

English texts

Philippe Boudon The lessons to be learnt from Le Corbusier's experience at Pessac

This work of Philippe Boudon based on Le Corbusier's experience, illustrates on the one hand the complexity and the difficulty of humanistic architecture and on the other hand leads to a new attitude on the part of the architect confronted with his own work. For if, between the "plans" of the architect and the results of man's experiments and the passage of time, a whole mine of unknown elements comes to light, it is by the analysis of this process of experimentation that one is able to discern the fundamental ideas of a new town planning, of a new architecture that is truly humanistic.

At Pessac, Le Corbusier's work has not been understood, and has been subject to transformations, alterations and adaptations. M. Boudon, by observation and direct enquiry set out to discover the "why" and the "how" of this recreation of the work by the users. This is what gives the value — in terms of analysis and positive conclusions — to this excellent study.

An architect continuing where other architects have left off, that is perhaps the beginning of humanism in architecture.

The sociological and architectural study on which the present article is based is of the suburb built in 1925 at Pessac, near Bordeaux, by Le Corbusier. The alterations and transformations which have been undertaken by the inhabitants during the 40 years of its existence are greatly in excess of what one might have expected. In fact, one might be tempted to draw the conclusion that there has been a conflict between the architect's intentions and the inhabitants reactions, between everyday life and architecture. Le Corbusier said, in connection with Pessac, "It is always life, you know, which is right, the architect who is wrong". Pessac therefore poses a real humanistic problem in the life-architecture relationship.

The area, from the beginning, was the object of much sarcastic criticism and was called variously "the Moroccan city", "the Sultan's suburb", "the sugar lumps". For several years there was no water supply. Perspective buyers were difficult to attract due to the advanced architectural concept, and the first occupants were generally from a low social strata. Many of these were evicted for non-payment of the extremely low rent. The lack of maintenance was a contributing and contagious aspect of the overall deterioration. In the light of all this, it is clear that the public reaction was largely influenced by the social reputation of an area which had become almost taboo, rather than by the architecture itself. As to the architecture, it was the object of varied and often contradictory reactions.

The interest in undertaking a study in depth was to demonstrate that the surprising alterations which the architecture underwent represent a positive rather than a negative result. The spatial and structural concept (long windows, roof terrace, pilotis, open plan, free façade — all characteristic of Le Corbusier) allowed the occupants to arrange their dwellings in one of an unlimited number of combinations. One person interviewed thought of this as a new approach to house design. "What to me is interesting is that from a basic structure, the house can be altered to suit the occupant, rather than the occupant the house". It is also remarkable to hear in an ensemble based on a standard plan "the houses are extremely transformable — there are as many different possible arrangements as there are houses".

To this freedom of arrangement can be added the fact that the functions are not strictly allocated within the space and allow a choice: in this way the "place" — one cannot say room — to which Le Corbusier referred as the "parlour" can, at will, be used as an entrance hall, an office, a bedroom or a living-room — one tenant even used it as a hairdressing salon. Similarly the garages — and in houses designed for workers in 1925 the garages had possibilities as extra usable space — one finds bedrooms, kitchens, workshops and offices.

In his planning schemes, the great importance that Le Corbusier placed on the synthesis between the individual and the collective is well known. In his "unités" the emphasis is collective, in Pessac, "garden city". The influence of Fruges, the client, seems to have been important here, and the final form taken by the project was doubtless due to the dialectic between his objective of 'strictly individual houses' and that of Le Corbusier which in 1925 would have been "villa blocks" in which the collective concept dominates. The same preoccupation with the synthesis between collective necessity and individual problems is at the basis of the planning and architectural concept of Pessac, closely tied to the widespread standardization: "Standards are letters — and with these letters you must write the individual names of your future occupants". Be it from technical necessity or ideological will, standardization makes apparent another ambiguity in this study: on the one hand there is individual material and physical isolation, on the other the affirmation of this individuality in the face of collectivity. On the first point, the study shows that the grouping simultaneously favors social contact and individual

privacy by the layout of the houses: "There is a certain density in this layout without a feeling of being one on top of the other"; "One has the impression, once at home, that one really is at home." On the second point, it is apparent, despite what one might have thought in considering the alterations as a reaction against standardization, that the houses which have been most modified are not those which were most similar, but those which had the most individuality. The alterations, instead of being a reaction against conformity, are rather the translation of the conscience of an individuality which the occupants have discovered through standardization. It is here that Pessac ceases to appear as a failure, since the inhabitants have been able to feel and express their individuality, which they have done by signing their own names in their own way, as it were, rather than doing so in the manner of Le Corbusier.

This personalization could apparently not have been the case if an individuality had not been inherent in the concept. For Le Corbusier, however, Pessac was a failure, although the lessons which he learnt there were used in later work where the relationship between the individual and collective were reversed.

In closing, it is clear that if the architectural language of Le Corbusier and that of the occupants are out of phase — and it is precisely that which the first wished to express which has had least effect on the second — there is a certain incoherence both on the part of the architect, between his intentions and his acts, and on the part of the occupant, between his reactions expressed verbally and his actions in fact. Observation makes it plain that, despite the difference in language, there is an accord apparent between the occupants' alterations and the architect's concept. In this, the architect's basic idea, at Pessac, shows itself to be full of possibilities. Current architectural research into the problems of the arrangement of a free space in the home by the occupant could learn much from Pessac, in that it can be shown that the lightness, suppleness and mobility generally sought after may not be accompanied by that solidity which is undoubtedly tied up with a sensation of having roots which is clearly present at Pessac. Above all, it shows that no matter how much liberty is afforded to the occupants, this liberty must follow the rules set down by the architect, who therefore assumes entire responsibility for the final result.

Lucio Costa The Planner Defends his Capital

Brasilia is not a gratuitous gesture of personal or political vanity, as it would have been the case during the Renaissance, but the product of a huge collective effort as part of our national development — steel, oil, motorways, cars, shipyards — it is in effect the keystone of an arch, and the originality of its planning and architectural expression bears witness to the intellectual maturity of the people which conceived it, a people devoted to the construction of a new Brazil, resolutely facing the future with the desire to be master of its own destiny. Thus, at an altitude of 1,000 metres, and at 1,000 kilometres from Rio, which, 3 years ago, celebrated its four hundredth anniversary, the Brazilians, notwithstanding their reputation for laziness, built their new capital in only three years.

The major reason for such a short building programme was to minimize the possibility of a reversal of the decision taken, by a change of government. It is proof of the validity of its

conception that, in the 7 years of its existence, it has been able to "withstand" five presidents, ten local administrators and a number of unexpected political and military crises.

It is natural that Brasilia should have its problems, which are basically the contradictions and problems of the country itself — the problems of a country in the course of development whose tradition is an agricultural economy with a late and ill organized industrialization programme, and a persistent through-current of poverty. The transfer of the capital, of itself, could afford no way out of these fundamental problems, the more so as powerful financial interests stood to benefit from the status quo.

I shall attempt here, however, only to justify the urban concept of Brasilia, because despite its political, economic and social problems, to which can now be added institutional problems — the fact remains that it exists where a few years ago there was nothing but desert and solitude; it is already accessible by motorway

from all parts of the country; along these new arteries, life and activity is growing; the inhabitants are adapting themselves to the new way of life that the new city suggests to them, the children are happy; even those who live in poor conditions on the outskirts are better off than they were; its uncompromising and rather abstract architecture is becoming more and more part of daily life and the city has its own particular charm and attraction; the 'interiorization' of the capital has contributed to the playing down of political crises, whereas the economic and financial crises would have happened in any case; finally, Brasilia is really a capital, and not a provincial city, because in its scale and intention and despite its youth and drawbacks, it already equates to the grandeur and destiny of the country. As it happens, it was designed on three different levels of scale; the collective or monumental, the day to day or residential and the concentrated or gregarious; the inter-play of these three

scales gives the city its personal and special character. At the present time, the third scale, as exemplified by the social centre and recreational areas has not yet been built. It will consist of two complexes, each containing five floors of offices for the liberal professions, with cafés and restaurants at ground level. In the interior there will be shops, night-clubs, theatres and cinemas, served by a compact system of pedestrian access routes, courts and loggias (already existing on two levels in the southern complex). Cars will remain on the monumental platform, with heavy traffic at a lower level. The centre of urban congestion has been deliberately provided to provide a contrast with the open spaces of the residential super-quadrangles along the main road access. The provision of these quadrangles — enclosures with lines of trees laid out in large squares — was primarily intended to articulate the residential with the monumental scale, and thus guarantee the general balance of the urban area; each group of four of these 'super-quadrangles' constitutes a neighbourhood unit with all necessary services — primary and secondary schools, commerce, clubs, etc. One characteristic of the plan was the desire to collect in each of these neighbourhood units a broad representative population from all social classes in order to create an ensemble which had neither "rich" or nor "poor" areas. Duet o a lack of vision and inept administration, this fundamental aspect of the concept of Brasilia has not yet been achieved. The foundation of the National Habitation Bank seemed at first to be a step in the right direction, but, unfortunately, nothing has so far been done and a lack of understanding of the basic ideal persists. The road-residential axis is another aspect peculiar to Brasilia. In most cases, the large scale of the motorway ends at the entrance to a city and becomes diluted into a grid of small-

scale roads and avenues. In Brasilia, the motorways lead straight to the heart and traverse it in both directions — North-South and East-West. In the suburbs the car, instead of being banished, is incorporated, but at a lower speed adapted to the rhythm of daily family life.

The different levels of the access lanes, its gradual curves and the fact that the Northern section follows the irregular natural contours give life to the perspective of the various masses of the buildings. These are generally set up on pilotis and are subject to a height limitation of 6 floors to accentuate the contrast with the city centre.

The administrative and collective part of the city, with its monumental axis, is characterised by being set out on successive levels: 1) the natural ground level. 2) the triangular platform where the three autonomous instruments of democracy are to be found, a space laid out with the clarity of a 'People's Versailles'. 3) the ministers' esplanade and the cultural centre. 4) the main platform, where the two axes of the city cross on three levels. 5) the court containing the T.V. tower.

The rejection of 'taboos' and modish clichés has permitted the inclusion of the 'old' principles of CIAM and an adaption of the axial planning of Paris in an organically articulated whole. Normally, planning consists in creating conditions in which the town can become — time and the element of surprise intervene; in Brasilia, however, the site has been taken over and imposed upon, rather in the manner of the original conquerors or of Louis XIV — an urban structure being created which was capable, in a very short time, of serving as a nation's capital. Unlike cities which have to adapt themselves to their surroundings, in this case, the city, set in a vast desert and under a vast sky, has created the landscape.

Even though the city is still incomplete — the centre does not exist and there are gaps everywhere, every Brazilian who visits it, even those who live in the old concentrations of Rio and S. Paulo, have the feeling that this really is their capital.

In its architectural expression, Brasilia conforms to an ideal concept of plastic purity, where elegance — self-confident and untrammelled, is ever present. Even though it is a free formal concept and is, in this sense, opposed to the strictly structural ideas of Nervi, for example, and even though it has had to absorb pre-conceived restraints from such critics as Zevi for instance, Brasilia, as much by its planning as by its architecture, reflects a reality and a sensitivity which is entirely Brazilian, and as such represents a native contribution which can only be consolidated with the passage of Time.

