as hospitals, prisons, barracks, arsenals, bridges, light towers and others. In the hierarchic classification of pre-Revolution architecture, such buildings had – according to their lesser rank – occupied in the theory only a subordinate position. The visionary pathos of the architects of the revolution had occasionally elevated them to gigantic symbols of a new, free people. But this remained a dream, merely designs on paper by Ledoux, Boulée, Lequeu, Vandoyer and others. They contributed nothing directly to the building problems around 1800.

It is known that Napoleon treated architects with distrust. His feeling for greatness was closely tied up with the demands of economy. Vandoyer says of him: "The sovereign does not like architecture; the ministers suspect therefore all who bear the name of architect and, to flatter the prince, they say it openly . . ." And from Napoleon himself we know numerous utterances of this sort: "They ruined Louis XIV. They should have been made responsible when they exceeded their estimates and put into debtors' prison for payment for this excess. They are the scandal of my reign."

The attitude of the emperor had considerably increased the role of engineers in building (for example through the *Corps des Ponts et Chaussées*). And in light of this situation Durand's teaching at the Ecole Polytechnique came to have a heightened significance. He knew how to communicate to his students his own conviction that the engineer is summoned, through more comprehensive problems and through the execution of larger projects, to be the architect in the stricter sense. Now begins, for architectural history, the very significant emancipation of engineers from the artistically oriented architects.

It seems an irony of history that this teacher of a sober, rationalistic architecture was the student of Boullée, an architect who cared for nothing but the vision of gigantic buildings which should impart to man a lofty and heroic feeling and, for whom the technical aspect of building belonged to the trivial sphere of execution.

When we consider one of Boullée's designs we can see how far the disciple Durand had to remove himself from his teacher in order to play the other role which we are attempting to describe here. As an idea, Boullée's Newton-Cenotaph (**1**) conforms to no concrete need. The gratuitous undertaking is the product of a grandiose, romantic hero-worship. The monument to the great physicist and astronomer celebrates the champion of the science of the cosmos who transcends history and belongs to all mankind. The edifice expresses grand "ideas." What did it matter to Boullée whether it was at all technically feasible!

And now Durand. He is far removed from the symbolism and exalted importance of the design of his master. Durand is a rationalist. According to him, architecture is to be built on a set number of clearly definable principles. This in itself would not be new. French architects of the 17th century had tried to bind architecture to fixed rules. Since the founding of the "Académie Royale d'Architecture" by Colbert in 1671, theory and teaching leaned toward a strictly codified system, toward a normative, absolute architecture-aesthetic, the mirror-image of an encompassing national-cultural absolutism. Therefore, as is frequent in the history of artistic forms of expression, an academic classicism presented itself at this time; a classicism which could be so law-abiding that it believed it necessary to ignore the authority of antiquity when the latter was not rigorous enough for it. In reaction to the extravagantly capricious fantasy of form in the Rococco, the 18th century attempted to unite, in classicism, the authority of antiquity with the Encyclopedist's faith in man's intellect. It is the moment when an architect indeed no longer believes in an absolute law of proportions but tries to save it, by any method possible, as a *postulate.*

Consequently, Durand discards the primacy of aesthetic criteria. He turns against the usual distinction, in all architectural theory books, between decoration, distribution and construction. For him, only construction is an applicable concept in all building: "With this established, we can naturally deduce the general principles of architecture: and once these are known, we have only to put them to use,

1. the objects that architecture uses, that is to say, the elements of the sructures;

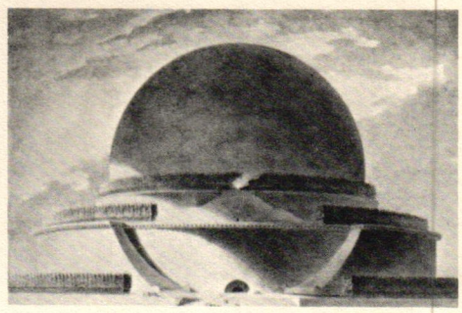
2. the combination of these elements, in other words, the composition in general; and

3. the assembly of these combinations in the composition of such and such a structure in particular" (*Précis I,* 4).

Durand's book of theory begins consequently with presentations of construction: walls, vaults, attic stories, and so on. This is in keeping with the subject. In the same sober spirit of an elementary building theory, he speaks also of the often discussed subject of "orders." The discussion of application and proportions of classical orders had always occupied an important position in architectural treatises; basic aesthetic speculations joined with this matter. Durand makes quick work of this, in which he rationalizes, *standardizes.* In themselves, these elements of classical architecture concerned him little; he could just as well do without them, but he keeps them, because their "use was expected," and their elimination would provoke more disturbance and perplexity than it is worth. Thus he gives a few rules for their simple use – and at the same time rejects all theories about their relation to the proportions of the human body.

For Durand there stands at the beginning of all architectural activity, the fulfillment of material requirements. Architecture had to serve them in the most direct way. To this end he took the decisive step from the *aesthetic* norms of the past to the constructive (and functional) norms of the Ecole Polytechnique. Durand's enumeration of the elements of building and of basic constructions is meant to give not merely didactic examples from many possibilities, but it is also to be understood as a step toward the concept of a *rationalization of building.* Accordingly, there are for him two principles: (1) "covenance," that is, functionalism, that which is appropriate for a function; (2) "économie,"

1



1. Etienne Boullee: Cenotaph for Newton, view. Dated 1784 (in: Helen Rosenau, Boullees Treatise on Architecture, London 1953, fig. 45).

that is, the economy. Such maxims had to conform to Napoleon's military austerity and to his notion of architecture. Durand's utilitarian concept and his teaching at the Ecole Polytechnique actually conformed to the earliest of official building policies. This in no way precluded the desire for monumental expression. Durand knew how to combine spartan economy with the imperial image. Thus he sought to demonstrate that monumentality need not be extravagant, to which end he compared Soufflot's Pantheon (formerly the church of Saint Genevieve) to his own projects. Soufflot, according to Durand, wanted through great extravagance to produce an impression of grandeur. He chose as ground plan the Greek cross. In the interior along 612 meters of wall he used a total of 206 columns, of which — and now Durand's "devastating" argument — only a portion was visible from any given view point. The material expense stands therefore in disproportion to the desired effect. Durand pointed out further shortcomings in the Pantheon ("This structure whose dome threatens ruin, cost 17 million . . . ," *Recueil,* pl. 10) and concluded his argument with the triumphant remark that for the same money he would have erected two much more imposing structures . . . We would smile at such calculations, which appear in a leading theory book of the time, nevertheless here is an indication of a new understanding of architectural problems.

Functionalism and economy should be the chief guiding principles for architects. Durand specifies exactly what is to be understood: the command of functionalism is fulfilled by attention to the following criteria: the structure must be *strong* (solide), *sound* (salubre) and *comfortable* (commode).

It is economical when one pays attention to *simplicity, regularity,* and *symmetry.* These concepts are not exactly new to architectural theory; "convenance," "solidité," "commodité" were words from the old treatises. What is more, in the text books of domestic architecture they played the leading role. But the aesthetic was still treated as a thing apart. What is new with Durand is that he derives an aesthetic from these concepts. Here he stands on the modern notions of the "beauty of the functional." The understanding of the functionality of a building becomes an aesthetic pleasure. For Durand, the question is of the *compatibility* of beauty and usefulness, the question is of their order of rank. Indeed, the question is irrelevant, since the useful cannot be recognized as anything other than beautiful.

It is clear that this utilitarianism had to be more suitable to the needs of the period around 1800 than had been all earlier theories. The turning from the 18th to the 19th century presented many new building problems, for which no single unifying norm was accessible.

For the mastery of such problems Durand gives his students a few rules of thumb, which in architectural history have gotten him the reputation of an unimaginative rationalist.

Even the demand for symmetry is for him rationally established, it is not a concession to the aesthetic but results from economy in laying out the plan ("the straight line is the shortest distance between two points . . .").

One would not be fair to Durand's historical significance, however, if one wanted to judge him primarily by formal aesthetic criteria. His contribution lies in his proposing practical methods for the rationalization of building. He could not, in his time, arrive at this from construction, because the technical means were insufficient. Thus he approaches the problem of rationalization from the formal side. In this he proceeds analytically and *accumulatively.*

The fundamental idea of his theory consists of the *combination* of single, precisely defined elements. Table I in the "Deuxième partie" of the *Précis* gives elementary ground plan theory in a nutshell. On a gridded paper simple grand plan arrangements become possible through manifold variations; the "horizontal combinations of columns, pilasters, walls, doors and crossings" allows a *repetitive* building form on the basis of the grid modules. Durand is convinced that the good and the useful will be facilitated through the simplicity of this system. The column intervals are, for example, to be established once and then maintained in the whole building. Thus the ground plan does not originate from a composite idea, it is composed accumulatively from the base module (**2**).

Louis Hautecoeur indicated afterwards in his *Histoire de l'architecture classique en France* (Vol. V, Paris 1953), that this method was commonly used: "In general the architects of the Empire took a sheet of gridded paper and, in the manner of certain architects of the Quattrocento and the Cinquecento, use the square as module" (p. 315). Here it may be pointed out that *Thomas Jefferson,* for some of his architectural designs, made use of vellum divided into coordinates (see Thomas Jefferson, *Original Designs* . . . , Boston 1916, p. 112: ". . . Wove Paper . . . Engraved with coordinate lines . . ."). However, Jefferson's designs show exactly that the use of this expedient is not without broader formal consequences while Durand is composing his ground plans with the gridded paper. The goal is simplification: ". . . nothing is so simple as this part of composition" (*Précis I,* p. 90).

In the treatment of the elevation Durand proceeds just as systematically. The horizontality subsumes several vertical divisions but, according to this system, neither takes precedence over the other. For him there is no hierarchy of decorative devices (as was still the case with Jacques-François Blondel in his "Cours"). The method of design here is also additive; it is not evolved from a single architectural idea. The structure is made up literally of the selected single elements (*Précis I,* pl. 2 and 3: Combinaisons verticales de Colonnes, d'Arcades, de Voutes, etc.," **3, 4**). Formal aesthetic problems do not present themselves to the architect by this procedure, because ". . . the different architectural decorations . . . through a natural effect, result from these horizontal and vertical dispositions" (*Précis I,* p. 91). The "form" in the artistic sense is therefore something that derives from itself, a result of constructual thought. There is no *preconceived idea of form.*

Durand successively applies his system to individual parts of a structure, progressing from elementary grammar to syntax. In Table 9 of the first volume he gives a survey of all possible plans of vestibules ("Porches") (**5**), in Table 16, larger courtyards ("Cours") (**6**); the principle is everywhere the same: it is based on the variability of simple basic forms from which the building develops. Durand's structural thinking, which bans every decorative element, that is not a result of the construction itself, tends toward a constructivistic purism. In this regard he gives a characteristic remark: "The real decoration of a wall dwells in the appearance of its construction." (*Precis I,* p. 82). He goes so far as to forbid decoration, when it pertains to architectural means, but not when it appears in the form of "objets de la nature" or as sculpture and painting. Architecture may not fraternize with the other arts (as the Baroque demanded), every category of art must speak purely for itself – here are joined a classicistic purism and a constructivistic aesthetic.

Durand understood very well that one could reproach him for pedantry and schematization. So he endeavoured to show that his modular system was anything but monotonous. According to him the possible combinations of ground plans were sufficient to satisfy all desire for individuality. Table 20 in the first volume of *Precis* (**7**) gives a schematic survey of the vocabulary of his method of design ("Ensemble d'édifices résultants des divisions du quarré, du parallelogramme et de leurs combinaisons avec le cercle"). Herein, we believe, lies Durand's significance; through logical standardization he aspired to a rationalization of building, long before this was aspired to on a technical level with the help of prefabricated parts.

Where Durand applies his method of design to specific problems, he arrives at solutions, which betray a strong tendency toward standardization. The second volume of *Precis* (Troisieme partis) appeared in 1805. It is dedicated throughout to the vast, topical projects; law-courts, town halls, academies, libraries, museums, markets, stock exchanges, theaters, hospitals, barracks, and so on. The dominating palaces and churches of the old works are missing (or, as with the latter, only very briefly touched upon). Private domestic architecture is treated but this part of the text book is, for Durand's ideas, the least fertile.

It is the nature of such a collection of types that little power of persuasion emanates from it; the plans of specific building types must not be taken literally, they are to be appreciated as expressive of suggested ideas, which in the individual case may undergo their modification through the precisely defined problem. Similarly, the accompanying commentaries are rather brief and apply only in broad context. Nevertheless, this part of the work should not be underestimated. In view of the range of the projects which presented themselves in this part, it was not practical to lay out all imaginable variations, but to suggest to the students of the Ecole Polytechnique a limited number of standardized, economically responsible types for specific needs.

In truth, these buildings seem rather uniform; one can imagine the plans for different projects being interchangeable, as they appear so unspecific in their primary form. Simple geometric forms prevail: square, Greek cross, combination of square and circle. Symmetry prevails.

It was not least for this collection of types that Durand has influenced the architecture of the younger generation. His design for a library (*Précis II,* pl. 10) is very thoughtfully conceived; the circular central structure is parcelled into sectors according to the separate library divisions. It is an echo of the taste of the "Revolution architects" that the stacks and reading room are joined together in an enormous square, whose sides are formed by severely uniform colonnades which are rather monotonous in their length. At the same time, the "endless succession" of like elements which are not grasped at once by the eye must be "read," comply to the modular principle of this architecture, which cannot be judged by the traditional criterion of "composition," as is the case with many buildings of our time.

In the "museum" Durand has provided a type which has been executed repeatedly in similar forms. Schinkel's "Altes Museum" in Berlin indeed renounced the normal square in the ground plan (**9**), but his ground plan disposition is essentially the same (*Précis II,* pl. 11). Karl von Fischer's plan for the Munich Glyptothek of 1814 follows this type (**10**) for whose invention Durand had no tradition to lean on.

With the plan for an exhibition hall (*Précis II,* pl. 15) we stand at the threshold of the modern (**11**). The huge buildings of world exhibitions are here already anticipated. The modern crowd of curious and fun-seeking visitors demands a new architecture. (Durand: "of places intended at the same time for business and for pleasure.") This architecture had to be quick to build; schematism was here a virtue. The later 19th century through historicism got itself into the straitjacket of adapted "compositions," troublesome for modern purposes. Durand still stands before this eclecticism of nouveau-riche bourgeoisie. We mistake their meaning, when we seek in him works of form fantasy. Because there are times when it is progressive to *systematize* and to *rationalize.* In this direction he performed an important service.

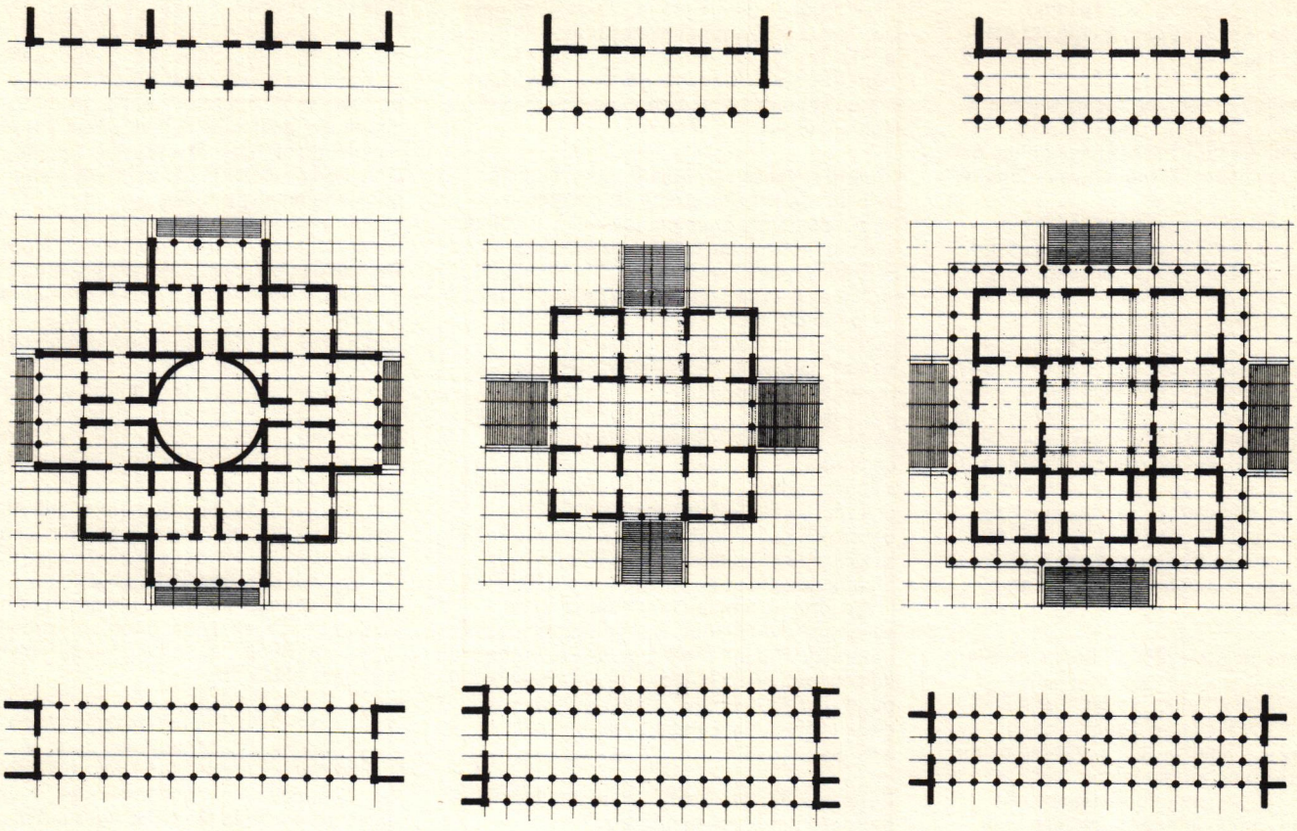
Illustrations are to be found on the following pages.

2

2e Partie

Planche 1.

COMBINAISONS HORISONTALES,
de Colonnes, de Pilastres, de Murs, de Portes et de Croisées.



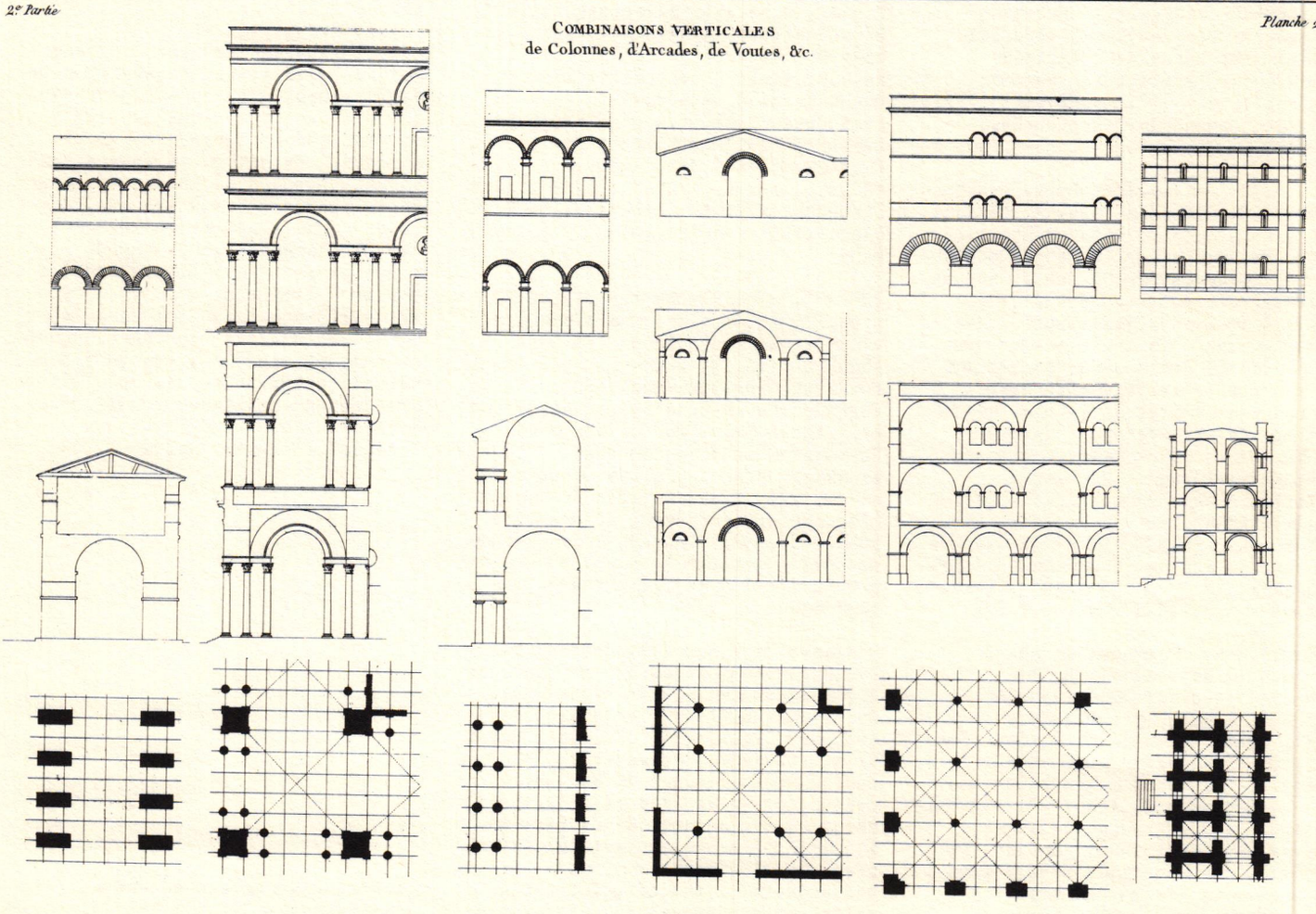
Gravé par C. Normand

3

2e Partie

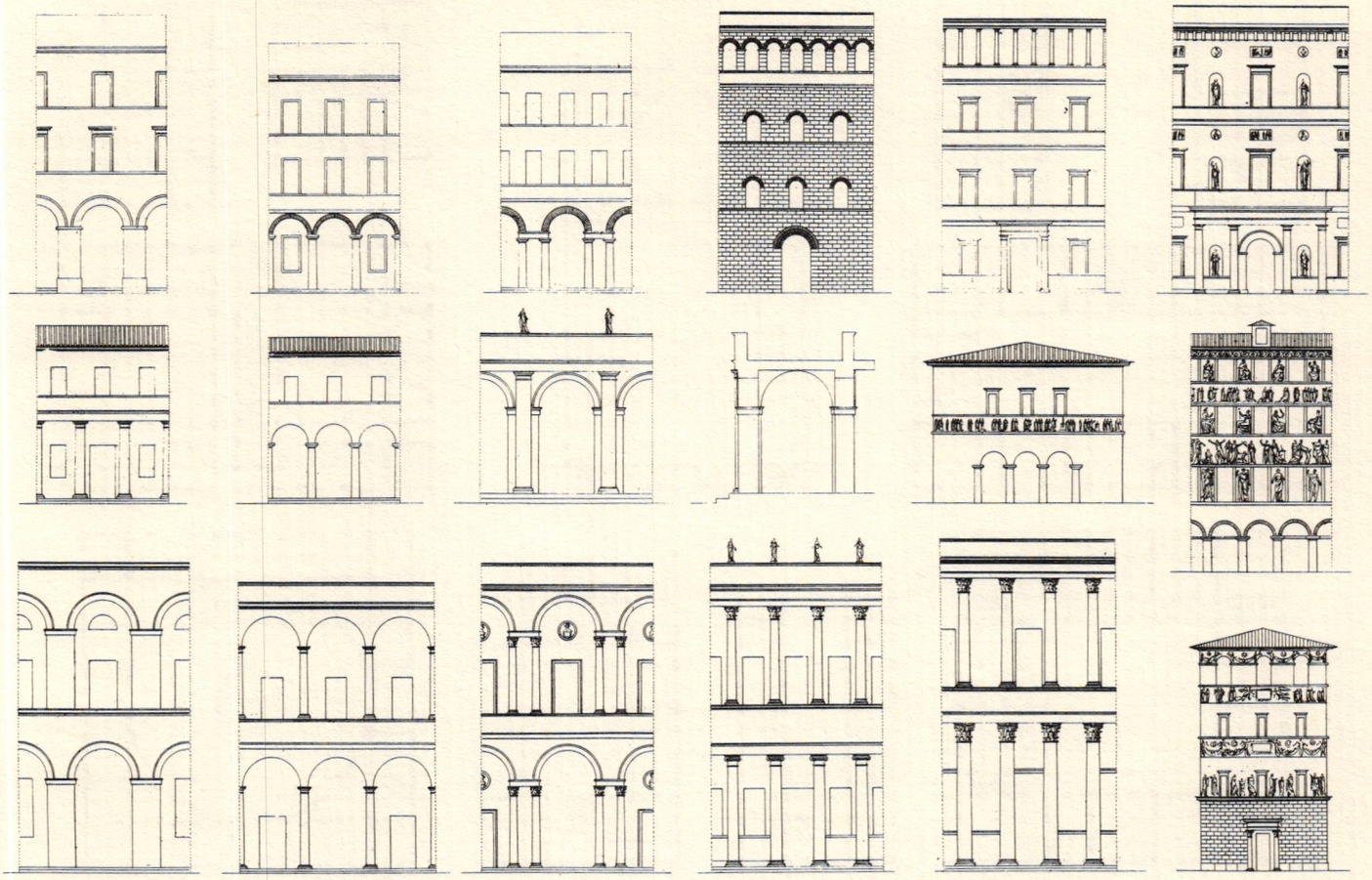
Planche 2.

COMBINAISONS VERTICALES
de Colonnes, d'Arcades, de Voutes, &c.



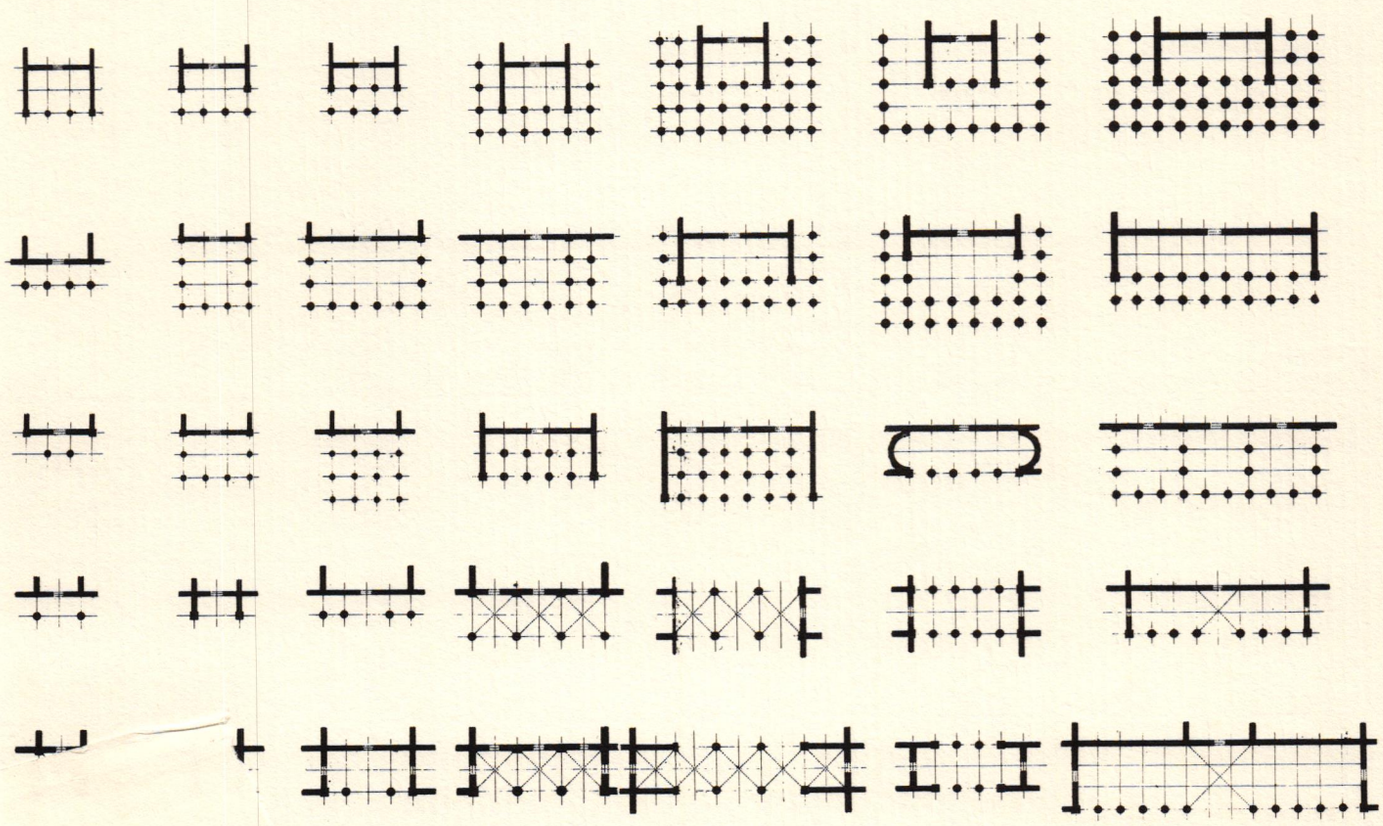
Gravé par C. Normand

COMBINAISONS VERTICALES.
de Colonnes, d'Arcades de Croisees, &c. &c.