The Place of the Three Powers, an open area in the manner of Place de la Concorde, is the only modern example of this form which can be compared with traditional models.

Three years ago, the directrice of the famous Musée des Carrosses, of Lisbon, stated:

"For me, Brasilia has been a profound experience. At first, a great shock; the burning sun, the red earth devoid of vegetation — like a forest of geometric forms; a phantom city! Later, however, I began to understand its austerity and appreciate the quiet atmosphere created by this city which is without doubt a place in which modern man can come face to face with himself. Brasilia is a purification of the inhuman life which we live out in most modern conurbations. It is a city which reveals us as men of our time. We must, like it, be open to all influences in the way in which it is monumental and human, simple and grandiose, ascetic in the purity of its forms. It is a mystic city due to its climate of detachment."

Alexandre Persitz Architecture & Humanism

Is the architecture of our time a failure because both it and town planning are incapable of responding to the problems of our society, or rather is our society incapable of providing the architects with the means to carry out their mission?

No one can doubt the necessity of giving modern man an environment based on humanist principles. Is it still necessary to define the terms 'humanist' and 'architecture'?

Two hundred years ago, the word 'humanist' was given the following definition: "Any theory or doctrine which has as its end the human being or his development; any doctrine which shows up man to his best advantage by purely human means." Nearer our time Renan wrote "The religion of the future will be pure humanism, that is the worship of everything that is of man, life sanctified and raised to a level of moral truth." Then Carrel wrote "It is the development of the human personality which is the ultimate aim of civilization."

In fact, the expression served — as it still does — to define many philosophical ideas which are often contradictory. The major religions, most schools of philosophy together with all political systems claim to be humanist above all and subjugate all their dogmas, teaching and actions to this idea. As Sartre said "Everyone is humanist in his own time".

Modern humanism, however, insofar as it exists, is no longer preoccupied with the individual as such, but rather with the individual as an integral part of a wider group. Humanism has therefore become something other than the cult of the individual; for this cult is substituted that of a more general idea of the respect of individual needs within the larger framework of society. At the same time, however as our civilization evolves towards a collectivization of its way of life, the emergence of certain individual liberties imposes on society the responsibility of supplying the individual with a

certain number of "services" — a responsibility which is accepted, at least in theory.

"Architecture, since the beginning of time, has been the open book of humanity, the principal expression of man in the different stages of his development, both as a force and as an intelligence." For Hugo, this theory was valid only up to the 15th century but, in fact, it is still valid. As for humanism, however, it is not necessarily witnessed in the various stages of our architectural inheritance as architecture has always expressed the ideologies in whose service it was created.

In our time the architect still has a considerable role to play. He is concerned with every aspect of man's environment and is at once actor and audience in a drama whose importance many of them realize. One can doubtless call oneself an architect without seeking further than the more obvious problems concerned with aesthetics, function and technology, without really feeling responsible, morally speaking, for the "end effect", on the anonymous user with whom one has less and less direct contact and whose daily life one does not share.

One can have humanist convictions in a very general way without being an architect. It is when philosophic conviction and the will to create become confused that a crisis of conscience is apparent, now as always. It is then that "the state of the artist (or equally, of the architect) wavers between the miseries of the reprobate and the servility of the salesman", according to whether one accepts, or not, to act or to submit. From here, humanism is equivalent to a moral engagement which takes precedence over any architectural credo. The architect who is conscious of his mission, of the role he has to play in society, has a sense of responsibility in all this, but like his predecessors, he is alone and isolated. He is misunderstood by the powers that be, whose every action is guided by principles of apparent economy and a policy of

gap-filling and who are incapable of understanding the influence of architecture on their own stability.

He is equally misunderstood by those who should be benefitting from his talents: modern man, wallowing in a spent heritage peppered by new and indefinite aspirations, constantly looking backwards in his search for values, incapable of finding for himself what he needs for his own happiness, lacking any standards or examples from his own time but at the same time knowing positively what he does not want!

Humanist architecture presupposes, in the first instance, a philosophy, a doctrine which commands, explains and justifies the work and the spatial concept and which removes the gratuitousness of the pure aesthetic gesture which can never be more than the hollow expression of an artist's individuality, no matter how well done.

It can be shown that those great architects who have, since the beginning of this century, led the main movements of modern architecture, have had the same preoccupation in their work as the 19th century humanist architect Ledoux and have approached their work in a similar way. Whether it be Tony Garnier with his project for an industrial city which rebelled against inhuman working conditions, or Wright who created an organic architecture for a world which he desired to be truly democratic, or Le Corbusier, who undertook that most complete, coherent and deeply considered study undertaken by any one man up to that time, the Radiant City.

Each of these architects has attempted, by himself, to achieve an all encompassing synthesis. If the work of Le Corbusier contains practically every aspect of architecture and town planning, and organizes them in a logical unity, its author was undoubtedly the first to realize that the task was too great for one man, and that no one brain, however talented, is capable of mastering

the total design of a city. He was the first to call in other disciplines — engineers and sociologists, etc., and this led to the creation of Ascoral.

The first evidence of a humanist architecture and town planning was contained in the Charter of Athens (air, sun, greenery) and its principles are fairly common knowledge. Unfortunately, the only principles which emerged which are in general use, those of elementary hygiene and comfort, have done little to prevent the spread of vast, filing cabinets of humanity under the guise of dwellings in every city all over the world. These are rightly described as dehumanized architecture and give rise to a sense of frustration which, one hopes, will provoke a reaction towards better things in the future. It is clear that it is not sufficient to provide a minimum area per head of population as the basic starting point.

One might have hoped that the socialist countries would have made a positive contribution, but it is clear that their powerful administration and concentrated technical ability have done little towards the creation of a humanist architecture. The situation is not hopeless everywhere, however. Scandinavian architecture, although often without brilliance, is deeply humanist. Government, people, architects and planners speak a common language. The high standard of living and culture, and an advanced social system has given rise to a society in which there are neither palaces nor slums.

This is not only the result of a strong economy, as it is as true in Norway as in Sweden. In Britain, a country whose economy is frequently in a state of crisis and who was deeply affected by the war, considerable planning research has been done, and its new towns are designed on considered humanist principles. Brasilia and Chandigarh have not so far, developed from the stage of being architectural compositions of great intrinsic beauty to that of being cities in the true sense.

That all this groundwork has had so little effect on the work in other countries is as surprising as it is incomprehensible. Even worse, the same mistakes are being repeated and multiplied on a frightening scale.

The situation in France is catastrophic. There is no city, town or beauty spot which has not become disfigured by newly built monstrosities whose sheer ugliness causes despair. If the 19th century left us a heritage of dullness which is difficult to overcome, the first half of the 20th has seen the blossoming of a multiplicity of built objects which cannot be described as architecture, and whose early descent into decrepitude is full of ominous foreboding. Whatever the cause, be it laziness or economics, the result is characterized by the highest possible density, per sq. metre, together with the greatest possible spiritual void.

Spain and Switzerland, to mention only two countries, are in danger of losing their most famous beauty spots through the free reign given to the speculator.

Any attempt to define humanist architecture and town planning is, in effect, an attempt to isolate the principles of an organization of space in such a way that man can find conditions in which it is possible for him to realize his legitimate aspirations; also where his evolution is in no way restricted.

The predominant characteristic of the second half of the 20th century is the rate of increase in evolution in every field. This accelerated rhythm has become a determining factor which architectural concepts must take into account in the immediate future. The notion of "everlasting" which has been an essential characteristic in architecture through the centuries is fast

becoming an obstacle to creative effort and the need for a new approach is becoming evident. "To leave to posterity a legacy of our genius" is no longer a valid tenet. What is more important is to leave behind us as few obstacles as possible to future generations, because humanism does not express itself in a desire to resolve today's problems at the expense of future generations. Auguste Perret said "beautiful buildings are those which become beautiful ruins". Today it would be more exact to say that the best architecture is that which will best adapt itself to future conditions, or which can be easily and economically taken down!

The term "human scale" can nowadays lead to a certain confusion. What is certain is that this scale has changed and that the man of 20th century, living cheek by jowl with machines, has acquired a perception of spaces and volumes which are infinitely greater than those to which preceding generations were accustomed. The important thing is the introduction into these huge volumes of spaces on a different scale, adapted to the perception of a man travelling on foot. Between these two "grids" there is a threshold of changing view of discovery.

Some years ago, I attempted to define the principles of what could be described as an embryonic spatial urbanism. Since then, many projects have been produced, based on these ideas.

The superimposition of different grids of very different scale within the overall urban structure leads to a micro-urbanization which allows man to rediscover a scale based on the length of his stride; it is this which will provide the modern transposition of the environment which we so admire in small towns of the past.

Standardization and modular design, elementary requirements in any industrialized construction — the only technical solution to our problems — are in no way in conflict with these principles. Instead of standardizing cells, blocks, buildings or districts allowing systems of construction to dictate the architecture, elements should be designed which can be assembled to satisfy any requirement. That this can be done is illustrated by some of the school systems developed in Britain and by "Habitat 67" by Moshe Safdie. The grouping of cells and the possibility of combining them have for years been the basis of many and lengthy arguments. In fact, most solutions have advantages and disadvantages. The most important thing is to avoid rigid formulas and to allow man a free choice. It is this lack of choice, by the imposition of practically identical dwelling types, stacked in high tower blocks which is the greatest root cause in the majority of cases of urban neurosis.

The practice of humanism in architecture is above all the rejection of the constraints imposed by an environment which lead finally to humiliation. It is the providing of a possibility of choice to men. To build cities of 10,000 similar dwellings is a technical achievement akin to the construction of an improved variety of concentration camp.

The evolution of our life tends towards a constant growth of all our needs. Above all, our need of space — the habitable space of the 'cell'. The lack of space is without doubt an ever-increasing source of frustration. Family life is changing and a new relationship is growing which requires an almost complete separation between adults, adolescents and children. The day of the all-purpose living-room as we know it is passing and the introduction of radio, television and gramophone dictate a new division of space in the home.

The flexibility and adaptability of the family dwelling unit is another humanist requirement,

not only functional but psychological. Its individuality is no longer a question of furniture or colour but one of adaptable spatial organization. Fixed equipment is also irrational as it is generally dated in 5 years or so — certainly in a much shorter time than the building in which it is installed. In any case, the choice of household equipment is to the woman of today a way of asserting herself.

If a humanist approach is to be made to architecture, one fundamental question poses itself: who is this man for whom an environment suitable to his full development should be created? For a long time it was possible to believe that one knew him, his aspirations, his comportment, his desires, his customs, his beliefs and his ideals. We now know, however, that it is becoming more and more difficult to define the man of today, and even more so to predict his evolution. It has been said that there are, and always will be, constant factors in the relationship between man and his home, deeply seated in his subconscious (the cave or uterine complex); that the family unit continues to form a practically unchangeable base.

This is still partially true, though probably not for much longer. In effect, changes are taking place in the human race which will leave certain seemingly unchangeable principles open to doubt.

One of the important factors in this change is the advent of the era of the motor car which, in addition to being a transport problem, is a phenomenon of social promotion. What is an aid to individual freedom has, in the mass, become a factor in the dehumanization of the urban scene which has become extremely difficult to deal with.