Gravé par C. Normand.

PORCHES.



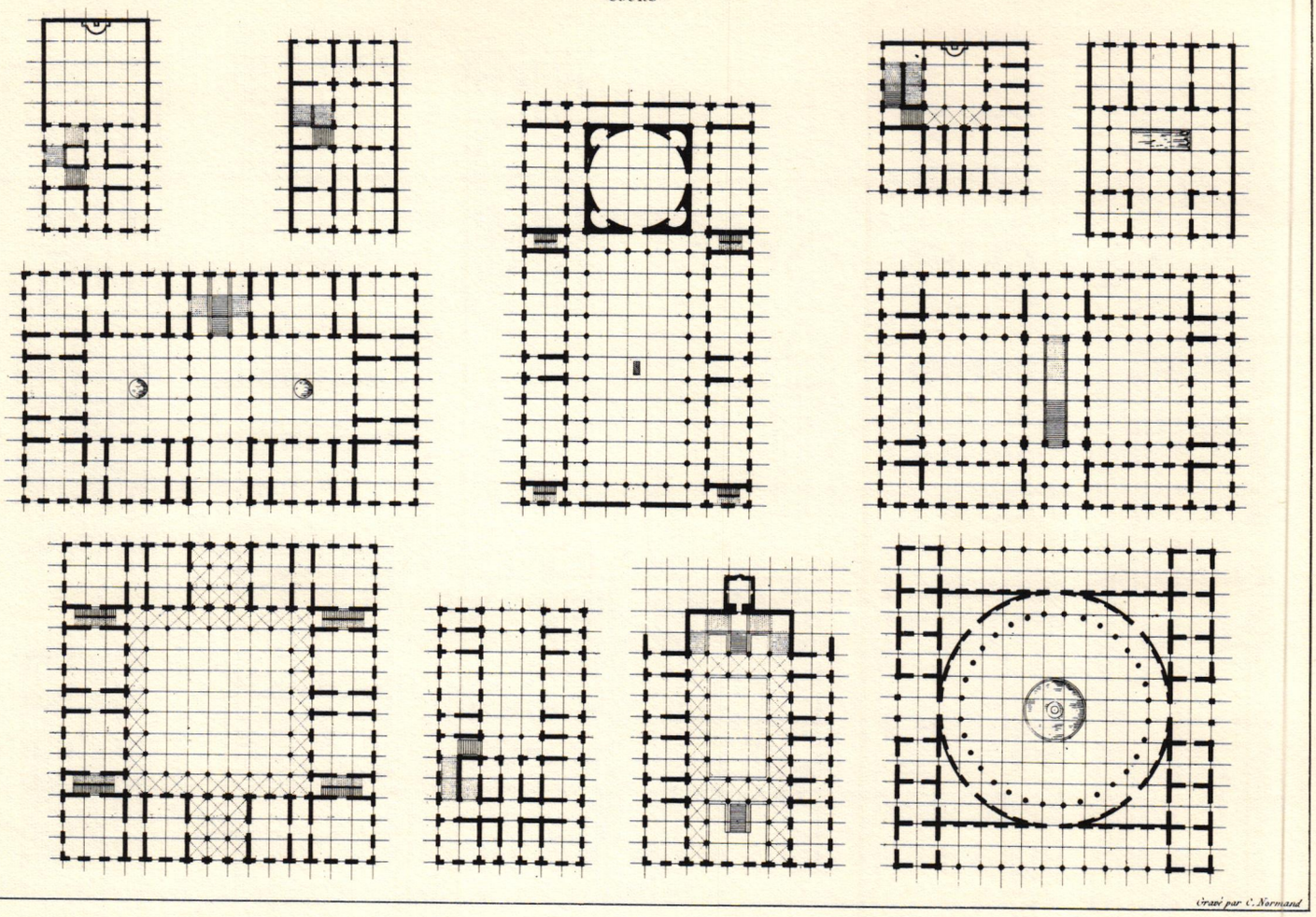
Gravé par C. Normand.

6

2e Partie.

COURS

Planche 16.



Gravé par C. Normand

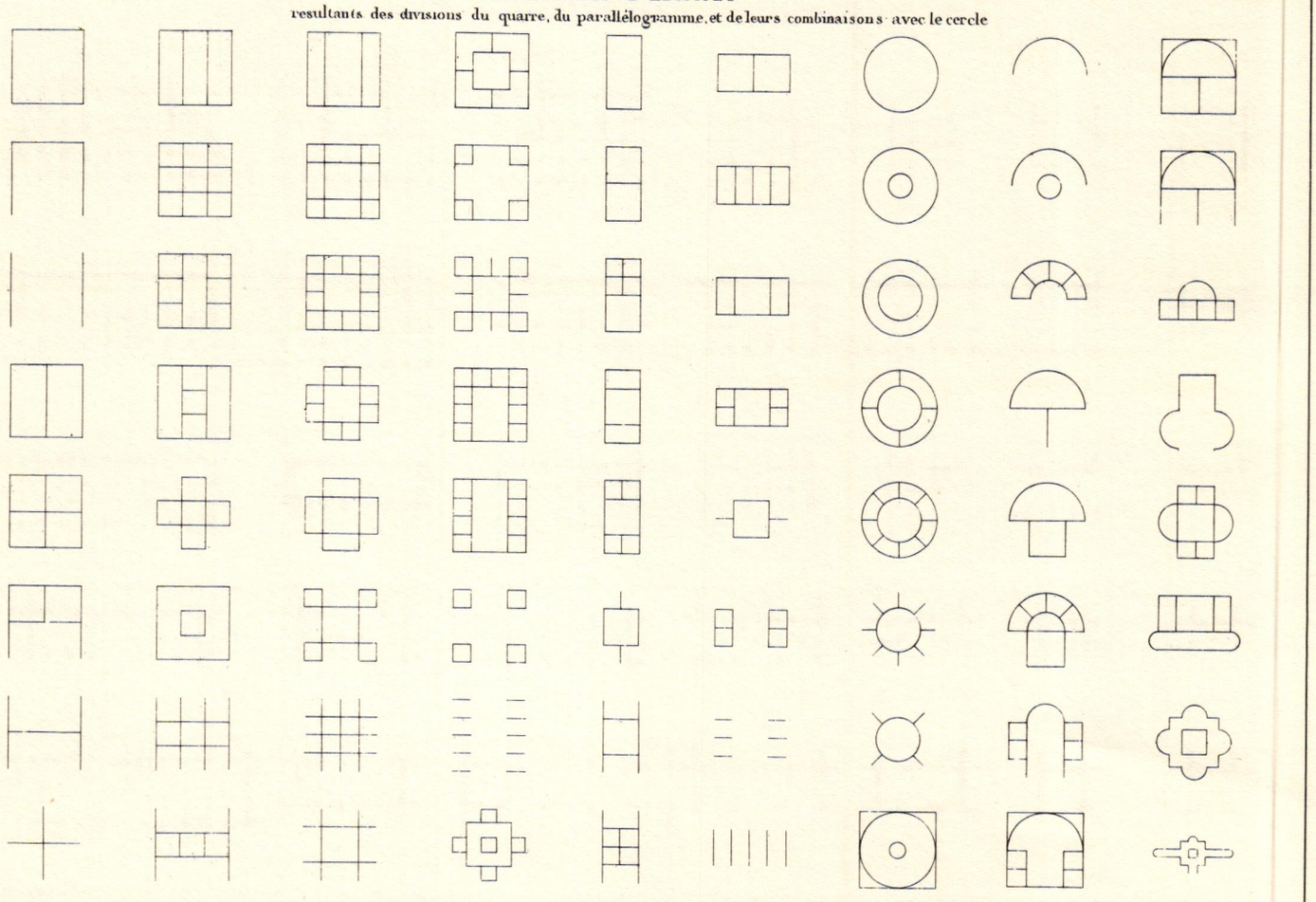
7

2e Partie

ENSEMBLES D'ÉDIFICES

resultants des divisions du quarre, du parallélogramme, et de leurs combinaisons avec le cercle