In addition to the complex problem of traffic routes, there is the even greater one of car parking which is swallowing up space in the "green belts". These seas of sheet steel will have to be hidden underground or in multi-storey silos. Housing a motor car will be more expensive than housing a man. The choice is already made, however, as the man of today will make considerable sacrifices in favour of his car.

It must be remembered that the home must now, as a natural extension of itself, be accompanied by all sorts of collective and social amenities, and that their absence or inadequacy is a contributing factor of dehumanization. It must be emphasized, however, that these amenities where they exist, must provide a choice of activity, and not be limited, as is so often the case, to a creche and young peoples social centre. There is still a considerable lack of scientific information available in this domain. Sociology, in its role of 'poor relation' does not provide information which is really probing and useful. It only gives the planner marginal help and in any case, sociological studies can never be more than arbitrary, occasional and sporadic. Neither intuition nor genius can, however, replace them. Let us be quite clear that problems arising from a 'humanist architecture' in our time can only apply to a minority of the world's population — that is the industrial civilizations — whereas for the vast majority of humanity, the problem is one of simple survival. At this level, it is clearly useless to seek a formula based on philosophy or architecture. On the other hand, it is certainly the responsibility of the wealthier nations to assume the role of pioneers, not only in supporting space research, but in consecrating a part of their scientific expertise, their technological skill and their wealth to a solution of the problem which is still basic to the whole of humanity — that of the human dwelling. If we succeed in this, we shall have assisted in the advancement of humanist architecture.

Giovanni Klaus-Koenig Humanism & Architecture

Giovanni Klaus Koenig was born in Turin in 1924. He is an architect, a pupil of G. Michelucci, Professor of the course 'Distributive characters in architecture' at the University of Venice. Professor of 'History of Art and architectural

history and styles' at the University of Florence. Professor of Aesthetics in the Industrial Design course at the Florence Institute of Art. He has written, among others, the following books "The ageing of modern architecture"

(Florence, 2nd edition 1967). "Analysis of architectural expression" (LEF, 1964). "German architecture after the Second World War" (Capelli, Bologna, 1965). "The Architecture of Expressionism, part II" (Vitainli & Ghianda, Genoa, 1967).

1. The absence of any humanist conscience, resulting from a lack of general culture, is a very common phenomenon in technical universities or Beaux-Arts schools. Both these types of schools are, in fact, from a didactic point of view, orientated towards diametrically opposed positions in the teaching of architecture. Since 1930 however, Italy has been fortunate in having her schools combine the two sorts of education, although she has rested too long on her laurels in this respect, and the present situation is one of crisis. In view of this, we felt that the reader might be interested to hear how this crisis has come about in Italy and thus kill any illusions that it is sufficient simply to house the two forms of education under one roof in order to resolve the problem. The constant addition of new subjects has produced a ridiculous total of 37 on the curriculum — it is only too clear that the time has come for a radical change in the pattern of Italian architectural education.

2. Each generation of architects is indelibly stamped with its year of qualification. With the exception of those who become lecturers, the mass of architects reflect the training which they have received. The "keeping up to date" resulting from flipping through magazines is superficial and the basic culture is that which is acquired at university. If it is difficult to recognize the style of a designer, it is all too easy to recognize the school which he attended — the period and the lecturers.

In the Federal Republic of Germany, for instance, the training given by such strict rationalists as Eiermann, Kramer and Oesterlen has resulted in the spread of a rationalized expression, ordered into a more or less standardized technology and morphology. On the other hand, Max Taut's and Scharoun's pupils, such as W. Rausch and Chen-Kuen-Lee, conform to a quite different pattern.

In Italy, the reversal of positions was not so complete and sudden. The generation of rationalist architects replaced the old academicians gradually and without fuss. Besides this, the "first wave" rationalists died in the war or in Nazi Prison camps (G. Pagano, G. Terragni, G. Banfi) or else died young (A. Libera). Other architects whose temperament was more uneasy and problematic, themselves provoked the crisis in rationalist expression by grafting to the original stem organic elements (C. Scarpa,

I. Gardella), neo-realist elements (M. Ridolfi) and even expressionist elements (G. Michelucci). The reawakening of the study of the history of architecture — above all by S. Bettini, B. C. Argan, R. Pane, B. Zevi and C. L. Ragghianti — helped to spread architectural culture, either by university education or by the publication of a considerable amount of critical work on modern architecture.

3. One could be deceived into believing that Italy is in an enviable position and should be able to produce good architecture. Unfortunately this is not the case and ample proof was furnished by the recent national competition for the new offices of the Chamber of Deputies in Rome. I had the honour of sitting on the jury with Nervi and Michelucci. We could award no prize, but had the opportunity of seeing at first hand a cross section of the architecture of our country. It was all there, from the arches and colonnades of the old academicians who are still alive, to the rationalists, passing through the pop-artists, the constructivists, the organics, the structuralists, the neo-baroque and the neo-libertarians. Every shade of taste was represented, but none of the projects was convincing. It was interesting to note, however, that the most original ideas came from those architects who are also professors of the history of art, such as P. Portoghesi. The best designs were cultivated works, often well considered, but they all lacked the intuition of 'true form' which characterized the 'patient research' of Le Corbusier in the Venice hospitals.

4. During a recent conference organized by the review "Casabella", the architect F. Borsi, in a lecture on the influence of architectural magazines, pointed out that architecture, encounters a time of self-appraisal in the seventies of every century. This was the case with the Florentine mannerists of 1570, the eclectics under Napoleon III and under the Third Republic. It is, in fact a moment of truth when all the experience of the century seems to come as one — rather like the meeting of an unexpected obstacle during a fox hunt, when the huntsmen come together after being spread out over a wide area. It is from such momentary unity that a new strength is born. If one had asked Buontalenti or Ammannati where they were leading the architecture of the Renaissance they would hardly have replied "towards the Baroque"!

They were, all the same, very close to it, even though they were not aware of the fact. Buontalenti, with the fantastic formal daring of the choir of the Holy Trinity, was also tempted by an impossible attraction to Brunelleschi. In the villa of Artimino, he used the linear and "crushed" style of Michelozzo. It was just these feelers, this desire to explore the future and learn from the past which gave birth to the expression "mannerist". In retrospect, it appears to us as the manifestation, not of a fertile but uncontrolled fantasy, but as a critical maturity which was in suffering.

5. The state of affairs as described above doesn't displease me of itself, insofar as it is not negative, even though it is much more complex than earlier manifestations. In effect, the mannerist crisis of 1570 was a purely Italian affair, the eclectic crisis purely European, while the present one is world-wide. More exactly, it is a series of non-homogeneous and contradictory crises. For example, although during the years 1955-1960, Italian architecture sought after 'liberty', America was drawn towards a decorative neo-classicism; while Japan discovered reinforced concrete, and brutalized the traditional morphology based on the use of timber, the Berlin wall traumatized that city and made vital the expressionist work of Scharoun which up to that time was swamped in the tranquillity of a consumer civilization.

These times of waiting are dangerous, and it is for this reason that the spirit of criticism becomes essential, since history and criticism, the past and the present, can succeed in becoming closer and united with a single aim. Hence the importance of reviews, magazines, discussions, international study groups. This is perhaps an opportune moment to eliminate the present ludicrous separation between those architects who specialize in history, criticism and typological research and those who consider themselves as the 'creators'. This divorce, born in the second half of the last century in the Beaux-Arts academies, is completely senseless, as neither side can develop in ignoring the other — the one digging ever deeper foundations and the other concentrating on building walls with no foundation. The fusion of the two is more likely to be arrived at by group work than by the creation of multipurpose individuals. It will possibly be the major task facing us in the next twenty years.

Dom Angelico Surchamp An Architecture for Man

Born in Troyes in 1924. Entered the Benedictine Abbey of Sainte-Marie de la Pierre qui Vire in 1942. 1948, the Atelier of Cœur-Meutry. Frescoes at Auxerre, Troyes (Lycée, Chapelle St. Luc, Hauts-Clos, St. Joseph), Romilly, Cambrai, Anost. 1951, the art review 'Zodiac' which in 1954 branched out with the art publications of the same name (26 titles under the heading 'La Nuit des temps', 16 under the heading 'Les points cardinaux', 20 under the heading 'La carte du ciel' and 3 under the heading 'Introductions à la nuit des temps'). In the field of music his study of Albert Roussel was published by Seghers in 1967.

Modern technology is, in fact, likely to do Man a great disservice.

It is no surprise to see architecture becoming less human — the converse would be even less probable; the more so in that technology is taking an ever greater part in building as a glance at any detailed working drawing will confirm.

It is, however, all too easy to forget the real essential. Le Corbusier never used a less happy phrase than "a machine for living in" — a phrase like many others used by him which, in fact, belied his true thinking. It is a phrase which negates the real truths of architecture and the arts because in this way, man would become a product rather than the master — or certainly a user, rather than a possessor.

The truth is basic. If our era is little by little losing its sense of all those fundamental values

which are the most constant aspects of the history of humanity, it is largely because the idea of "home" is being undermined. The dwelling has always been one of the basic human essentials and the family is its essence. A family cannot exist without its dwelling; without a home, there is no family, without a family, the real man cannot exist, that is, the man who is conscious of his duty, his dignity and his responsibility, a link in a chain connecting past to future.

It is clear that, with the explosion of urban development and an urban way of life, we are coming to need a sort of psychological antidote. With the arrival of Saturday, there is a general exodus from the town, from the impersonal blocks of flats, to the country. Once there, it is becoming more and more usual to own a house, be it a new holiday chalet or an old house fitted out in as original and personal a way as possible. This is a vital human need, which it is impossible to submerge.

I have always been struck by the works of Saint Jean Chrysostome (354-407) who held that "agriculture is the first of the arts, weaving the second and architecture the third: the last of all is cobbling (many of us travel barefoot). These are the useful, necessary arts." Saint Basil, his contemporary (329-379), said "Architecture, and work in metal and stone, these are the arts which are absolutely essential to existence". One can see the reason behind these statements; the first art is the one most important to life, the last the least useful.

Unfortunately we have been taught the opposite. That which is beautiful, as Alain (among others) said, is recognisable by its superfluity, by its facility. Architecture has been affected by this concept of aesthetics where an ideal has become abstracted from life. It was as though it considered that, in order to excuse itself for being man's servant, it should adorn itself with façades and other useless decoration, often ill suited to the buildings' intended use.

It is true that the necessary reaction to this took place and that the functional aspects of the art of building came into their own. This is all very well, but functionalism isn't everything. It is not enough that one can cook in the kitchen, sleep in the bedroom and watch the television in the living room; the family must be able to spread itself, to enjoy itself. It must be able to find its feet and be at ease in its environment. This is the ultimate essential.

That which is true in the case of the house of man is equally true in the house of God. People must equally feel at ease when they are in a church. If it is functionally planned, but lacks a deeply human and personal character, it becomes a machine for praying in or for worshipping God and becomes at the same time inhuman.

Once this has been understood, one no longer stops at the façade which often hides a reality which has no connection with the exterior appearance; one looks at the interior and understands the laws of the eternal architecture in which the sanctuary is the essential climax, secret, hidden, its exterior appearance reflecting its interior logic

Those who are constantly exclaiming "Life is dear" are inveterate pessimists. The same people find death to be relatively more economic, once the burial expenses are paid! It is much more costly, however, to be ill or an invalid, both for the individual and for the community, where the lesser trial of death is postponed until much later, after a high price has been paid to the clinic or hospital.

While on the subject of clinics, which we salute from the bottom of our hearts for their devotion to the recovery of health, let us think for a moment of those miracle clinic which one should see. One of them, at the Berlin Friedrichsfelde zoo, should be visited by everyone.

"What use do exemplary animal parks serve?" says our crotchety amateur economist. "We are not rich enough to be able to afford this kind of luxury. Our duty is to be realistic!"

There is, however, no better place than the zoo in which to learn realism. A truly human and social basis of realism is exemplified by "biorealism" — life in all its truth, effective biology. This is what one seeks to discover in the newer zoos, not a simple diversion watching the antics of animals.

The most impressive part of a zoo is not, however, the imposing animal clinic where sickness is diagnosed, studied and cured. The most authentic

biorealism is apparent in the healthy organisms in this animal bourgeoisie.

A host of specialists in animal comportment — zoologists and biologists who are among the greatest scientific brains of our day, such as Dathe at Berlin-Friedrichsfelde, Hediger at Zurich or Grizimek at Frankfurt, to name but a few of the greatest — make a study of each type of animal over a period of years, assessing its basic and most minute requirements and its psychosomatic reactions. This is not all, however; this treasury of knowledge, as befits our scientific era, is applied. This does not mean the calculation of so many square metres of cage per baboon or so many litres of water per day per sealion. Not at all. The era of cages in zoos is past. The time is past when the cartoonist Heinrich Zille did a drawing of two small boys, one of whom was pulling a toy cart carrying a dead rat, his playmate who he was about to bury, "What did he die of?" asks his friend. "Our apartment is too damp" was the reply.

Human beings have often had the same value placed on them as rats. Many, in certain districts in our commercially successful world, have not had much luck; housewives seem to have had a lower value placed on them than many baboons or sea-lions.

Whatever happens, the future holds for humanity a new humanism, created by science. Public

health is incontestably the popular asset which is the most difficult to preserve. To abandon it is a crime, in any place, at any time.

We must repeat constantly: architecture is the long term container for every human function, a lasting investigation of popular virtue. Regardless of cost, a landing on the moon is a passing achievement compared with a new city on earth, immortalized in concrete.

Experimental research, if it does not lead the way, must at least progress in parallel: what a thirst for knowledge is consecrated to biological endurance in the capsule of a rocket; but how insignificant is this compared with the finely detailed knowledge of a primary school class, repeated hundreds of thousands of times for the education of future generations. Unjust though it may be the everyday affects us less than the sensational exception.

At present we are not doing enough research, and even worse, are not undertaking the study, mastery and cure of the 'ills of civilization' of our fallible world, made up as it is of a random assemblage of diverse elements.

It would be worth while at least creating a trial sample of a more healthy environment, in order to define aims and to seek to attain them. Whatever the cost of this isolated experience it would be greatly compensated for by mass repetition of the successful model.

S. Teshigahara Humanism in Interior Design

It seems a long time since Tagore came to Japan. He was a poet, philosopher and teacher. The object of his visit was to learn more of the Japanese people and their way of life. In fact he seemed most interested in Japanese architecture and the Japanese interior. I accompanied him on his visits and particularly showed him the "Tokonoma" which is the heart of the Japanese house.

Nowadays, the "Tokonoma" is no longer part of everyday life, is in danger of being forgotten and no longer seems to arouse the interest of the public. Tagore, however, was fascinated by it and he said: "This is where the real Japan is to be found!"

Before arriving in Japan, he had visited several countries in Europe and Japan was last on his trip. He considered that as a result he could be completely objective in his assessment of its character. He visited many historic monuments — tea houses, temples, castles at Kyoto

and Nava, but I should like to recall the day when I brought him to the home of Baron Shibusawa — a leading Japanese nobleman.

It was in early summer, the house was surrounded by trees and Tagore was particularly impressed by the large Tatami hall. This was completely covered in new Tatamis which provided an overall green background and gave off a fragrant smell. In Japan the Tatami is generally changed once a year and this hall of 100 Tatami had just been renewed. Two sides were open to the garden, a third side separated from an adjoining room by a sliding door and finally, between the fourth side and the Tokonoma there was the earth wall. In the Tokonoma there was a Kakimono and a flower arrangement (see illustration). This was the only decoration! There was a cushion for sitting on and a small container in which incense was burning — in the garden, one could hear the sounds of running water and a singing bird.

Having sat down, Tagore said, "How perfect — what richness. At last I've seen Beauty such as it exists nowhere else in the world." Tagore had only experienced European interiors in which people tend to show off all their possessions. He had found here in Japan greater richness in a room which contained practically nothing.

This interior composition of a Japanese house could hardly be described as a Nothing. It is something which has progressed beyond the All, which surpasses it. This spirit, only man, and such a man as Tagore could understand.

Everyone knows that it is easy to seek after Completeness, but it is difficult to remain in the Nothing. In its present attitudes, Japan has been much influenced by European standards. There is an ever greater tendency to pursue an extrovert existence, rather than an introvert "Nothing". I feel that it is time that we in Japan consider deeply what Tagore found so admirable. Soon it will be too late.

Kulio Mayekawa Humanism & Architecture

The reason that the theme "Humanism and Architecture" attracts the architect's attention is undoubtedly the rapid deterioration of the human environment, due to the inroads made by mechanization into every sphere of man's activity. This problem cannot fail to interest the modern architect, since he is responsible for man's environment, although I am bound to say as an architect from the Far East, that Humanism, as conceived in the West, can no longer be our salvation. This is because Humanism is a creation of Western thinking — which was itself the cradle of Western civilization — and will therefore never be able to find a satisfactory issue from the vicious circle in which it has placed us.

During the two thousand years of its history, Europe has striven to establish a splendid civilization, always upheld by the conviction that the world was created by God to serve man. Is it not this conviction which has dictated Western attitudes towards everything other than Man, and has led to the idea that all these things are

to be subjugated and conquered by him, with a strict distinction in all cases being drawn between them and himself? Humanism itself, was it not his intelligent invention aimed at the rationalization of this principle of segregation, promoting in turn rational thought and the creation of Europe's technological civilization?

One cannot deny that it is due to Humanism that the machine age has reached its present level of development, nor that it is also responsible through this for the disruption of the human environment.

By working since the dawn of history in an effort to control nature, Man has succeeded in creating an industrial civilization; it is now time that he set himself to controlling the industrial civilization itself, and Humanism seems to be thought of as a proper foundation for this new human adventure. What I am afraid of, however, is that Humanism, based as it is on the traditional principle of European thought, will lead only to the creation of new

evils by destroying the existing ones. We cannot escape from the vicious circle.

Nature, as conceived in the West, has always been something which existed outside of Man, whereas in the East, Man has always been considered as part of it. At the present time, when it is essential to find a new 'guiding light', I am convinced that it can only be found by a new means, one as yet unknown to the West.

Western Humanism has always placed Man at the centre of the Universe which surrounds him, whence his segregation from Nature and his surroundings. To change this long established principle will undoubtedly lead to serious conflicts with nature and environments which already exist or have been created. It is a matter of much regret to me that I am unable to make a sufficiently eloquent case for my fears in a foreign language, but they are very real. I am sincerely troubled by the present state of architecture and the human environment in modern Europe — particularly as Europe's present could be our future.

At the present time, the urban centre forms and then changes at an incredible speed. Thousands of buildings that are sprouting everywhere and which engender new forms of organization of life. The situation is further complicated when one thinks that the elaboration of the master plans, which are adopted instantaneously, fixes for many years the actual living conditions of the inhabitants.

The essential problem of humanism in an architect's work is really that of the optimal relationship between society and the individual in the large towns. In this era of prefabrication, architects measure land by tens and hundreds of hectares, and the population by groups of thousands of inhabitants. Do we not have a tendency under these conditions to consider only the large social groups to the prejudice of the individual? For us, it is clear that the humanistic

essence of the socialist revolution carried out in our social practice also has, as an imperative consequence, the triumph of a superior humanism in the field of architecture. This is translated by mass construction (in 50 years the Russians have built 1,000,000,000 m² of housing surface in the town and 20,000,000 in the country) but this must also be translated by a grouping of the conditions that are objectively necessary to man's personality. The humanism of contemporary architecture is at the measure of its ability to solve technical problems, and also its comprehension of the way of life that is at present forming, the psychism of the inhabitant, of his capacity to bring forth the flame of feeling from concrete and glass, with the same inspiration that laid hold on our ancestors when they set those amazing churches with their silhouettes thrust against the sky, those pic-

toresque isbas perched on the edge of our rivers. But we have much still to think out, much to discover. In our day and age the architect has become (as in Antiquity) a professional with a wide scope. To-day's architect deals with the fields of industrial aestheticism, use of the land, applied arts, exhibitions and even with matters dealing with the cosmos, where he devises the structures and the aesthetics of the spatial machines. The principle is that the study of the milieu is no longer possible except within a wide collaboration. The architect whose project is carried out as a result of a common effort by a team of people from related trades resembles a stage director who has to go into all the details of the play if he wishes to attain a unity of the aesthetic and the functional. In 20th century, he must be historian and sociologist, technician and psychologist, philosopher and poet. . .

Dr P. C. Racamier The Psychology of Architectural Space

He is of French nationality, a psychiatrist and psychologist, at the Psychiatric Hospitals; was Medical Director of the Hospital of Prémontré, then of a psychiatric clinic in Switzerland. He is a Member of the International Association of Psycho-analysts and of several scientific societies, lecturer in psycho-analysis in Paris and Lyons and onetime lecturer in this subject in Switzerland. He continues to lecture in psycho-analytic psychiatry, a subject which he taught for many years in the Cery University Clinic in Lausanne. He has published several works and has presided at innumerable conferences on modern psycho-pathology, socio-pathology, psycho-therapy, the psycho-analytic treatment of the mentally ill and the organization of psychiatric institutions. At present, he is occupied on several works treating present day trends in psycho-analytic psychiatry and on the building of a modern psychiatric Institute.

The modern expert in psychology cannot remain indifferent either to architecture or to the architect, for the simple reason that one of the essential functions of any architectural creation is to satisfy certain of man's psychological needs. Let us consider this for a moment. It stands to reason that any building which fails to satisfy these needs is nothing more than a tool; although useful, it remains a tool, and a dismal one; this can be proved by simple observation.

All successful architecture old or modern, displays the same balance — the balance between functional necessity, technical resource and psychological need. Obviously each of these has changed with the passage of time, and of all of them, technical resource is the one which has undergone the greatest change. Psychological needs have changed the least. The architect who succeeds in establishing the delicate relationship between the three is the one whose work will remain to the forefront.

The success of a work of architecture is frequently seen as the ability to please aesthetically and functionally; if this proposition is supplemented, as it now can be, by the excellence of the industrialized content, it can also be simplified if one is prepared to accept that beauty is automatically present in a building which completely fulfils its function and makes proper use of the materials of which it is constructed. In taking into account the purely utilitarian functions of a building however, as is all too often done, one is making a serious mistake. Man has needs other than material ones, although these appear to be the most easily provided in the present state of Western civilization; when he forgets his psychological needs, he is being tragically foolish, although it must be admitted that these are the very needs which he least understands. The architect should not only understand the reasons for man's psychological needs, but be able to understand the needs themselves. He should be able to assist his clients in discovering

them for themselves. This is the work of the true artist, to teach others to appreciate something of whose existence they are as yet unaware.