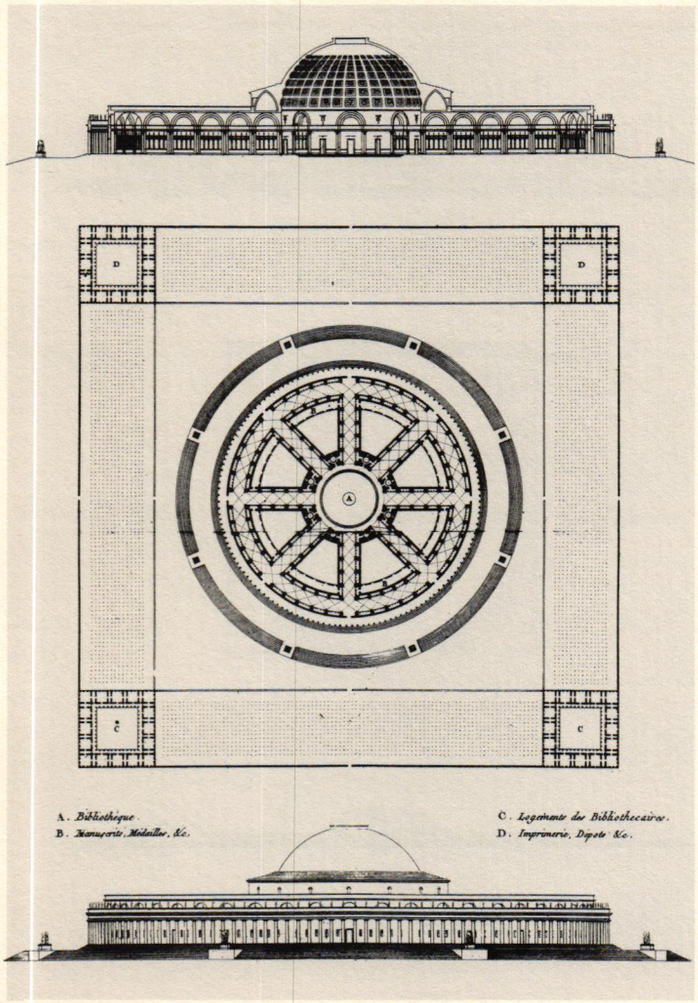
Planche 20



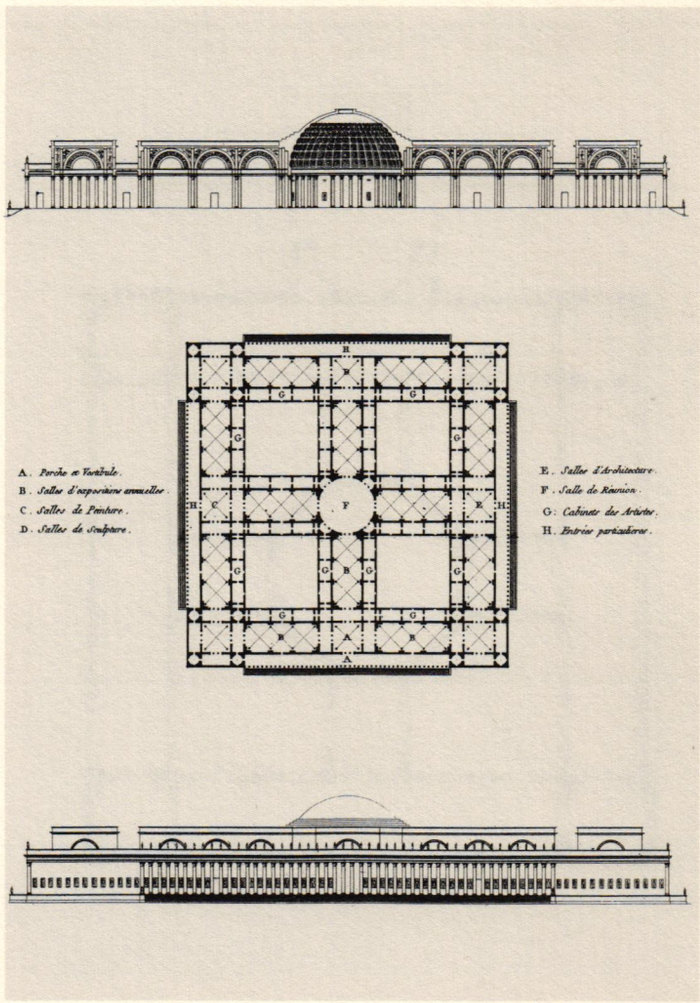
Gravé par C. Normand

8. Durand, Précis II (Second volume, Paris 1805), pl. 10: "Bibliotheque".

9. Durand, Précis II, pl. 11: "Museum".



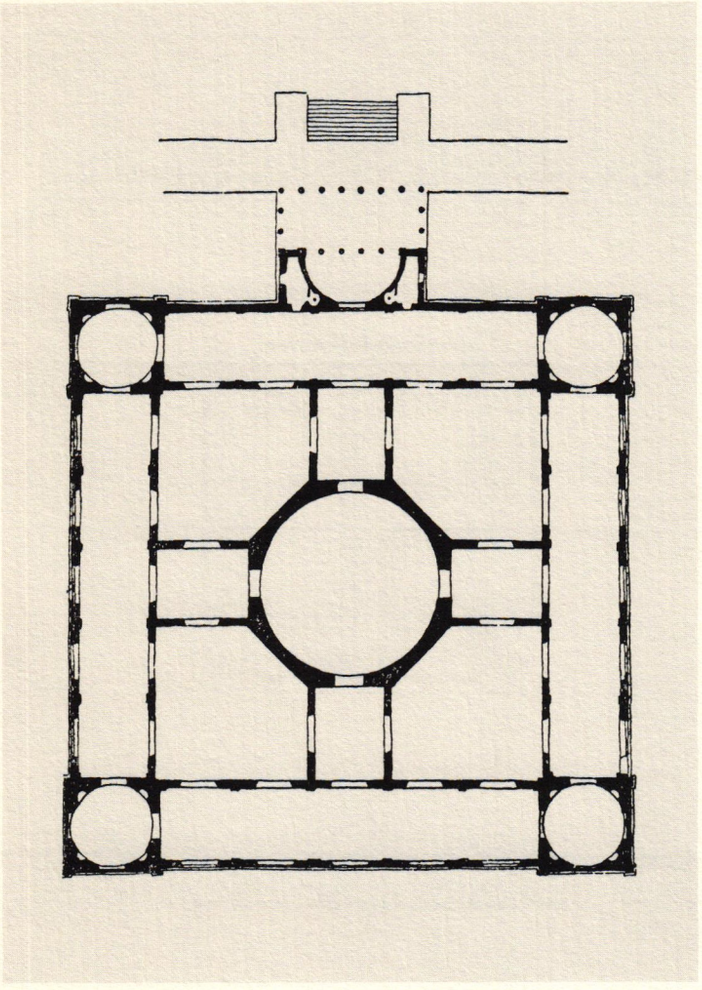
9



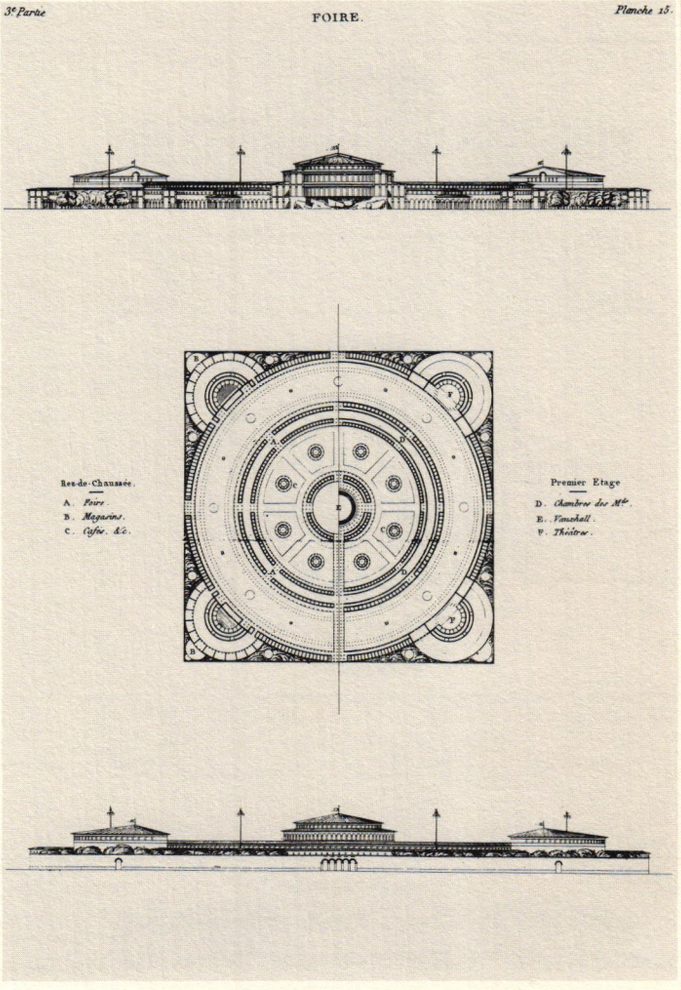
10. Karl von Fischer: Entwurf zur Munchener Glyptothek, Grundriss I (1814) (in: Hermann Beenken, Schöpferische Bauideen der deutschen Romantik, Mainz 1952, p. 49).

11. Durand, Précis II, pl. 15: "Foire".

10



11



Ben Brewster

Walter Benjamin and the Arcades Project

Ben Brewster is a research student in Sociology at the School of Oriental and African Studies in London. He is on the editorial board of the New Left Review *to which he is a regular contributor. This introduction to Walter Benjamin first appeared in the* New Left Review *No. 48, March-April 1968.*

Walter Benjamin, 1892-1940.

Walter Benjamin (1892-1940) came from a Jewish bourgeois family. Born in Berlin, he spent his childhood there, studied philosophy in Freiburg, Munich and Bern, and after the First World War worked as a literary critic and essayist in Berlin and Frankfurt. When the Nazis came to power in 1933, Benjamin fled to Paris, where, apart from holidays in Spain and Italy, he lived until 1940. He was caught by Spanish police attempting to flee across the Pyrenees after the fall of France, and took his own life on September 26th, 1940.

While studying in Munich in 1915 he first met Gerhard Scholem, who was to become a life-long friend and aroused in Benjamin an interest in Jewish mysticism that contributed to his later work. Scholem emigrated to Palestine during the '20's, and Benjamin planned to follow him, but financial difficulties and intellectual commitments always prevented him. Between 1923 and 1925 he was attached to the University of Frankfurt, where he wrote his book on German baroque tragedy, *The Origins of German Tragedy.* Other works in the early '20's included his graduation thesis at Bern in 1919: *The Concept of Art Criticism in German Romanticism* and a long essay on Goethe's *Elective Affinities.* Another friend of the war years, Ernst Bloch, introduced Benjamin to Marxism, and this influence was deepened by meeting the Russian film director Asya Lacis on Capri in the summer of 1924. He followed up discussions with her about the Soviet Union by reading the Marxist classics and Lukács' *History and Class-consciousness.* In the winter of 1926 to 1927 Benjamin made a trip to Moscow. These Marxist beginnings were carried forward by his meeting Brecht in the late '20's, and he became one of the latter's first critical champions. In Frankfurt he also became a close friend of Theodor W. Adorno, his wife Gretel and Max Horkheimer. A book of aphorisms, *One Way Street,* was published along with the book on tragedy in 1928, establishing him intellectually, but not financially. His family had been ruined in the inflation. After 1933, in exile, his financial position worsened until, late in 1935, he was provided with a small income by Horkheimer's *Institut für Sozialforschung* that had moved from Frankfurt to Geneva in 1933 and later moved on to Paris and New York. During this period he was closely involved with the complex developing relationships between *avant-garde* art and the Communist movement. This involvement gave rise to two crucial essays, *The Author as a Producer* (1934), on the artist's relation to the proletariat, and *The Work of Art in the Era of its Mechanical Reproduction* (1935), on the *avant-garde.* But the major preoccupation of the last 10 years of his life, the work which tied him to Paris, was a study of 19th century France known as the 'Arcades Project', for which the text we print here is a crucial provisional draft. His other work was short articles for reviews and newspapers, some in series which have since been collected together as books, notably *Childhood in Berlin around Nineteen-hundred* and *City Portraits.*

Despite the fragmentary nature of much of his work, Benjamin occupies a crucial place in the development of German Marxism and German criticism, since he was the only theorist who linked the dominant current of Marxist philosophy and aesthetics, the neo-Hegelianism introduced by Bloch and Lukács and taken over by the philosophers and critics of the Frankfurt school, with the *avant-garde* currents in the arts in the inter-war period: with surrealism, with the Dada movement and its descendents – notably John Heartfield, whose photomontage technique Benjamin claimed 'has made the cover of a book into a political insrument' – and with the epic theatre of Brecht and Tretyakov. The gap between revolutionary philosophy and revolutionary art has widened again since his death. The study of his work is significant to the extent that it will help to bring the two together again.

Benjamin's fascination with Paris dates back to 1913, when, at his father's instigation, he made his first visit to the city. For the rest of his life his travels gravitate around Paris, and after leaving Germany in 1933 he made it his home. In the early '20's he translated Baudelaire's *Tableaux parisiens* and poems from *Les Fleurs du Mal.* In 1925 he embarked on a translation of Proust in collaboration with Franz Hessel; the latter introduced Benjamin to surrealism, and the first idea of the Arcades Project originated in discussions between them. Benjamin saw his own work in terms of 'cycles' in which the various parts represented the contradictory moments of a synthetic unity (the image of an arch between opposing pillars is also characteristic). In 1928, when a first draft of the Project was nearing completion, he wrote to Gerhard Scholem, 'Once I have finished . . . the work with which I am at present, circumspectly, provisionally occupied – the highly remarkable and extremely precarious essay *The Parisian Arcades: a Dialectical Fairyland* – this will close for me a productive cycle – that of *One Way Street* – rather in the sense that the Tragedy book closed my germanistic cycle. In it the worldly themes of *One Way Street* will march past in an infernal

intensification' (30.1.28, *Briefe* I p. 455). At the time he thought this 'the work of a few weeks' (*Ibid.*). But it grew steadily in scope, and whenever he could spare the time from journalistic work he returned to it, for it 'howls like a small beast in my nights if I have not taken it to drink at the most diverse sources during the day' (Letter to Scholem, 24.5.28, *Briefe* I p. 472). As the project grew, Benjamin realized that 'once I have grasped it, then an old, as it were rebellious, half apocalyptic province of my thoughts will have been subdued, colonized, set in order' (Letter to Scholem, 23.4.28, *Briefe* I p. 470). Its purpose was 'what you once touched on after reading *One Way Street*: to gain for an era the extreme concreteness that put in an appearance here and there in that book for a children's game, a building or a position in life' (Letter to Scholem, 15.3.29, *Briefe* II p. 491), to find out 'how far it is possible to be "concrete" in historico-philosophical contexts' (Letter to Scholem, 23.4.28, *Briefe* I p. 470). The problem: 'to represent the happy unity of theoretical conception and mental armature' (Letter to Hugo von Hofmannstal, 5.5.28, *Briefe* I p. 471). The first draft, *The Parisian Arcades: a Dialectical Fairyland,* was completed in the late '20's and seen by the Adornos. It has since been lost. In the next few years the scheme fell out of sight, as the preparations needed for it grew, and Benjamin's financial straits demanded more commercial journalistic publication. But it still remained one of the four books he felt it would be catastrophic not to be able to finish (Letter to Scholem, 26.7.32, *Briefe* II p. 556). Then, in 1935, came the offer of a stipend from the *Institut für Sozialforschung* to complete this very work. He immediately sat down and produced a second draft or Exposé of the project, photocopies of which he sent to the Adornos, to Scholem and to Horkheimer. This text, entitled *Paris, die Hauptstadt des XIX. Jahrhunderts,* is the text we publish here in translation. But the project continued to grow. In the next five years Benjamin concentrated on one of the six sections outlined in this Exposé, the fifth, on Baudelaire. This grew so much that it became itself a three-part book on Baudelaire, to be entitled *Charles Baudelaire. A Lyric Poet in the Era of High Capitalism.* Drafts for two of its three parts survive, one fairly fragmentarily as *Centralpark,* the other in an as yet unpublished article, *The Paris of the Second Empire according to Baudelaire* – which was modified for publication in the *Zeitschrift für Sozialforschung* (January 1940) under the title *Some Themes in Baudelaire.*[1] The epistemological considerations that were an essential part of the Arcades Project, though not separately dealt with in the Exposé, have also survived as the *Historico-philosophical Theses.*

Benjamin's work is today undergoing a major reappraisal in Germany,[2] and it is still difficult to assess the status of *Paris, Capital of the Nineteenth Century* in the sequence of Benjamin's work as a whole. However, a few indications are possible.

Writing to Scholem about the Exposé in May 1935, Benjamin described it in much the same terms as those he had used in 1928: '. . . now and then I give in to the temptation to see in the book's internal construction analogies with the baroque book [*Tragedy*] which it might seem most unlike externally. And I may suggest this much to you: in this case as well the central point is the revelation of a traditional concept. Then it was the concept of tragedy, now it is the concept of the fetishistic character of commodities. Just as the baroque book mustered its own epistemology, the Arcades will too to at least the same extent, though I cannot tell whether it will be as an autonomous representation, nor how successful it will be. Finally, the title 'Paris Arcades' has disappeared, and the draft is called *'Paris, die Hauptstadt des XIX. Jahrhunderts'* and I silently call it *Paris, capitale du XIXe siècle.* Thus a further analogy suggests itself: as the tragedy book stemmed from the German 17th century, the new book will originate in the French 19th century.' (Letter to Scholem, 20.5.35, *Briefe* II pp. 654–655). But Benjamin also felt that his position had changed markedly in the years since the first draft, and this was one of the reasons for the delay in the work's completion: 'The deepest reason for the Saturnine pace of the thing is the complete process of upheaval that a lot of thoughts and ideas that date as far back as my period of immediately metaphysical or even theological speculation had to undergo if they were to contribute all their strength to my present view-point. This process goes on quietly all by itself: I myself was so little aware of it that I was enormously surprised, when – in response to an external stimulus – I recentiy wrote down the plan of the work in a very few days' (Letter to Werner Kraft, 25.5.35, *Briefe* II 660). The project was first conceived when he was still enthused by Aragon's *Paysan de Paris* 'of which I could never read more than two or three pages in bed of an evening because the pounding of my heart was so loud that I had to let the book fall from my hands. What a warning!' (Letter to T. W. Adorno, 31.5.35, *Briefe* II). The title of the earlier draft – *A Dialectical Fairyland* – 'suggests the rhapsodic character of the representation . . . But this epoch was that of carefree, archaic, nature-shy philosophizing. it was the Frankfurt discussions with you, Asya [Licis], Felizitas [Gretel Adorno], Horkheimer that brought this epoch to an end. That was the end of rhapsodic naivety. The romantic form had been overtaken by a developmental short-cut, but neither then, not for several years did I have a concept of any other form . . . Then came the decisive encounter with Brecht and with it the high-point in my doubts about the work from which I was, nonetheless, still not alienated.' He goes on to say that 'The Exposé, which is nowhere untrue to my concept, is naturally not its complete equivalent' (*Ibid*).