The psycho-analyst is sometimes able to discover from his patients which of their psychological needs they seek to satisfy in their homes, and in buildings generally. The psychiatrist, in his attempt to cure the mentally sick, who observes them within the walls where they live can assess the relationship between the man and place where he lives. This is because mental pathology can invent nothing. It can only deform and unbalance certain mechanisms and certain functions which are in themselves perfectly normal; it is because of this that it can bring out psychological truths which are essential, but which might otherwise remain unnoticed. The asthmatic is much more aware of the importance of air and of breathing than someone who breathes normally.

At the moment we only know some of the laws which relate psychology to living spaces and dwellings, but we do know, for instance, that the home is universally accepted as a symbol of the maternal breast. This breast, which very few of us can remember, remains in our unconscious as a pole of attraction and as a place to return to. The child at birth is so helpless, his need of his mother is so great, that he can never completely rid himself of this first instinct; the sense of security which he seeks in his home is a lasting one. The home, therefore, is man's psychological envelope — as with his mother after birth, the individual discovers his own identity by relating himself to it.

To know oneself as an entity is to know that one has limits. The skin is the outside limit of the body, but the psychological limit can go further than this — depending on circumstances — from the clothes of the pedestrian, to the car of the motorist. These limits form the psychological envelope of "self". It is in this way that the walls within which one lives form an extension of oneself and can be said to function as a reflection of one's own being. This need is fundamental and goes back through time, demonstrating itself in the decoration of walls with man's own history, be they the walls of caves, churches, palaces or stables.

This relationship with walls becomes acute with the mentally ill, because the awareness that they are individual and unattached human beings gives them a feeling of fragile insecurity, making them more than usually dependant on the walls surrounding them. It can be observed that the quality of the walls themselves has a significant effect on the patient's psychological comportment.

Naturally, the normal human being does not react so violently to the qualities of his envelope, and besides this, he has the power to change them, although they can affect him without his being aware of the fact. This is confirmed by the successful experiments in the provision of

"functional" colour schemes in workshops, etc., museums, in factories and aesthetic animation generally in work places. Man's output is therefore directly related to the architectural quality of the space where he works.

Far be it from me to suggest that psychological activity is only dependent on the immediate environment. We know that psychic activity in the normal individual is autonomous over a very wide field and is determined by the past as already experienced as much or even more than by the present, and by the unconscious more than by the conscious. We know also that his external reactions are often contradicted by internal contradictions and imaginary transformation.

As a result of detailed experiment, it can be proved that the capacity for objectivity, attention, memory and invention of a normal subject is rapidly and seriously diminished if he is artificially deprived of the many stimuli which normally feed the senses (hearing, vision, taste, etc.). In other words, the psychic only retains its functional integrity when it is subject to environmental stimulation; it is interesting to note here that a monotonous stimulation has the same effect as a complete absence of stimulation; and that an excess of stimulation has similar results. Quantitatively, these psychological laws are elementary. They are, however, worth remembering, as there are few among us who are as interested in feasting the eyes as the stomach. Having discussed the quantitative, there remains the qualitative.

Modern research has confirmed the value of one aspect of mental activity, which had already been assessed intuitively; the place of imagination and fantasy, this vast underground activity, subconscious or unconscious, of the transformation and the transfiguration of reality, of which dreams are one of the manifestations — the most remarkable if not the most constant. It is known that every subject who is deprived of this indispensable interior activity is destined to become, sooner or later, physically or mentally ill.

Let us then examine what contribution modern "functional" buildings make to this activity: it must be admitted that it is very small, and is sometimes even negative. No space which does not possess the property of symbolic resonance can be considered to be alive or be truly lived in. It is for this reason that man has a tendency to surround himself with objects which are of no use other than to act as "fantasy bearers" or "dream bearers". It should be pointed out that in order to be effective, the symbol need not be in evidence; in the same way as in a work of art, the 'symbolic circulation', like the circulation of the blood, can be sensed, but not seen.

It appears that the dimensional aspect of lived-in space is the most critical, and the the dimensions, form and structure of social spaces have a considerable influence on the individuals who frequent them.

In order to understand this better, let us take some examples from the animal life in a zoo. The animal organizes the space in which he lives even more than does man; he generally has his own territory, where he lives and hunts, and in addition he has his peri-corporal space, a circle which all the evidence goes to show that he considers to be a part of himself, and whose radius is known as the critical distance. This space is inviolable and it can be shown that if the animal is enclosed in too small a space, he either walks in circles, or endlessly back and forth on a fixed path, like a mechanical toy. These movements are completely unnatural, and are similar to those made by patients suffering from certain serious mental illnesses. It is not surprising, then, that being enclosed in a restricted formless space can bring about in these patients this sense of rigid and monotonous mobility, which is always accompanied by mental exhaustion. It can happen that in such a space, the patient reacts as though he were being physically suffocated by fear or by violence; on the other hand, on being put in a vast open space, he feels literally lost and physically prostrate. There are grounds for believing that this phenomenon of the appropriation of environ-

mental space is equally present in the normal individual, even though less well defined than in the animal or the mentally ill. He is not aware of it however. Many people suffer psychologically from living too close together; although it is to them an indefinable feeling, it is, in fact, due to the constant violation of their personal space. Very few people are aware of the amount of space which they need in front of their desk, chair or bed, in order to feel at ease, although this requirement does exist. It naturally varies with the individual and circumstances.

It is, however, more widely appreciated that certain arrangements of space are more conducive to certain activities than others. To take as a simple example, it is clear that a group discussion may not have the same tone, or perhaps even the same result, if it takes place round a circular table rather than a rectangular one. A great deal remains to be learnt about socio-spatial relationships, and it is a field in which, up to now, architects have had to work from empirical or intuitive hypotheses.

Both architects and psychiatrists are hoping to learn a great deal from the modern psychiatric hospitals and clinics which are under construction. They will effectively become architectural laboratories.

We must recognize here that the study of psychiatric architecture gives us the opportunity to examine at first hand a remarkable collection of errors, and as we all know, errors in architecture die hard!

Psychiatric needs seem to raise one of the great dilemmas in architecture, which we believe to be a reflection of a specifically human psychological dilemma: should we build dwellings which are open or enclosed? As posed, the question can be dismissed, because they should be at once both open and enclosed. Man must always reconcile his need for security with his need for liberty, and the art in architecture is similarly to know how to reconcile man's need for limits and his need for expansion, both of which are part of his essential make up — envelopment and flight.

It is reasonable to say that architecture is one of the most accurate manifestations of a civilization: it gives an indication of the technical, psychological, social and aesthetic evolution of a society. Man, however, is not only reflected by his architecture; he is also to a large extent affected by it.

The destinies of Man and architecture are closely interwoven. As in all such relationships, not a little science and a great deal of love are needed in order that this one may be successful.

Henri Lefebvre Humanism & Urbanism Some proposals

1. The old, 'classic' humanism has long since vanished. It is dead. Its mummified body embalmed, weighs heavily and smells bad. It is present in many public and unpublic places, transformed into cultural cemeteries, museums, universities, various publications, even new towns and some journals devoted to planning. Trivialities and platitudes are wrapped up in such phrases as "human scale", "human dimension", "human service". All at a time when what we most need is to create 'something' on the scale of the Universe.

2. This old humanism died during the World Wars, during the demographic growth which accompanies massacres on a grand scale, as a result of economic growth and competition and under pressure from ill-mastered technology. It is no longer even an ideology, hardly ever a subject worthy of official speeches or the provincial press.

3. There have recently been cries of anguish as if the death of humanism identified itself with the death of man. "God is dead, so is Mankind". Careful, though! Such formulae popularised by Michel Foucault, and taken up by irresponsible publicity, are not new. The Nietzschean meditation began almost a century ago, during the war of 1870-1871 and was a bad omen for Europe, its culture and its civilization. When Nietzsche announced the death of God and that of Man, he left no gaping void. He announced the coming of the Superhuman. He surmounted the nihilism which he had diagnosed. Modern writers who delve into the theoretical and poetical treasures of the 19th century, plunge us again into nihilism. If Man is dead for whom are we going to build? Why build? What matter that the City has, or has not disappeared, that it must be re-thought, rebuilt on new foundations or even improved upon. What matter if terror reigns; if the Atomic bomb is, or is not dropped; if the planet Earth explodes or does not? What does matter? Who thinks, who still speaks, and for whom? If sense and finality disappear, if we can no longer even take them into account, create them in a praxis — nothing is of importance or even of interest.

4. The old humanism is fading. It disappears, and even nostalgia for it is on the wane, and we turn around less and less often to look at its diminishing form where it crosses our path. It was the ideology of the liberal bourgeoisie. It was founded on the people, on suffering. It covered, it held up the rhetoric of beautiful souls, noble

sentiments and clear consciences. It consisted of Graeco-Latin citations, sprinkled with Judaeo-Christianity. An unpleasant cocktail, enough to be sick on! Only a few intellectuals (so called Leftists) can still stomach this lamentable mixture; neither revolutionary nor openly reactionary nor yet Dionysiac or Apollonian, they baptise their compromise with the name 'humanism'.

5. We must bend ourselves towards a new humanism, that is, towards a new praxis and a new man, avoiding the myths and ideologies which threaten any such project. Urban life has not yet begun. We have been living in the debris of a thousand-year old society, in which the country has dominated the town, and whose ideas, 'values' and taboos were, for the most part agrarian, rural and 'natural'. Occasional cities sprang from the rustic ocean. The rural society was (and still is) that of non-abundance, of poverty and privation accepted or refused. The point to emphasise: the crisis apparent in the traditional city is accompanied by the world crisis of the agrarian civilization, which is equally traditional. They go hand in hand and even partially coincide. It is up to us to resolve this double crisis, especially in the creation of the new town, and of a new life within it.

6. In the last sentence, the "we" is by way of being a metaphor. It covers those who are eventually to benefit, the interested parties. No one, architect, planner, sociologist, economist, philosopher or politician can create, from nothing, new forms or relationships. Only a social existence (the praxis) in its encompassing creative capacity can achieve any such result. The professions listed above can clear the way; they can suggest, try out and prepare ideas and forms. Most important, they can classify experience already acquired, draw lessons from failure and generally assist the birth of what is possible by a scientifically based process of trial and error.

7. Let us note here the urgency of a transformation of intellectual concepts and ways and means. In using here formula used in other contexts certain mental processes, as yet unfamiliar to us, will be essential.

(a) Transduction: This is an intellectual operation which can be undertaken methodically and which differs from the classic concepts of induction and deduction, and also from the construction of 'models', from simulation and the enunciation of hypotheses. Transduction

elaborates and constructs a theoretical object — a possible object, on the basis of information springing from reality. It presupposes a constant feedback between the conceptual framework used and empiric observation. Its theory (methodology) sets in motion the spontaneous mental process of the planner, the architect, the sociologist, the politician and philosopher. It introduces precision into invention and awareness into Utopia.

(b) Experimental Utopia: Nowadays, who is not Utopian? Only rigorously specialized technicians, working to order without any critical appraisal of the norms set down can escape the influence of Utopia. Everyone else is Utopian, including the planners who envisage Paris in the year 2,000 AD, the engineers responsible for Brasilia and so on! Utopia should be considered experimentally, after first studying, on site, its implications and consequences. These can be surprising. Which are, which will be the most successful areas socially? How can they be singled out? And on what criteria? This is what is most interesting.