On this basis it is tempting to regard the Exposé, *Paris, Capital of the Nineteenth Century* as representing the quintessence of Benjamin's position in his later years, as opposed to the earlier draft of the Arcades Project. Clearly, in the absence of the completed Project, or even of complete drafts of its various parts, this is largely correct. Nowhere else is there such a complete picture of what the final work would have been like. The Exposé is for Benjamin a kind of miniature equivalent of what the *Grundrisse* was for Marx. But even here Benjamin has a dialectical warning for us. In a letter to Gretel Adorno he writes: 'As in your letter you refer so emphatically to the draft "No. 1" of the Arcades, it should be stated that nothing in this draft "No. 1" has been given up, no word has been lost. And what you have before you [The Exposé] is, if I may say so, not draft "No. 2", but *another* draft. These two drafts have a polar relation. They represent the work's thesis and antithesis. I do not regard draft No. 2 as any kind of conclusion. Its necessity lies in the fact that the viewpoints available in No. 1 will not immediately allow of any patterning (*Gestaltung*) – except for an illicit, "poetic" one. Thus the long renounced sub-title to the first draft: *A Dialectical Fairyland.* Now I have both ends of the arch, but not yet the strength to span it. This strength can only be obtained by long training, for which work on the material represents one element among others' (Letter to Gretel Adorno, 16.8.35, *Briefe* II pp. 686–687).

To close this introduction, a summary of the content of the Exposé given by Benjamin to Gerhard Scholem: 'This work represents the philosophical realization of surrealism – and hence its sublation (*Aufhebung*) – as well as an attempt to establish the image of history even in the most unpretentious fixings of existence, its rejects' (9.8.35, *Briefe* II pp. 684-685).

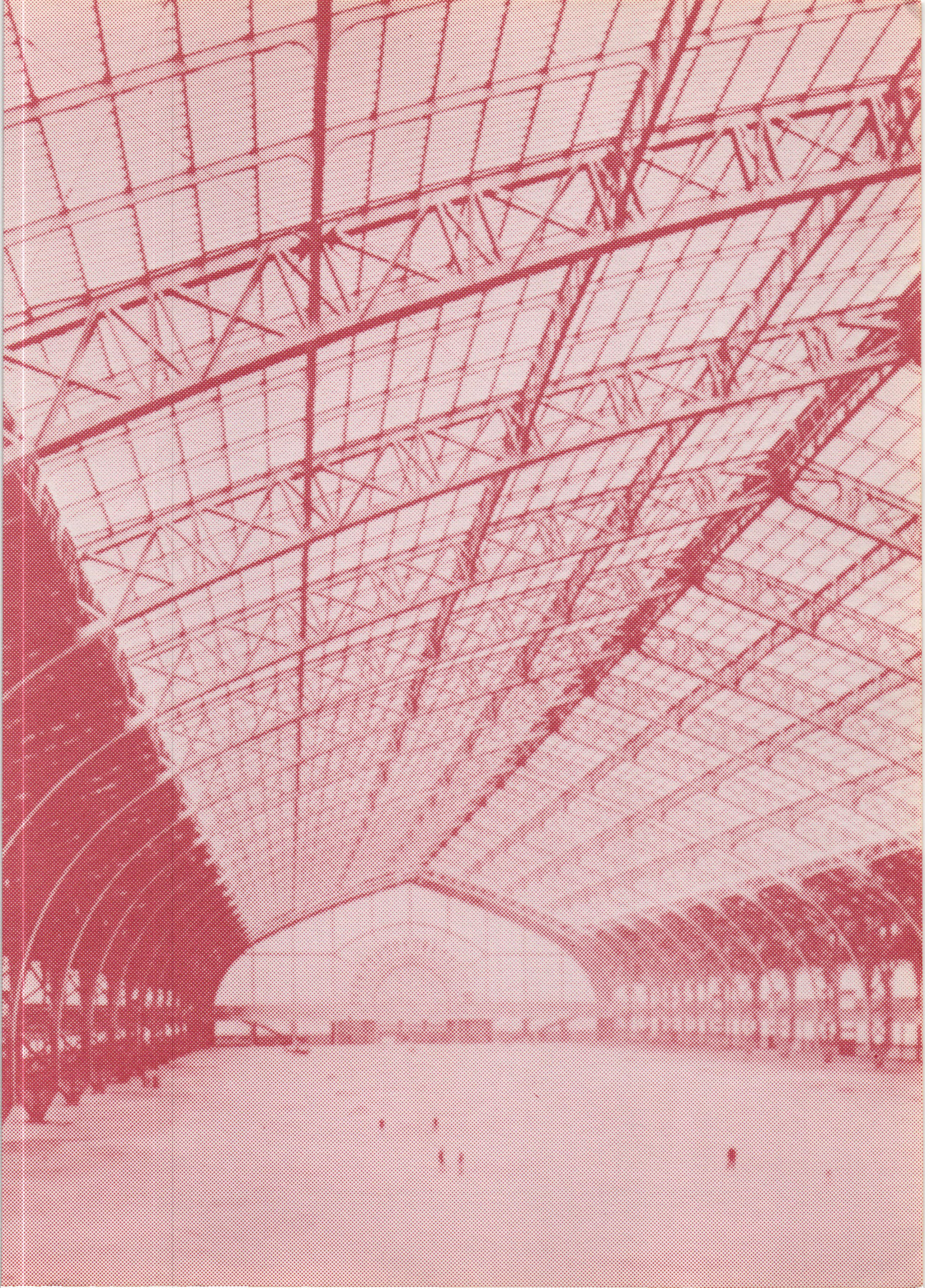
[1] See T. W. Adorno: *Prisms* (London 1967), p. 239 and Rosemarie Heise: 'Vorbemerkungen zu einem Vergleich der Baudelaire Fassungen', *Alternative 56/57* (Berlin October-December 1967, pp. 198-202).

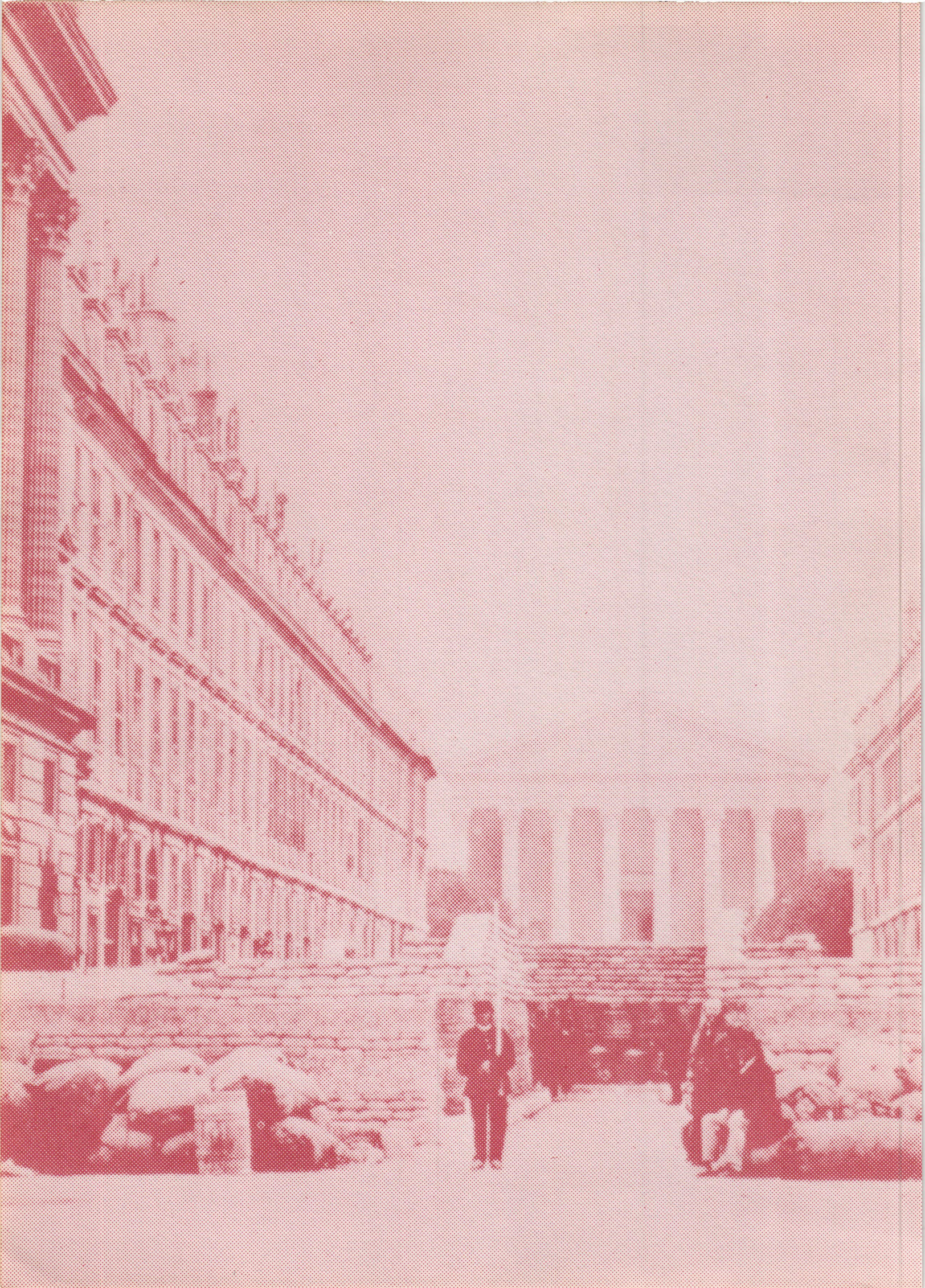
[2] See the issue of *Alternative op. cit.*

Bibliography

Der Begriff der Kunstkritik in der deutschen Romantik (Bern 1920).
'Goethes Wahlverwandschaften' in *Illuminationen.*
Ursprung des deutschen Trauerspiels (Berlin 1928; revised edition Frankfurt 1963).
Einbahnstrasse (Berlin 1928; Frankfurt 1960).
'Der Autor als Produzent' in *Versuche uber Brecht* (Frankfurt 1966).
'Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit' in *Illuminationen.*
Berliner Kindbeit um Neunzehnhundert (Frankfurt 1950).
Stadtebilder (Frankfurt 1960).
'Einige Motive bei Baudelaire' in *Illuminationen.*
'Zentralpark' in *Illuminationen.*
Schriften Vols. I and II (incomplete) edited by T. W. and G. Adorno (Frankfurt 1955).
Illuminationen (Frankfurt 1961) — includes 'Paris, die Hauptstadt des XIX Jahrhunderts'.
Briefe Vols. I and II, edited by G. Scholem and T. W. Adorno (Frankfurt 1966).
See also Rudolf Tiedermann: *Studien zur Philosophie Walter Benjamins,* Frankfurter Beiträge zur Soziologie No. 16 (Frankfurt 1965).

See also Illuminations, essays by Walter Benjamin, Harcourt Brace, New York, 1968.





Paris: Capital of the Nineteenth Century

'Paris, Hauptstadt des XIX Jahrhunderts' is published in Illuminationen *by Suhrkamp Verlag, Frankfurt am Main, copyright 1955. Reprinted by permission of the publishers. Translation courtesy of the New Left Review. The illustrations by Jean Grandville are from the nineteenth century book* Un Autre Monde.

The waters are blue and the plants pink;
the evening is sweet to look upon;
one goes for a stroll. The great ladies are
out for a stroll; behind them walk lesser
ladies.
Nguyen-Trong-Hiep: *Paris capital of France* (1897)

I Fourier or the Arcades

De ces palais les colonnes magiques
A l'amateur montrent de toutes parts
Dans les objets qu'étalent leurs portiques
Que l'industrie est rivale des arts.
Nouveaux tableaux de Paris (1828)[1]

Most of the Paris arcade came into being during the decade and a half which followed 1822. The first condition for their emergence was the boom in the textile trade. The *magasins de nouveaute*, the first establishments that kept large stocks of goods on the premises, began to appear. They were the forerunners of the department stores. It was the time of which Balzac wrote: 'Le grand poème de l'étalage chante ses strophes de couleur depuis la Madeleine jusqu'à la porte Saint-Denis.'[2] The arcades were centres of the luxury-goods trade. The manner in which they were fitted out displayed Art in the service of the salesman. Contemporaries never tired of admiring them. For long afterwards they remained a point of attraction for foreigners. An 'Illustrated Paris Guide' said: 'These arcades, a new contrivance of industrial luxury, are glass-covered, marble-floored passages through entire blocks of houses, whose proprietors have joined forces in the venture. On both sides of these passages, which obtain their light from above, there are arrayed the most elegant shops, so that such an arcade is a city, indeed a world, in miniature.' The arcades were the setting for the first gas-lighting.

The beginnings of construction in iron constituted the second condition for the appearance of the arcades. The Empire had seen in this technique a contribution to the renewal of architecture along ancient Greek lines. The architectural theorist Bötticher expressed the general conviction when he said that 'with regard to the art-forms of the new system, the formal principle of the Hellenic mode' must come into force. Empire was the style of revolutionary terrorism, for which the State was an end in itself. Just as Napoleon little realized the functional nature of the State as instrument of the rule of the bourgeois class, so the master-builders of his time equally little realized the functional nature of iron, with which the constructional principle entered upon its rule in architecture. These master-builders fashioned supports in the style of the Pompeian column, factories in the style of dwelling-houses, just as later the first railway stations were modelled on *chalets*. 'Construction occupies the role of the sub-conscious.' Nevertheless, the concept of the engineer, which came originally from the Revolutionary Wars, began to gain ground, and the struggles between builder and decorator, Ecole Polytechnique and Ecole des Beaux Arts, began.

With iron, an artificial building material appeared for the first time in the history of architecture. It went through a development whose tempo accelerated during the course of the century. This received its decisive impulse when it turned out that the locomotive, with which experiments had been made since the end of the 'twenties, could only be utilized on iron rails. The rail was the first iron unit of construction, the forerunner of the girder. Iron was avoided for dwelling-houses, and made use of for arcades, exhibition halls, railway

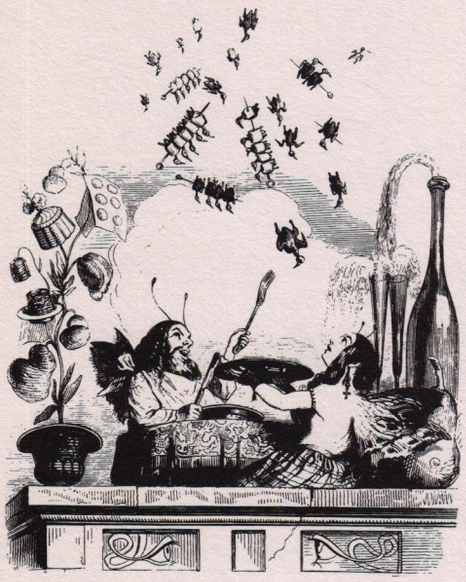
[1] 'The magic columns of these palaces show to the connoisseur on every side, in the articles which their portals display, that industry rivals the arts.'

[2] 'The great poem of display recites its stanzas of colour from the Madeleine to the gate of Saint-Denis.'

stations – buildings which served transitory purposes. Simultaneously, the architectonic areas in which glass was employed were extended. But the social conditions for its increased utilization as a building material only came into being a hundred years later. In Scheerbart's *Glass Architecture* (1914) it still appeared in the context of the Utopia.

* * *

Chaque époque rêve la suivante
Michelet: *Avenir! Avenir!*[3]



To the form of the new means of production, which to begin with is still dominated by the old (Marx), there correspond images in the collective consciousness in which the new and the old are intermingled. These images are ideals, and in them the collective seeks not only to transfigure, but also to transcend, the immaturity of the social product and the deficiencies of the social order of production. In these ideals there also emerges a vigorous aspiration to break with what is outdated – which means, however, with the most recent past. These tendencies turn the fantasy, which gains its initial stimulus from the new, back upon the primal past. In the dream in which every epoch sees in images the epoch which is to succeed it, the latter appears coupled with elements of prehistory – that is to say of a classless society. The experiences of this society, which have their store-place in the collective unconscious, interact with the new to give birth to the utopias which leave their traces in a thousand configurations of life, from permanent buildings to ephemeral fashions.

These relationships became discernible in the Utopia devised by Fourier. Their innermost origin lay in the appearance of machines. But this fact was not expressed directly in their utopian presentation; this derived both from the amorality of the market society and from the false morality mustered to serve it. The phalanstery was to lead men back into relations in which morality would become superfluous. Its highly complicated organization resembled machinery. The imbrications of the *passions*, the intricate combination of the *passions mecanistes* with the *passion cabaliste*, were primitive analogies based on the machine, formed in the material of psychology. This machinery, formed of men, produced the land of Cockaigne, the primal wish-symbol, that Fourier's Utopia had filled with new life.

In the arcades, Fourier had seen the architectonic canon for the phalanstery. Their reactionary transformation at Fourier's hands was characteristic: while they originally served social ends, with him they became dwelling-places. The phalanstery became a city of arcades. Fourier established in the narrow formal world of the Empire the highly-coloured idyll of Biedermeier. Its fading brilliance lasted until Zola. The latter took over Fourier's ideas in his *Travail,* just as he took his leave of the arcades in *Therese Raquin.* – Marx broke a lance on Fourier's behalf, defending him from Carl Grün, and stressed his 'gargantuan concept of man.' He also turned his attention to Fourier's humour. As a matter of fact, Jean Paul in his *Levada* is as related to Fourier the pedagogue as Scheerbart in his *Glass Architecture* is to Fourier the creator of Utopias.

* * *

II Daguerre or the Dioramas

Soleil, prends garde à toi!
A. J. Wiertz: *Oeuvres Litteraires*
(Paris 1870)[4]

With construction in iron, architecture began to outgrow art; painting did the same in its turn with the dioramas. Preparation for the dioramas reached its peak just at the moment when the arcades began to appear. Tireless efforts had been made to render the dioramas, by means of technical artifice, the *locus* of a perfect imitation of nature. People sought to copy the changing time of day in the countryside, the rising of the moon, or the rushing of the waterfall. David counselled his pupils to draw from Nature in their dioramas. While the dioramas strove to produce life-like transformations in the Nature portrayed in them, they foreshadowed, via photography, the moving-picture and the talking-picture.

Contemporary with the dioramas there was a dioramic literature. *Le livre des Cent-et-Un, Les Francais peints par eux-memes, Le diable a Paris, La*

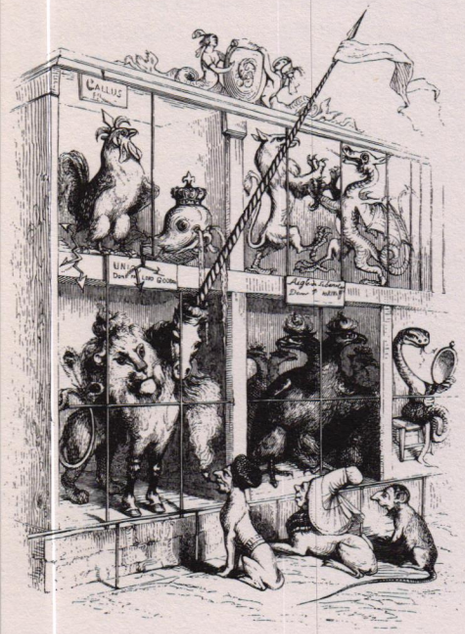
[3] 'Every epoch dreams its successor.' Michelet: *Future! Future!*

[4] 'Sun, look out for yourself.'

grande ville belonged to this. These books were a preparation for the belletristic collective work for which Girardin created a home in the 'thirties with the *feuilleton.* They consisted of individual sketches whose anecdotal form corresponded to the plastically arranged foreground of the dioramas, and whose documentary content corresponded to their painted background. This literature was socially dioramic too. For the last time the worker appeared, away from his class, as a stage-extra in an idyll.

The dioramas, which signalled a revolution in the relationship of art to technology, were at the same time the expression of a new attitude to life. The town-dweller, whose political supremacy over the countryside was frequently expressed in the course of the century, made an attempt to bring the country into the town. In the dioramas, the town was transformed into landscape, just as it was later in a subtler way for the *flâneurs.* Daguerre was a pupil of the diorama-painter Prévost, whose establishment was situated in the Arcade of the Dioramas. Description of the dioramas of Prévost and of Daguerre. In 1839 Daguerre's diorama was burned down. In the same year he announced the invention of the daguerreotype.

Arago presented photography in a speech in the Assembly. He assigned to it its place in the history of technical science. He prophesied its scientific applications. Whereupon the artists began to debate its artistic value. Photography led to the destruction of the great professional standing of the miniature-portraitists. This did not happen purely for economic reasons. The early photography was artistically superior to miniature-portraiture. The technical reason for this lay in the long exposure time, which necessitated the most intense concentration on the part of the subject. The social reason for it lay in the circumstance that the first photographers belonged to the *avant-garde* and that their clientele for the most part came from it. Nadar's lead over his professional colleagues was demonstrated when he embarked on taking snapshots in the Paris sewers. Thus for the first time discoveries were required of the lens. And its significance became all the greater as, in the light of the new technical and social reality, the subjective contribution to artistic and graphic information was seen to be increasingly questionable.



The World Exhibition of 1855 was the first to have a special exhibit called 'Photography.' In the same year Wiertz published his great article on photography, in which he assigned to it the philosophical enlightenment of painting. He understood this enlightenment, as his own paintings show, in a political sense. Wiertz can thus be designated as the first person who, if he did not foresee, at least helped to pave the way for montage, as the agitational utilization of photography. As the scope of communications increased, the informational importance of painting diminished. The latter began, in reaction to photography, firstly to emphasize the coloured elements of the image. As Impressionism gave way to Cubism, painting created for itself a broader domain, into which for the time being photography could not follow it. Photography in its turn, from the middle of the century onwards, extended enormously the sphere of the market-society; for it offered on the market, in limitless quantities, figures, landscapes, events which had previously been utilizable either not at all, or only as a picture for one customer. And in order to increase sales, it renewed its objects by means of modish variations in camera-technique, which determined the subsequent history of photography.

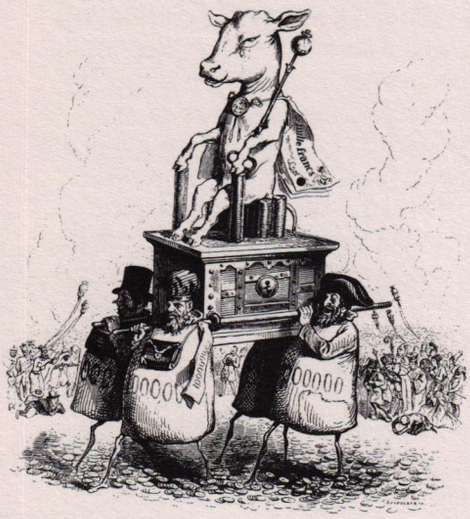
III Grandville or the World Exhibitions

Oui, quand le monde entier, de Paris jusqu'en Chine,
O divin Saint-Simon, sera dans ta doctrine,
L'âge d'or doit renaître avec tout son éclat,
Les fleuves rouleront du thé, du chocolat;
Les moutons tout rôtis bondiront dans la plaine,
Et les brochets au bleu nageront dans la

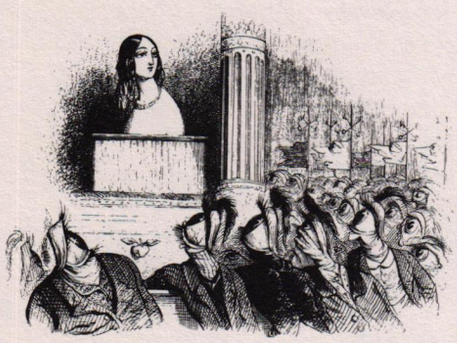
World exhibitions were places of pilgrimage to the fetish Commodity. 'L'Europe s'est déplacé pour voir des marchandises,'[5] said Taine in 1855. The world exhibitions were preceded by national exhibitions of industry, of which the first took place in 1798 on the Champs de Mars. This was a result of the desire 'to amuse the working-class, and is for the latter a festival of emancipation.' The workers were to the fore as customers. The framework of the entertainment industry had not yet been formed. The public festival provided it. Chaptal's speech on industry opened this exhibition. – The

[5] 'All Europe has set off to view goods.'

Seine;
Les épinards viendront au monde fricassés,
Avec des croûtons frits tout au tour concassés.
Les arbres produiront des pommes en compotes
Et l'on moissonnera des cerricks et des bottes;
Il neigera du vin, il pleuvera des poulets,
Et du ciel les canards tomberont aux navets.
Lauglé et Vanderbusch: *Louis et le Saint-Simonien* (1832)[6]



Fashion: Mr Death! Mr Death!
Leopardi: *Dialogue between Fashion and Death*



IV Louis-Philippe or the Interior

Une tête, sur la table de nuit, repose
Comme une renoncule.
Baudelaire: *Une martyre*[7]

Saint-Simonians, who projected the industrialization of the earth, appropriated the idea of world exhibitions. Chevalier, the first authority in the new field, was a pupil of Enfantin and editor of the Saint-Simonian paper *Globe.* The Saint-Simonians had anticipated the development of the world-economy, but not the class-struggle. Their part in industrial and commercial enterprises around the middle of the century went together with a helplessness in those questions which concerned the proletariat. The world exhibitions glorified the exchange-value of commodities. They created a framework in which their use-value receded into the background. They opened up a phantasmagoria into which people entered in order to be distracted. The entertainment industry made that easier for them by lifting them to the level of the commodity. They yielded to its manipulations while savouring their alienation from themselves and from others.

– The enthronement of the commodity and the glitter of distraction around it was the secret theme of Grandville's art. The correlative to this was the ambivalence between its Utopian and its cynical element. Its refinements in the representation of dead objects correspond to what Marx calls the 'theological capers' of the commodity. They took clear shape in the *spécialité:* under Grandville's pencil, a way of designating goods which came into use around this time in the luxury industry transformed the whole of Nature into specialities. He presented the latter in the same spirit in which advertisements – this word too (*réclames*) came into existence at that time – were beginning to present their wares. He ended in madness.