8. Another approach is essential intellectual: to single out, without separating them, the three fundamental concepts, the structure, the function and the form; to understand the part they play, their influence, their validity, their limitations and inter-relationship; to understand that they form a whole, but that the elements of this whole have a degree of independence and a relative autonomy; not to show a preference for one or the other, as this results in an ideology, that is, a dogmatic system of preference — structuralism, formalism, functionalism; to use them, one by one, on an equal basis, to analyse what is true and real (this can never be exhaustive and definitive), also for the 'transduction' operation; to completely understand that a function can be satisfied by different structures, that there is no single valid relationship between the terms; to ensure that function and structure are given a form which at once reveal and conceal them — that the trilogy of these factors constitutes a whole which is greater than its parts.

These all too brief methodological guides need qualification. Among the intellectual weapons at our disposal, there is one which merits neither the disdain nor the privilege afforded to an absolute, that of a system (or sub-system) of preference.

We know that the humblest citizen has his system of preference (or rather, his sub-system). The mere fact of living in this or that place

implies the reception, the adoption, the transmission of such a system, as, for example, a preference for new towns, or for old towns.

The architects seem to have established and to have all too often dogmatically imposed their own system of preference under the guise of "function" "form" and "structure". They have

designed on the basis of living as conceived and understood by themselves, rather than as conceived and understood by the prospective inhabitant.

The only system, which could, with justice, be termed 'urbanism' and which could re-discover the essence of the old town — which would bring

together the preferences of the practice known as 'living' (that is, human) and which would add to these, once acquired, by transduction, a theory of significant time-space, which would define a practical approach from this theoretical background — this urbanism as yet, does not exist.

Jean Bossu Project for a Social unit

This project for a social unit by Jean Bossu — the basis of a solution for the problem of our cities — satisfies the two-fold requirement of the urban dwelling — recreational facilities by intensifying the occupation of a central core on a 430m. wide development, leaving the 8,000 inhabitants with 40 hectares (100 acres) of parkland at their disposal.

Grouping 1,800 dwellings, the urban centre has been designed by Bossu as an attempt to collect together, in 30,000m², a variety of attractive urban themes and to re-create the urban atmosphere of Faubourg Saint-Honoré, the Place des Vosges, the Rue de Rivoli, the parks of Monceau, Montsouris, Bagatelle.

The main access is designed as an engineering structure, leaving the choice of façade of the dwellings to the individual occupant. The car access is hidden in the town's perimeter. The scheme groups all the necessary services, shops, public administration, liberal professions, cultural centre, medical and social services, primary schools, sports facilities and garages.

A. Strigalev Constantin Melnikov

Constantin Melnikov, one of the most brilliant pioneers of 20th century architecture was born in Moscow in 1890. His training was at the Beaux Arts school in Moscow where he designed in the styles that were fashionable at the time — Cretan halls, Roman railway stations, Russian churches, classical war museums. He qualified in 1917.

Once qualified, he rejected the pastiche of historical styles and sought after an architecture which better expressed his time. His early days coincided with the Russian revolution and with the building of a new Russia, a new way of life, a new culture and new human relationships.

Very little was built immediately after the Revolution, although it was a time of feverish activity for architects, who occupied themselves in competition work, architectural discussion, journalism and teaching. As a result, a new school of architects came rapidly to maturity, which, once building on a large scale recommenced, had an enormous contribution to make to the architecture of our country and of the world as a whole.

In Melnikov's own words "For we architects, these years were remarkable, and we were gripped by a fever of enthusiasm in our desire to build a new, happy world for mankind. We drove ourselves selflessly and after the long years of pastiche, a new and generous art was created. Architecture began to speak again in its natural tongue."

The most notable research work during these years was done by Tatlins, the Vesnine brothers, Ladovski, Gainsbourg, El Lissitski, Nikolski, Krinski and, of course, Melnikov. They were working on new building types, the re-thinking of traditional types, rural and urban planning, workers' clubs, recreation centres, sports buildings, exhibition halls, garages, factories.

Melnikov played a rather special part in all this. He stayed out of the groups which were being formed and had little time for theoretical discussion, he studied continuously and worked a great deal. His work was deeply individual, often the object of criticism, but always fresh. He had an extraordinary sense of form in space, was exceptionally inventive and married the function and artistic expression to the geometrical form, seeking to provoke an emotional shock. He did not subscribe to the theory that the form must follow the function, saying that in this way the technician tends to usurp the position of the architect, who is left with the sole task of decorating the exterior. He considered that the architect's task, once the functional requirements have been grasped, is to satisfy them in a given space and he applied these principles in his first constructed project, the tobacco industry pavilion at the Agricultural Exhibition in 1925.

He created, in this building, a highly articulated space, powerfully expressed. It contained many of the characteristics which were to become well known in his work, such as the breaking up of the building into volumes of different heights and shapes, variable floor to floor heights, cantilevers,

monopitch roofs at different angles and external staircases.

His best known work is still the national pavilion of the U.S.S.R. at the Universal Exhibition of 1925 in Paris. He built on the entire available site, the building being divided into two spaces by a wide diagonal staircase. A structure in light inclined panels formed the junction over this staircase. It was entirely new in concept and contrasted with the heavier work of the architects of the other pavilions. It was widely acclaimed.

After the exhibition, it was re-erected in Paris and served for a long time as a workmen's club. As a building, its importance can be measured by the influence which it had on architectural evolution and the modern industrial aesthetic. As well as the pavilion, he designed a group of light kiosks, precursors of the modern commercial centre.

A year previously, Melnikov had designed and built a huge market which was composed of a series of wooden "cells" planned in a sawtooth arrangement in order to ensure the best possible liaison between the administration at the centre and the various access points. His use of colour was also remarkable in creating variety within a standardised framework.

The sawtooth arrangement was one which he used on many occasions and in many applications. He likes to work on a series of similar projects, varying his design approach in each case.

In Moscow he built four large garages, and as a result he was asked to undertake the design of a garage for 1,000 taxis in Paris, for which he produced two alternative solutions. One proposed an eight storey cube with four access routes. The second was much more audacious and suggested building the garage over the Seine, a bridge and the adjoining streets and buildings — creating, in fact a second level of buildings. It was to be a three dimensional structure consisting of enormous corbels which crossed and supported one another. In order to diminish the frightening effect of such a large cantilever on people passing underneath, he added purely decorative and non-functional elements at the extremities to give an impression of support.

Such a spatial concept was very daring in 1925 and was to be echoed 40 years later in the vertical zoning proposed by Paul Maymont for Paris.

Melnikov made considerable use of the fact that the diagonal of a rectangle is longer than any of its sides. Using the diagonal in his compositions, he gained a visual increase of the space at his disposal and as a result, his buildings always seem bigger inside than they appear from the outside.

He said himself "My most useful tools have been the symmetry out of symmetry — the infinite suppleness of a diagonal, the slender qualities of the triangle and the imponderable mass of the corbel". The cantilever, for him, is the most characteristic element of 20th century architecture, playing the same role for us as the

architrave for the Greeks and the vault for the Romans.

His attraction to the diagonal even went as far as its use in such supposedly static forms as the circle and the cylinder. His design for the Zouiev Club (1927) is based on the intersection of five cylindrical spaces of different heights arranged along a longitudinal axis. The strength of this axis likens it to the diagonals of his other work. His first designs for the "architect's house" date from 1918. One solution proposed a circular plan, arranged, not on a system of radii but on one of obliques, which are more dynamic. Another had a square plan divided on a dihedral line slightly shorter than the diagonal. Both plans were centred about a large fireplace. In the design which was built (1927-1929), Melnikov re-used the Zouiev Club theme in a smaller version of two cylinders. The external diameter of each cylinder is 10 metres and they are 9 and 12 metres high respectively. They penetrate one another, on a North-South axis by 1/3 of their diameter. Internally, this house gives an impression of great intimacy and what has been described as formalism from the outside becomes warmth in the inside.

Although respecting the work of F. L. Wright, Melnikov feels that it is not essential that space be continuous. One must be aware, of course, of the total space but this must not prejudice the advantages given by isolation.

In these days, when rationalist concepts are in vogue, Melnikov's ideas are much wider and are motivated solely by a desire to satisfy the needs "of the enigmatic but real world of our senses".

The most important criterion in his eyes is the relationship between built architecture and the many, complex laws of nature.

The search for a dynamic architecture of mobile, living space, is another aspect of his work. As a child, he was struck by the fact that a single man could move the enormous mass of a locomotive on a turn-table. Therefore the rotation of a heavy mass poses no particular technical problem.

In 1925, Melnikov won first prize in the competition for a branch office of the Leningrad Pravda in Moscow. The site demanded a vertical treatment and the nature of the building demanded that it be original in conception. The solution proposed was for a group of five identical superimposed and glazed cylinders. Each one has a trapezoidal bay window widening towards the outside. The four upper cylinders turn independently around a central staircase and can be arranged in an infinite number of combinations.

In the competition for a Christopher Columbus Memorial in St. Dominique (1928) he again came back to the idea of a large rotating mass. His design was for two inverted cones joined at the summit, at the intersection of which was placed Columbus' sepulchre. He wished to express the uniting of the old and new worlds by the voyages of the great navigator. The cones were to be mobile, turned by the action of wind and rain.

In 1931, Melnikov took part in another competition in which he re-used the idea of rotation in a functional and interesting way. It was the competition for the Theatre of the Unions of Moscow (M.G.S.P.S.). He designed a 3,000 seat theatre in the form of a truncated cone in which he planned a vast parterre and five balconies. It could be adjusted mechanically to face any one of three different stages.

This idea was taken up again in seven designs for clubs between 1927-1929, of which six were built, although they did not, in fact, contain all the details of the original designs.

One of them, the Roussekov Club in Moscow, is one of the best known and most controversial of Melnikov's buildings. It is planned on two distinct axes which converge on one another: the first is based on the hall and stage and the second, symmetrical, reflects the exterior volume by a centrifugal movement of the masses. The club is organized around a hall which can be divided up by movable diaphragms which give, in different combinations, 6 independent auditoriums.

In an alternative scheme for the Zouiev Club, there are also four independent circular halls which can be used separately or independently. In the little club for the Frounze factory, there

is a similar arrangement in which 3 small halls can be used together as one large one.

In the Maxim Gorki Palace of Culture, a hall of 1,000 places is divided equally by a movable partition, and in the club for the Bourevestnik factory, the hall can be connected to the adjoining gymnasium. In both these clubs, there is a swimming pool under a removable floor.

The workers' club at Doulevo has a stage which can be used in relation to an internal hall or an external amphitheatre. The hall itself can be connected to another adjoining space.

Melnikov's plans are not easy to read. One must have a well developed sense of space; use all one's powers of imagination to discover behind the orthogonal lines the exterior masses and the three dimensional internal spaces.

"To see architecture in project form is like listening to music with the score", says Melnikov. "The only difference is that the composer of a symphony has the enormous advantage of being able to listen to his work in rehearsal to help in assessing the true value of his work."