* * *

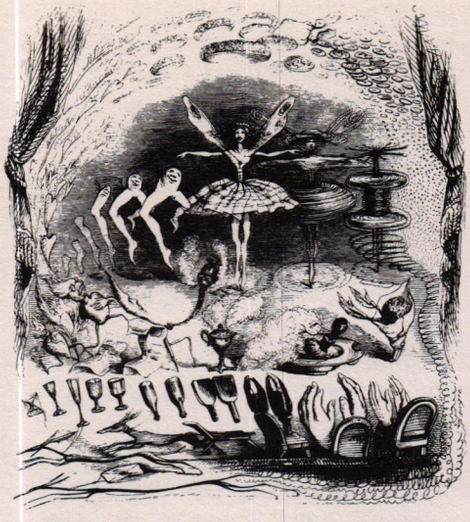
The world exhibitions erected the universe of commodities. Grandville's fantasies transmitted commodity-character onto the universe. They modernised it. The ring of Saturn became a cast-iron balcony, upon which the inhabitants of Saturn take the air of an evening. The literary counterpart of this graphic Utopia was represented by the books of Fourier's follower, the naturalist Toussenal. – Fashion prescribed the ritual by which the fetish Commodity wished to be worshipped, and Grandville extended the sway of fashion over the objects of daily use as much as over the cosmos. In pursuing it to its extremes, he revealed its nature. It stands in opposition to the organic. It prostitutes the living body to the organic world. In relation to the living it represents the rights of the corpse. Fetishism, which succumbs to the sex-appeal of the inorganic, is its vital nerve; and the cult of the commodity recruits this to its service.

Victor Hugo published a manifesto for the Paris World Exhibition of 1867: 'To the Peoples of Europe.' Their interests had been championed earlier and more unequivocally by the delegations of French workers, of which the first had been sent to the London World Exhibition of 1851, and the second, of 750 members, to that of 1862. The latter was of direct importance for Marx's foundation of the International Workingmen's Association.
– The phantasmagoria of capitalist culture attained its most radiant unfurling in the World Exhibition of 1867. The Second Empire was at the height of its power. Paris was confirmed in its position as the capital of luxury and of fashion. Offenbach set the rhythm for Parisian life. The operetta was the ironical Utopia of a lasting domination of Capital.

Under Louis-Philippe, the private citizen entered upon the historical scene. The extension of the apparatus of democracy by means of a new electoral law coincided with the parliamentary corruption that was organized by Guihot. Under cover of this, the ruling class made history while it pursued its business

[6] 'Yes, when the entire world, from Paris as far as China, O divine Saint-Simon, follows your doctrine, then must the Golden Age return in all its brilliance, the rivers will flow with tea, with chocolate; sheep already roast will gambol in the plain, and buttered pike will swim in the Seine; fricasseed spinach will spring from the ground, with a border of crushed fried bread. The trees will bear stewed apples, and bales and sheaves will be harvested; wine will fall like snow, and chickens like rain, and ducks will drop from the sky with a garnish of turnips.'

[7] 'A head rests upon the night-table like a ranunculus.'



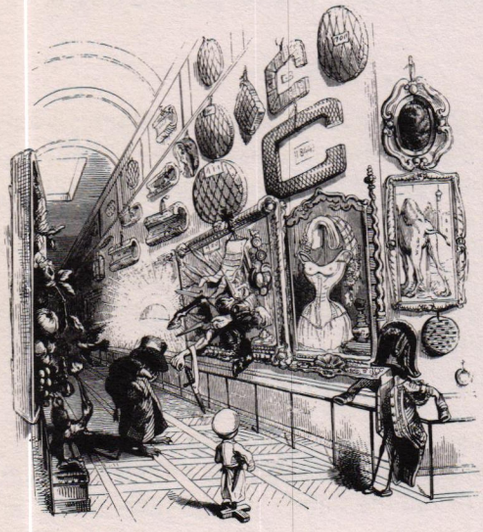
affairs. It encouraged the construction of railways in order to improve its holdings. It supported the rule of Louis-Philippe as that of the private businessman. With the July Revolution the bourgeoisie had realized the aims of 1789 (Marx).

For the private citizen, for the first time the living-space became distinguished from the place of work. The former constituted itself as the interior. The counting-house was its complement. The private citizen who in the counting-house took reality into account, required of the interior that it should maintain him in his illusions. This necessity was all the more pressing since he had no intention of adding social preoccupations to his business ones. In the creation of his private environment he suppressed them both. From this sprang the phantasmagorias of the interior. This represented the universe for the private citizen. In it he assembled the distant in space and in time. His drawing-room was a box in the world-theatre.

Digression on *art nouveau.* The shattering of the interior took place around the turn of the century in *art nouveau.* And yet the latter appeared, according to its ideology, to bring with it the perfecting of the interior. The transfiguration of the lone soul was its apparent aim. Individualism was its theory. With Vandervelde, there appeared the house as expression of the personality. Ornament was to such a house what the signature is to a painting. The real significance of *art nouveau* was not expressed in this ideology. It represented the last attempt at a sortie on the part of Art imprisoned by technical advance within her ivory tower. It mobilized all the reserve forces of interiority. They found their expression in the mediumistic language of line, in the flower as symbol of the naked, vegetable Nature that confronted the technologically armed environment. The new elements of construction in iron – girder-forms – obsessed *art nouveau.* Through ornament, it strove to win back these forms for Art. Concrete offered it new possibilities for the creation of plastic forms in architecture. Around this time the real centre of gravity of the sphere of existence was displaced to the office. The de-realized centre of gravity created its abode in the private home. Ibsen's *Masterbuilder* summed up *art nouveau:* the attempt of the individual, on the basis of his interiority, to vie with technical progress leads to his downfall.

* * *

Je crois . . . à mon âme; la Chose
Léon Deubel: *Oeuvres* (Paris 1929)[8]



The interior was the place of refuge of Art. The collector was the true inhabitant of the interior. He made the glorification of things his concern. To him fell the task of Sisyphus which consisted of stripping things of their commodity character by means of his possession of them. But he conferred upon them only connoisseur's value, rather than use-value. The collector dreamed that he was in a world which was not only far-off in distance and in time, but which was also a better one, in which to be sure people were just as poorly provided with what they needed as in the world of everyday, but in which things were free from the bondage of being useful.

The interior was not only the private citizen's universe, it was also his casing. Living means leaving traces. In the interior, these were stressed. Coverings and antimacassars, boxes and casings, were devised in abundance, in which the traces of everyday objects were moulded. The resident's own traces were also moulded in the interior. The detective story appeared, which investigated these traces. The *Philosophy of Furniture,* as much as his detective stories, shows Poe to have been the first physiognomist of the interior. The criminals of the first detective novels were neither gentlemen nor apaches, but middle-class private citizens.

V Baudelaire or the Streets of Paris

Tout pour moi devient allégorie.
Baudelaire: *Le Cygne*[9]

Baudelaire's genius, which drew its nourishment from melancholy, was an allegorical one. With Baudelaire, Paris for the first time became the subject of lyrical poetry. This poetry is no local folklore; the allegorist's gaze which falls upon the city is rather the gaze of alienated man. It is the gaze of the

[8] 'I believe . . . in my soul: the Thing.' . . . .
[9] 'Everything, for me, becomes allegory.'

flâneur, whose way of living still played over the growing destitution of men in the great city with a conciliatory gleam. The *flâneur* still stood at the margins, of the great city as of the bourgeois class. Neither of them had yet overwhelmed him. In neither of them was he at home. He sought his asylum in the crowd. Early contributions to the physiognomy of the crowd are to be found in Engels and in Poe. The crowd was the veil from behind which the familiar city as phantasmagoria beckoned to the *flâneur.* In it, the city was now landscape, now a room. And both of these went into the construction of the department store, which made use of *flânerie* itself in order to sell goods. The department store was the *flâneur's* final coup.

As *flâneurs,* the intelligentsia came into the market-place. As they thought, to observe it – but in reality it was already to find a buyer. In this intermediary stage, in which they still had Maecenases, but were already beginning to familiarize themselves with the market, they took the form of Bohemia. To the uncertainty of their economic position corresponded the uncertainty of their political function. The most spectacular expression of this was provided by the professional conspirators, who without exception belonged to Bohemia. Their first field of activity was the army, later on it became the petty bourgeoisie, and on occasion the proletariat. However, this group saw in the real leaders of the latter its adversary. The Communist Manifesto put an end to its political existence. Baudelaire's poetry drew its force from the rebellious pathos of this group. He took the part of the asocial. He achieved his only sexual relationship with a whore.

* * *

Facilis descensus Averni.
Virgil: *Aeneid*[10]

It is the unique quality of Baudelaire's poetry that the images of the Woman and of Death intermingle in a third – that of Paris. The Paris of his poems is a sunken city, and more submarine than subterranean. The chthonic elements of the city – its topographical formation, the old abandoned bed of the Seine – have indeed found in him a mould. Yet with Baudelaire, in the 'death-loving idyll' of the city, there is decidedly a social, and modern, sub-stratum. The modern is a main stress in his poetry. As spleen he shatters the ideal (*Spleen et Idéal*). But it is precisely the modern which always conjures up prehistory. That happens here through the ambiguity which is peculiar to the social relations and events of this epoch. Ambiguity is the figurative appearance of the dialectic, the law of the dialectic at a standstill. This standstill is Utopia, and the dialectical image therefore a dream-image. The commodity clearly provides such an image: as fetish. The arcades, which are both house and stars, provide such an image. And such an image is provided by the whore, who is seller and commodity in one.

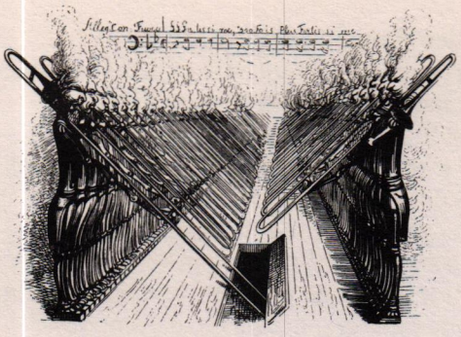
* * *

Le voyage pour connaître ma géographie
Record of a journey. (Paris 1907)[11]

The last poem of the *Fleurs du mal: Le Voyage* 'O mort, vieux capitaine, il est temps, levons l'ancre.'[12] The *flâneur's* last journey: death. Its goal: novelty. 'Au fond de l'inconnu pour trouver du nouveau.'[13] Novelty is a quality which does not depend on the use value of the commodity. It is the source of the illusion which belongs inalienably to the images which the collective unconscious engenders. It is the quintessence of false consciousness, of which fashion is the tireless agent. This illusion of novelty is reflected, like one mirror in another, in the illusion of infinite similarity. The product of this reflection was the phantasmagoria of the 'history of civilization' in which the bourgeoisie drank its false consciousness to the dregs. Art, which began to have doubts about its function, and ceased to be 'inséparable du l'utilité' (Baudelaire), was forced to make novelty its highest value. Its *arbiter novarum rerum* became the snob. He was for art what the dandy was for fashion.

– Just as in the 17th century allegory became the canon of dialectical imagery, so in the 19th century did *nouveauté.* And the newspapers marched shoulder to shoulder with the *magasins de nouveauté.* The press organized

[10] 'The road to Hell is easy.'
[11] 'The journey to discover my geography.'
[12] 'O death, old captain, it is time, let us weigh anchor.'
[13] 'To the depths of the unknown to find something new.'



the market of spiritual values, upon which at first a boom developed. The non-conformists rebelled against the surrender of art to the market. They rallied round the banner of *L'art pour l'art.* From this slogan there sprang the conception of the total work of art, which attempted to isolate art against the development of technology. The rites with which it was celebrated were the counterpart of the distractions which glorified the commodity. Both left out of consideration the social being of man. Baudelaire gave way to the delusion of Wagner.

VI Haussmann or the Barricades

J'ai le culte du Beau, du Bien, des grandes choses,
De la balle nature inspirant le grand art,
Qu'il enchante l'oreille ou charme le regard;
J'ai l'amour du printemps en fleurs: femmes et roses.
Baron Haussmann: *Confession d'un lion devenu vieux*[14]

Haussmann's urbanistic ideal was one of views in perspective down long street-vistas. It corresponded to the tendency which was noticeable again and again during the 19th century, to ennoble technical exigencies with artistic aims. The institutions of the worldly and spiritual rule of the bourgeoisie, set in the frame of the *boulevards,* were to find their apotheosis. Before their completion, *boulevards* were covered over with tarpaulins, and unveiled like monuments.

Das Blüthenreich der Dekorationen,
Der Reiz der Landschaft, der Architektur
Und aller Szenerie-Effekt beruhen
Auf dem Gesetz der Perspektive nur.
Franz Böhle: *Theater-Katechismus*[15]

– Haussmann's efficiency fitted in well with the idealism of Louis Napoleon. The latter encouraged finance capital. Paris experienced a great speculative boom. Speculation on the stock-exchange pushed into the background the forms of gambling that had come down from feudal society. To the phantasmagoria of space, to which the *flâneur* was addicted, there corresponded the phantasmagoria of time, to which the gambler dedicated himself. Gambling transformed time into a narcotic. Lafargue defined gambling as a miniature reproduction of the mysteries of the market-situation. The expropriations caused by Haussmann engendered a wave of fraudulent speculation. The judgments of the Court of Cassation, which drew its inspiration from the bourgeois and Orleanist opposition, increased the financial risk of Haussmannization. Haussmann attempted to shore up his dictatorship and to place Paris under an emergency régime. In 1864 he expressed his hatred for the rootless population of the great city in a speech in the Assembly. This population kept increasing as a result of his works. The increase of rents drove the proletariat into the suburbs. The Paris *quartiers* thereby lost their characteristic physiognomy. The red belt appeared. Haussmann gave himself the name *artiste démolisseur.*[16] He felt a vocation for his work and stressed the fact in his memoirs. Meanwhile, as far as the Parisians were concerned, he alienated their city from them. They no longer felt at home in it. They began to become conscious of the inhuman character of the great city. Maxime du Camp's monumental work *Paris* owed its origin to this consciousness. The *Jérémiades d'un Haussmannisé* gave it the form of a biblical lament.