In his opinion, post-war architecture continues to delve into the ideas developed and perfected in the twenties. The poor quality of work at present is due, he feels, to the exaggerated role

played by technology, which gives a character which is more technical than architectural.

"The art of architecture is at present fighting for its life. It is only the exterior skin, a sham beauty, which is called architecture, while the entrails, the structure of the building is abandoned to the engineer, who is in process of killing the art." It would be unjust to deduct from this that he under-estimates the importance of technology in modern architecture. His own work displays his strong feeling for structure. Before taking up architecture, Melnikov studied painting in the Beaux Arts School in Moscow. He considers that this was valuable to him. During his career he has followed closely the development of art in his own country and abroad and his work has profited from this. In his work as a painter, however, he has always remained a traditionalist and has remained faithful to his teachers Korovine, Malioutine and Kassatkin.

All the daring of his research, his dissatisfaction with previous work, his desire to place constantly renewed forms in the service of his fellow men are, for this man, concentrated in architecture. In his eyes, this is the art which is the most complete, the art which has an inexhaustible supply of possibilities for expression.

H. Robert von der Muhl, Homage to Richard J. Neutra

Richard J. Neutra, born on 8th April 1892 in Vienna has, in his lifetime become justly famous and has been honoured on countless occasions. During an architectural exhibition in Vienna, the Chancellor of Austria hailed him as one of the country's most eminent sons. His exceptional qualities have been lauded in Washington, Moscow, Rome, Tunis, Lausanne etc.

Two Swiss, Hugo Kaech, director of the Vienna Opera, and Ferdinand Maeder, architect, are at present completing a television series in which the perfection of techniques achieved in Neutra's work is widely drawn upon and more especially their effect on the lives of men.

The human being, his comportment and his reactions are Neutra's continual preoccupation — he is always as conscious of the well-being of the individual as of architectural effect.

The appearance of a building, so important in the effect which it has on the occupant, is an aspect which has been completely mastered by Neutra. Viennese like his master, Otto Wagner and the great Adolf Loos, he was early influenced by Louis Sullivan and Frank Lloyd Wright and his American work shows him worthy of what

had gone before. It would seem superfluous to enumerate his remarkable output; three volumes, published in Switzerland, have done this in detail and this review has regularly illustrated his work and published extracts from his philosophical writings.

A friendship lasting thirty-five years has given us the privilege of following the evolution of the master towards the fulfilment of his mission. It is his humanity which strikes one most about him.

During the 3rd International Congress of Modern Architecture (CIAM 3) in Brussels in 1930, we were on a visit to Antwerp, when Neutra suggested that instead of visiting the port, we should go and visit a unique work which was housed in the Cathedral, "The Descent from the Cross" by Rubens. To one of his culture, the lasting values of great art were preferable to the appraisal of passing technical problems.

During the magnificent exhibition of the masterpieces in Swiss collections in Lausanne in 1964, I introduced him to Dunoyer de Segonzac, who himself was particularly interested in

Viennese art, being as he was the owner of several of Klimt's drawings. The immediate rapport between the two men was astonishing, although the subject most discussed was not the integration of the arts, but the phenomenon of the progressive disintegration of form since the impressionists, a disintegration which affected not only line and colour, but which was even apparent in town planning with the sprawl of built-up areas.

Neutra's chief preoccupation is to use all available means to ensure that discomfort and uneasiness have no place in the lives of people, neither in the body nor in the spirit, and it is with this in mind that he speaks of biological or of bio-somatic architecture.

In order to spread his ideas and ensure continuity, he has founded several research institutes, in America, in Austria and in Switzerland. These institutes undertake the editing of his own publications and the works of other authors writing on related subjects.

At the present time this wealth of activity is directly inspired by the master himself, Richard Neutra.

Roberto Segre Colonial Fortifications in Cuba

Despite the mammoth constructions of the Siegfried and Maginot lines it can be said that military architecture in the true sense ended with the 19th century. Modern weapons have accelerated the disappearance of architecture as a means of defence or rather they have made a negative contribution in the development of underground rocket pens and of the underground shelters where man must hide to escape atomic destruction. He must return to the caves of his beginnings, albeit fully equipped with modern comforts. Military fortifications are therefore of special interest to us as an architectural experience — not only historic, but plastic, spatial, urbanistic and environmental; that is, human. These fortifications used to be, in fact, the physical framework within which a community had its being as in the castles of the Middle Ages and fortified cities of the Renaissance. There were periods in the history of Western culture where man's existence face to face with nature was expressed by his military architecture, by the use of geometric forms which complemented the natural surroundings or were in opposition to them. Massive rectilinear forms can signify — apart from their defensive ends — their desire to reshape and rationalize their physical environ-

ment. Boullée, for example, uses these enormous masses of stone to represent the absolute clarity of reason at the intellectual level of the human community. The study of the problem of massing — a lost art rediscovered by modern architects — has led Louis Kahn to make a detailed study of castles and fortresses, their complex geometric rules and their discipline in the control of space and volume.

Military architecture tends to be studied from a technical rather than an architectural standpoint, and as a result seldom figures in "classic" architectural books. This is a great mistake, even though much of the design was done by engineers. In fact, technical considerations, such as strategy or ballistics, were never the decisive factor in choosing between several solutions of equal worth, any more than was the introduction of functional or material elements, or environment. The forms fulfil a very definite specific function, with no concessions to decoration, although this lack of decoration in no way suggests a lack of form, volume or space which are for us the very essence of any architectural concept.

A fortification, in the Middle Ages, expresses one basic truth — that of man set against man, the attacker and the attacked. This, combined

with the limited power and range of the weapons available allowed considerable freedom in the choice of construction of the walls; the site chosen, usually on high ground, itself dictated the plan-form and "organic" structure of the architecture. The necessity for complete protection of the interior space implied a solid character, closed and inward looking, with a vertical emphasis.

With the Renaissance and the invention of the cannon a change took place in the form. The linear, diagonal and parabolic trajectory of the projectile necessitated an architectural reply dictated by the unchangeable laws of geometry. Gone was the freedom of formal composition. Based on the work of Leonardo da Vinci, de Filanete and Francesco di Giorgio, polygonal square or star shaped plans became the accepted form. The unified castle gradually became the unified town, the basis of the new defensive structure. The island-town could defend itself against the prevailing feudal forays.

Michaelangelo had a considerable influence on the forms taken by fortifications which had become fairly standardized. He showed that the form used need bear no relationship to the calculated trajectory of a projectile and that freer forms were possible. The walls of Florence

in their free plan-form express the movement of men behind them, and their ability to resist an attack which might take any form and come from any direction.

The increased efficiency of armaments during the Baroque era necessitated a form of defence which went beyond simple walls and ramparts and defensive actions had to take place in the surrounding areas. Vauban was the originator of an urban and architectural system which combined the rectilinear forms of the Renaissance with the freer forms of Michaelangelo. Fortifications in the Americas are not a straightforward development of those in Europe. Their originality springs from the fact that the Spaniards had discovered a fabulously rich continent which they were obliged to defend from attack by other European countries. They had complete control of the riches of South America and organized their commerce between the two continents from strategic points in the Caribbean, such as St. John in Puerto-Rico, Saint-Dominique, Portobello, Veracruz and Havana. The latter was especially favoured due to its position relative to the Gulf stream and the trade winds. The Spanish position was so impregnable that England, France and Holland resorted to piracy on the high seas rather than attempt any form of traditional warfare against the Spanish territories. As a result all their ports had to be strongly fortified to resist lightning attacks from the sea against galleons loaded with treasure which were sheltering there. As the convoys only sailed for Spain every one or two years, the concentration of wealth in these towns was enormous.

The problem of fortifications on this scale and at such a distance was a new one and one which Spain was not in a position to resolve. Her experience to date was based on the war of conquest against the Arabs in North Africa where a series of Castilian castles was built with each advance over a period of some hundreds of years. It was a system which was totally out-dated and unsuited to their new problems. Realising this, they engaged a family of Italian architects, the Antonellis, who supervised the construction of their American fortifications for almost 3 generations.

Until the arrival of Battista Antonelli in 1586, the existing fortifications had been cheaply and inadequately constructed and had twice succumbed to raids by pirates in a period of 50 years. All work done in this period was a complete copy of Renaissance fortifications in Europe, unadapted to the special conditions. The Castle of the Straight of Havana was a typical example, built by Bartholomew Sanchez in 1558. It was in stone, square in plan with 4 trapezoidal bastions, surrounded by a lobed moat. The living quarters were hollowed out of the bastions themselves. Despite its solidity, it never played a decisive role in the defence of Havana, and after the castles of Morro and Punta were built, it was converted into the official residence of the governors of the island. Its weakness was that it was designed to resist attacks from the land as would have been the case in Italy, whereas all

attacks here took place from the sea. In America, all the Spanish towns were on the coast, or at the head of long inlets where ships could shelter. This necessitated the construction of forts at the entrance to the approaches, which were an extension of the towns' own defences. The castle at Fuerza was one of those which was designed to satisfy these requirements.

The work of Battista Antonelli, continued after his return to Spain by his son Jean-Baptiste, and later by his nephew Cristobal de Roda, broke entirely new ground. Amongst their designs were the fortifications of Cartagene and Saint-Domingue, of Morro in Porto-Rico, of the port of Veracruz and the island of San Juan de Ulúa, of the castle of Santiago de Araya in Venezuela, of the fortresses of Morro and Punta in Havana. Even though the Morro of Santiago de Cuba is dated later than these others, it is typical of the work of the Antonelli family and may have been designed by his son, who visited the town in 1639. The presence in Cuba of the three major fortresses of Latin America — Morro in Havana, Morro in Santiago, and a century later, the fortress of San Carlo de la Cabaña — was no accident and was due to Cuba's importance to the Spanish trade routes. The haste in providing an adequate system of defence is highlighted by the relative lack of development of the towns themselves.

The forms of the Renaissance tended to disappear as time went on, due to the difficult siting and necessity for two-way defence from attack — from land and sea. The square basis was retained, however, wherever possible, with asymmetric extensions to cover points of strategic importance. Typical examples of this are San Salvador de la Punta at Havana (1590) and Santiago de Araya at Cumana (1604). The compact massiveness of the castle of Fuerza was replaced by the lighter and more spacious encirclement of a central court.

Antonelli's survey of the Havana defences convinced him that Fuerza alone was quite inadequate and he proposed two further forts at the entrance to the roads, supplemented by a boom. The building of the castle of Tres Reyes del Morro began in 1589 and lasted until 1630. The plan was in the form of a broken polygon, imposed by the irregular nature of the rocky promontory on which it was built. It was stepped down to sea level in a series of terraces to give an unobstructed field of fire. The whole concept is one of impregnability, as if contrasting the solidity of the fortress with the fragility of the attacking ships.

Defence from an attack from the land side is not neglected, the whole being transformed into a sort of artificial island by a deep moat.

The siting of Morro, at some distance from the town, obliged the architect to design it as a self-contained military community. Instead of the usual parade ground at the centre, there was a complex of living quarters, officers' mess, chapel, etc. Antonelli succeeded in combining two opposing traditions — an organic integration with nature as in the Middle Ages and the geometric abstraction of the Renaissance.

With these three fortresses, Havana was completely impregnable to pirate attacks.