The real aim of Haussmann's works was the securing of the city against civil war. He wished to make the erection of barricades in Paris impossible for all time. With the same purpose, Louis-Philippe had already introduced wooden paving. Nonetheless, the barricades played a role in the February Revolution. Engels gave some thought to the technique of barricade fighting. Haussmann intended to put a stop to it in two ways. The breadth of the streets was to make the erection of barricades impossible, and new streets were to provide the shortest route between the barracks and the working-class areas. Contemporaries christened the undertaking: 'L'embellissement stratégique.'[17]

* * *

Fais voir, en déjouant la ruse,
O République, à ces pervers
Ta grande face de Méduse
Au milieu de rouges éclairs.
Chanson d'ouvriers vers 1850[18]

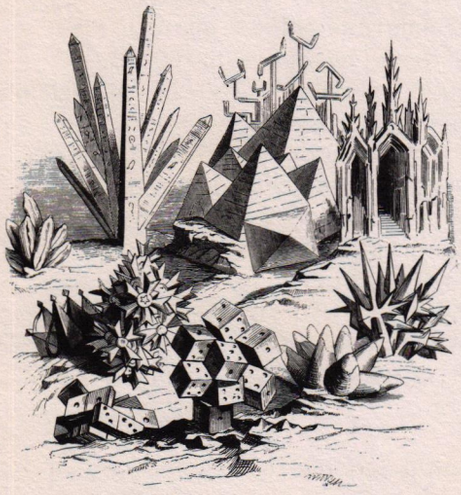
The barricade was resurrected anew during the Commune. It was stronger and safer than ever. It extended across the great boulevards, often reached

[14] 'I worship the Beautiful, the Good, great things, beautiful nature inspiring great art, whether it enchants the ear or charms the eye; I love the spring in flower: women and roses.' Baron Haussmann: *Confession of a lion who has grown old.*
[15] 'The wealth of decoration, the charm of the countryside, of architecture and of all scenery-effects only depend upon the law of perspective.'
[16] 'Artist in demolition.'
[17] 'Strategic beautification.'
[18] 'Reveal, by exposing the fraud, O Republic, to those evil men your great Medusa's face amidst red lightning-flashes.'

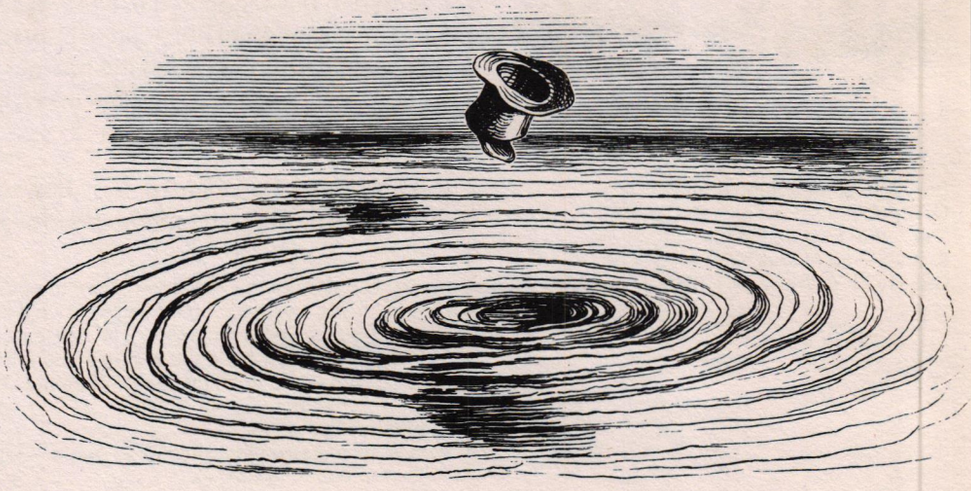
first-storey level, and shielded the trenches situated behind it. As the Communist Manifsto ended the epoch of the professional conspirators, so did the Commune put an end to the phantasmagoria that held sway over the freedom of the proletariat. It shattered the illusion that the task of the proletarian revolution was, hand in hand with the bourgeoisie, to complete the work of 1789. This illusion dominated the period from 1831 to 1871, from the Lyons Uprising to the Commune. The bourgeoisie had never shared this misapprehension. Its struggle against the social rights of the proletariat began right from the great revolution, and coincided with the philanthropic movement, which masked it and which experienced its most significant development under Napoleon III. Under him, there appeared the movement's monumental work: Le Play's *Ouvriers européens.* Side by side with the concealed position of philanthropy, the bourgeoisie had at all times occupied the open one of the class struggle. As early as in 1831 it recognized in the *Journal des Débats:* 'Every manufacturer lives in his factory like the plantation-owner among his slaves.' The failure of the old working-class insurrections was brought about by the fact that no theory of revolution showed them the way, but on the other hand this was also the condition of the immediate power and enthusiasm with which it set about the construction of a new society. This enthusiasm, which reached its peak in the Commune, at times won over to the working class the best elements of the bourgeoisie, but in the end led it to defeat at the hands of its worst elements. Rimbaud and Courbet declared themselves for the Commune. The burning of Paris was a fitting conclusion to Haussmann's work of destruction.

* * *

My good father had been in Paris
Karl Gutzkow: *Letters from Paris* (1842).



Balzac was the first to speak of the ruin of the bourgeoisie. But it was surrealism which first allowed its gaze to roam freely over it. The development of the forces of production had turned the wish-symbols of the previous century into rubble, even before the monuments which represented them crumbled. This development during the 19th century liberated the forms of creation from art, just as in the 16th century the sciences freed themselves from philosophy. A start was made by architecture as engineering. There followed the reproduction of Nature as photography. The creation of fantasies was preparing to become practical as commercial art. In the *feuilleton,* creative writing bowed to the exigencies of layout. All these products were on the point of entering the market as commodities. But they still lingered on the threshold. From this epoch spring the arcades and the interiors, the exhibition-halls and the dioramas. They are residues of a dream-world. The utilization of dream-elements in waking is the textbook example of dialectical thought. Hence dialectical thought is the organ of historical awakening. Every epoch not only dreams the next, but while dreaming impels it towards wakefulness. It bears its end within itself, and reveals it — as Hegel already recognized — by a ruse. With the upheaval of the market economy, we begin to recognize the monuments of the bourgeoisie as ruins even before they have crumbled.



Waiting for Printout
Toynbee, Arnold, *Cities of Destiny*, McGraw-Hill, 1967: 1
Woods: 2

Transformations of the Initial Structure
Courtesy of Steinberg, Saul, 1, 2, 3, 10
Neubauer, Erika *Lustgarten des Barock*, Salzburg, Residenz Verlag, 1966: 5, 11
Williams, Emmet Ed. *An Anthology of Concrete Poetry*, New York, Something Else Press, 1967: 7, 30
La Chasse, Paris, La Galerie Pittoresque Gallimand: 8, 16, 27
Bachmann-Fritzsch, *Deutsches Spielzeug*, Frankfort, Bertelsmann, 1965: 9, 13, 17
Dürer, Albrecht, *Etliche Underricht zu Befestigung der Stett, Schloss, und Flicken*, Nurenberg, 1527: 18
Braithwaite, David, *Fairground Architecture*, London, Hugh Evely, 1968: 11, 12, 29
Genoves, Marlborough-Gerson Gallery, New York: 14
(Joseph J. Linhart Collection), 28
Waddington, C. H., *The Strategy of the Genes*, London, George Allen & Unwin Ltd., 1957: 20, 21
British School at Rome: 22
Carre Bleu, Numeró 3, 1963: 24
Pollack, Jackson, Museum of Modern Art, New York: 26
The Espoo Project
Arkkitehtuurikilpailuja, Journal Finnish Architectural Competitions, 1967-8, Helsinki, SAFA, 1, 2
Columbia University, Department of Architecture, New Town Exhibition: 2, 3, 4
Palladio, 1960, July-December: 7, 8
Procivitate, Bruxelles, 1965: 9

Experimental Strategies: Notes for Environmental Design
Evans, Walker, *American Photographs*, New York, The Museum of Modern Art, 1938: 1
Modern Art, 1938: 1
Hollein, Hans, Collection of the Museum of Modern Art: 2
Le Corbusier (Charles-Edouard Jeanneret-Gris), *Vers une Architecture*, Paris, Editions Vincent, Freal & Cie., 1930: 3, 4
Engineering News, Feb. 23d, 1911, p. 221: 5
Author: 7, 10, 15, 16
Alcan Universal Homes: 8, 9
Papademetriou, Peter: 11
Ruscha, Edward, *Every Building on the Sunset Strip*, Los Angeles, Edward Ruscha, 1966: 12, 13, 14
Paris Match: 17, 18
La Presse: 19

Mass Communication on the People Freeway
Our Wonder World: A Library of Knowledge, Chicago, Geo. L. Shuman, 1914: 3
Klee, Paul, Portion of *A Girl Possessed*, Rolf Bürgi Coll., Bern: 2
Klee, Paul, Portion of *Battle Scene from the Comic Operatic Fantasy 'The Seafarer'*, Dürst-Haass, Muttenz, Switzerland: 4
Focillon, Henri, *Portion of Giovanni Battista Piranesi*, Paris, Alfa, 1963: 5

Marcuse
Montage by Joel Katz from photograph by Wide World

Maison de Verre
Taut, Bruno, *Die Neue Baukunst in Europa und Amerika*, Stuttgart, Hoffmann, 1929: 1
Taut, Bruno, *Modern Architecture*, London, The Studio Ltd.: 2
Werk, Feb. 1965: 3
Casabella #244, Nov. 1959: 4
Herbst, Rene, *Pierre Chareau*, Paris, Editions du Salon des Arts Menagers, 1954: 5
Decorative Art 1933, London, The Studio Ltd., 1933: 6
Brown, Theodore M., *The Work of G. Rietveld, Architect*, Utrect, Bruna & Zoon, 1958: 7
Le Corbusier (Charles Edouard Jeanneret-Gris) and Pierrefeu, Francois de, *The Home of Man*, London, 1948: 9
Sartoris, Alberto, *Gli Elementi dell'Architettura*, Milan, Hoepli: 10
Boesiger, Willy, *Le Corbusier et Pierre Jeanneret: Oeuvre Complete*, Zurich, Erlenback, 1935: 11
Hedendaagsche Architectuur in Nederland, Amsterdam, Kosmos 1937: 12
Deux Etudes de Paul Nelson: Architecture Hospitaliere-Maison de Sante et Pavillon de Chirurgie, Paris, Editions Albert Morance, 1936: 13, 14, 15, 16, 17, 18
The Museum of Modern Art Collection: 19
L'Architecture d'Aujourd'hui, September, 1931: 20
Frampton: 21
Domus, A. Hammacher, 28
La Phototeque, Paris, 40
Portrait of Bijvoert by Robert Vickery

Elephant House
Papademetriou, Peter

Lutyens' Architecture Restudied
Butler, A. S., *The Architecture of Sir Edwin Lutyens*, London, Country Life, 1950: 1a, b, 2, 3, 4, 5a, b, 6, 7, 8, 9, 10, 11, 12, 13, 14a, b, 16, 17, 18a, b, 19, 20, 22, 24, 25a, b, 26, 27a, b, 28, 29a, b, 30a, b, 31a, b, 33, 34, 35, 36, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 48, 49, 56
Weaver, Lawrence, *Houses and Gardens by Sir Edwin Lutyens*, London, Country Life, 1925: 15a, b, 23, 32, 61, 64a, 65
Sharma, Y. D., *Delhi and its Neighborhood*, Delhi, Archaeological Survey of India: 40
Burnham, Daniel H., and Bennett, Edward H., *Plan of Chicago*, Chicago, The Commercial Club, 1908: 50, 52
Lanchester, Henry Vaughan, *The Art of Town Planning*, New York, Charles Scribner's Sons, 1925: 51
Purdom, C. B., *The Building of Satellite Towns*, London, J. M. Dent and Sons, 1949: 53
Unwin, Taymond, *Town Planning in Practice*, London, T. Fisher Unwin, 1917: 54a
Creese, Walter L., *The Search for Environment*, New Haven, Yale University Press, 1966: 54b
Ferriday, Peter, Ed., *Victorian Architecture*, Royal Institute of British Architects: 57
Hitchcock, Henry-Russell, *In the Nature of Materials*, New York, Duell, Sloan and Pearce, 1942: 58a, b, 60, 62, 67, 68a, b
De Fries, Heinrich, Ed., *Frank Lloyd Wright: Aus dem Lebenswerks eines Architekten*, Berlin, 1926: 59
Manson, Grant C., *Frank Lloyd Wright: the First Golden Age*, New York, Reinhold, 1958: 63
Greenberg, 64b
Boesiger, W., *Le Corbusier; Oeuvre Complete 1946-1952*, Zurich, Editions Girsberger, 1955, photographs by Lucien Hervé, Paris: 69, 70, 71, 73, 74, 75, 76a, b, 78a, b, c
Boesiger, Willy *Le Corbusier et son atelier due de Sevres 35*, Zurich, Editions Girsberger, 1957, photographs by Lucien Herve, Paris: 77
Boesiger, Willy, *Le Corbusier: Oeuvre Complete, 1939-1946*, Zurich, Editions Girsberger, 1961: 79
Boesiger, W., and Stonorov, O., *Le Corbusier et Pierre Jeanneret: Oeuvre Complete, 1910-1929*, Zurich, Editions Erlenback, 1946: 81, 82, 84
Le Corbusier (Charles-Edouard Jeanneret-Gris), *Creation is a Patient Search*, translated by James Palmes, New York, Frederick A. Praeger, 1960: 82d
Boesiger, Willy, *Le Corbusier et P. Jeanneret: Oeuvre Complete 1929-1934*, Zurich, Editions Girsberger, 1948: 83

J.N.L. Durand's Architectural Theory
Rosenau, Helen, *Boulee's Treatise on Architecture*, London, Alec Tiranti, 1953: 1
Beenken, Herman, *Schopferische Bauiden der Deutschen Romantic*, Mainz, Matthias-Grünewald, 1959: 10

Paris: Capital of the Nineteenth Century
Grandville, Jean Ignace Isidore Gerard, *Un Autre Monde*, Paris, H. Fournier, 1844
Ponente, Nello, *The Structure of the Modern World*, Geneva, Skira, 1965, photograph by Chevojon
Guerin, André, *1871 La Commune*, Paris, Librairie Hachette, 1966
Portrait of Benjamin by Gisselle Freund