Le Morro de Santiago de Cuba, also known as the castle of San Pedro de la Roca, had a varied architectural history. It was begun in 1643, destroyed in 1662 by an English attack, seriously damaged by an earthquake in 1678 and not finally completed until the beginning of the 18th century. It is similar in its general concept to Morro de la Havana, except that whereas the latter is built on a horizontal platform, the Santiago fortress is built on a steep slope, the change of level from the sea to its upper platform being some 260 ft. This siting gives magnificent coverage towards the sea, and although access from the land side is easy, it is also extremely well covered defensively.

Its form changes continually, giving an almost infinite number of combinations of diagonal firing lines. On the sea side, the character is pure and menacing, while on the land side, the volume, seen in profile, is practically unseen and appears as a simple geometric form, closely married to the natural slope. This fort, together with two secondary ones, those of Esterella and Santa Catalina further up the roads, rendered the bay of Santiago de Cuba safe from pirate attack.

If the fortifications of Havana, built in the 17th century, proved successful against pirates, they failed to hold against a conventional army. In 1762, Spain was involved in the 7 years War between France and England. England, knowing Spain's wealth in the Caribbean and wishing to have a share of it, spread the war there and attacked Havana, which fell after a 44 day siege. Once the city was reinstated after the war, the Spaniards decided to extend and modernize the fortifications to enable them to face an invasion of this sort. The solution chosen retained the concept of fixed defensive positions; of the "stronghold". The Spaniard is too great a respecter of tradition, and learnt nothing from the mobile tactics of the pirates which had brought them such success. The new fortifications were vast and enormously expensive but could do nothing to delay the decline of the colonial empire.

This time the design was undertaken by French technicians in the tradition of Vauban, and this was particularly evident in the castle of Cabaña, built between 1763 and 1764. The emphasis in this was defence against attack from the land, whereas the others built at this time, such as Atares and Prince were more traditionally of a perimeter defence form. Despite their more elaborate design, however, the basic concept changed little. European standards were once again very much adhered to.

These new defences were never used, however, as the mainland possessions of Spain ceased to exist. In the 19th century the fortifications served, as in Europe, as a symbol of political power against revolutionary movements, in that they formed a repressive ring round the town. In this they reversed the role for which they had been designed. Now, having lost their functional meaning they remain as a dumb witness to human progress.

P. A. Emery The Castles of Gondar

Archaeologists are being more and more drawn towards the civilization of non-Mohammedan Africa which have appeared sporadically and disappeared again, whether it be such ancient ones as the Zimbabwe or, in Ethiopia, the Axumite kingdom, or such more recent ones as Ife and Ibadan in Nigeria, Kumasi in the Ashanti region in Ghana, or the Gondar — a few kilometres north of lake Tana, in Ethiopia. The Benin bronzes of the 16th and 17th centuries are evidence of seafarers, warriors and Portuguese merchants, but it seems unlikely that their presence was in any way related to the blossoming of the Benin civilization. At Gondar, on the other hand, or more exactly during the pre-Gondarian era, these same Portuguese, priests and soldiers, were the basis of the renaissance of political, economic and artistic gran-

deur of the Ethiopian empire and this brilliant period of history lasted for nearly two centuries. The period during which Gondar was the capital was particularly dazzling, perhaps even more so than the Axumite era. By their scale and the richness of their architecture, such buildings as are still standing give some idea of the splendour of the city and court. Unfortunately, the most important of these castles and palaces were rather badly restored during the Italian occupation, and, although at the moment, the whole town is standing, much skilful maintenance is needed, and should be undertaken at once, for this is an absolutely unique example in the history of African architecture.

In about 1540, the troops of the Arab invader Mohammed Gagne cleared the Ethiopian plateau and obliged the monarchy to withdraw to

the province of Choa, on the banks of Lake Tana whose islands were inhabited by Coptic monks. Portuguese soldiers, led by Dom Christophe de Gama, were fighting on the Ethiopian side and succeeded in defeating and killing the Iman Gagne on the Western shore of the lake. The Portuguese consolidated their position in Ethiopia and brought with them Portuguese and Spanish missionaries. At the end of the 16th century the Emperor Sartsa Denghel built at Gouzara the first tower-flanked Gondarian castle, of which some ruins remain. From 1619 to 1621, Father Paez, a Jesuit, built the remarkable church of Gorgora, Maryam Guemb (Mary's castle) on a promontory which dominates the North bank of Lake Tana; such decoration as remains on the ruins is of surprising richness.

The Emperor Sousneyos was converted to Catholicism in this church by the Portuguese priest Alfonso Mendez. At the same time he obliged his people to embrace the same faith. The excesses of the missionaries, however, caused the people to revolt, and in 1632 they were forced to leave, along with the last descendants of the Portuguese nobles.

After the construction by Sousneyos of a palace at Goumneghié, of which there is no longer any trace, his son, the Emperor Fasilidas built, according to legend, the first monument at Gondar, which was to be the new capital. It was known as the "Baths of Fasilidas". It was a gracious villa, arcaded and vaulted in the centre of a vast pool in a park surrounded by fortified walls. A few kilometres away, he undertook the construction of an imposing fortified castle. This was a on four floors, flanked by circular towers with cupola roofs, the whole topped by terraces with crenellated walls, similar to those to be found in the Portuguese castles at Mazagran in Morocco. He also built the fortifications of the Imperial city. The 12 gates open off bridges spanning a deep moat.

For more than a century, the successors of Emperor Fasilidas carried on working in this original style, whose general spirit could be described as feudal and European, with some details recalling the Romanesque period and the Renaissance. Some of them were extremely graceful, obviously the product of a sensitive civilization, and were much admired by travellers from abroad. At the height of its glory, Gondar had a population of 100,000, with separate Moslem and Falacha quarters (the Falacha were Ethiopian Jews who still survive in a village close to Gondar). The mystery surrounding the construction of a town of this size has never been completely solved. It is known that the earliest structure was built some time after the eviction of the Portuguese. Some priests may have, in fact, stayed behind at this time, and it is probable that a few of the 40 churches in the city existed at the time of its foundation. It is therefore reasonable to suppose that Gondar was constructed as much by half-caste Portuguese as by masons taught by them, presumably assisted by Levantine and Indian workers. The Portuguese had brought with them the art of working with stone, forgotten since the Aoumite period, the use of lime, the arch-centre and the construction method for the vault. The cupolas which top the angle towers of many of the buildings, however, are identical to those on Coptic and Nubian churches of the Nile valley. In addition, they are not unlike the architecture of certain palaces from Southern Arabia. The exterior access ramp leading to the first floor of the Fasilidas castle is reminiscent of that in the Citadel of Alep.

The castle of Fasilidas (1632-1667), completed in the reign of his successors Tsadig Johannes (1667-1682) and Yassou the Great (1682-1706) is the most important monument of the Imperial stronghold. A terrace, now collapsed, connected the castle of Fasilidas to that of Yassou the Great. This terrace covered a vast excavation, called the "Pool of Fasilidas" which was probably used as a water reservoir. One of the façades of the Castle of Yassou is still intact, but inside, the vault of the main hall has collapsed. The main tower is surmounted by a chapel. An exterior spiral staircase surrounds the walls of a truncated conical tower.

Facing the castle of Yassou, there are two smaller buildings, probably built by Tsadig Johannes. They are remarkably refined and elegant. One is the library, which has been rather over restored — the other is the chancellery of which, unfortunately, only the external walls and tower remain. Between these buildings and those in relatively good repair to the North there are other buildings which are in a very poor state of preservation or else have completely collapsed.

The Northern part of the stronghold was built in the 18th century, during the reign of Becafa (1721-1730) and of his widow, the Empress Mentouab (1730-1775). The layout of this group of buildings, which vary greatly in size and importance and are closely interwoven, subtly makes the most of the changes of level. Seen from the outside, this group gives the impression of having been built in the Middle Ages with its towers and battlements. This makes it the more surprising when, once inside, the palaces and other buildings are found to be sensitively designed in a style which, like the library, is reminiscent of the Renaissance. These are the Palace of King Becafa, with its vast halls, stables and trapezoidal main court, the palace of the Empress Mentouab, a villa on 3 floors, and the house of the Chief of the Cavalry which is built over a large patio garden and surveys one of the main gates of the stronghold. Still existing there are the Turkish baths and the marriage house which date from the time of Yassou the Great.

The Imperial stronghold still contained two churches in ruins, destroyed and rebuilt in the traditional Ethiopian style on a circular plan — that of Guemjabiet Maryam, the Treasure of Mary, and of Attatami Queddous Micaël, St. Michael the Handsome, which is much more interesting. This church was built by Emperor Dawit III. This was, and is, one of the most characteristic buildings in the religious architecture of the period. Originally it was a basilica with three naves which were entered through a portico of four arcades flanked by two round towers.

The buildings of the Imperial stronghold, interesting though they be, are not the only items of architectural and archaeological interest in Gondar. On a hill facing the group, there is the palace of Ras Micaël Sehoul. This building which is in a remarkable state of preservation, was probably built in the mid 18th century. It is reminiscent of the castle of Fasilidas, though smaller, and only requires the removal of some badly restored details to bring it back to its original state. It is now the home of the Emperor. At two kilometres to the North of the town, the fortified abbey of Debra Berhan Seillassie was built by Yassou the Great on the rectangular plan that Coptic religious architecture was to abandon some years later. It is of little interest except in its siting and approaches and in the magnificent interior painting.

Further from the town and right beside the Baths of Fasilidas, there is an isolated and strange structure, a sort of kiosk built on arcades, and called the "tomb of the horse". Not far from there, there is a curious domestic building which is now in ruins, but whose details are full of interest. It is the "chicken house".

When she became a widow the Empress Mentouab built the Abbey of Gousquam on a hill a few miles to the West of Gondar, and was buried there. At the centre of a double wall there is the circular Church of Debra Tsehayé, the Church of the Sun, with its concentric steps and its conical roof which rested on a circular gallery of forty arches. An unfortunate attempt was made to restore part of the church in concrete, probably under reinforced, which collapsed. By an open door under the priests house, one arrives at the ruins of the palace and the Oratory of the Empress Mentouab of which some of the walls are still intact, with the traditional Gondarian towers which are still in quite good condition.

The door and window details are witness to the same strange refinement which one finds in the other palaces. The remains of a bas-relief representing an elephant are a surprise and give a touch of exoticism appropriate to the late Renaissance decoration.

With the passing of the centuries, the Monuments of Gondar have withstood fire and earthquakes. In 1867, and again in 1868, Gondar was pillaged, first by the army of the Emperor Theodorus in his battle with a British Expeditionary force, then by Dervish invaders. The restoration work carried out by the Italian Corps of Engineers has probably saved some buildings, while disfiguring or destroying others. In the last 25 years, it seems that little has been done to save Gondar, which is one of Ethiopia's major tourist attractions. As a result, it would seem, that relatively soon it will be no more than a memory and a heap of rubble.

Roberto Segre Popular Architecture in Portugal

The reasons why a purely popular architecture still manages to exist in Portugal to-day are the following:

— the geographical position of the country which is separated from Europe by the Pyrenées and by Spain;

— the traditions brought by the succeeding populations who have occupied the Iberian peninsula, from those of Germanic origin to the Arabs;

— the slow economic development, still far from a phase of industrialization.

It is quite clear that these factors will disappear with the modernisation of means of communication, the alteration — however hesitantly this may come about — of the economic structures and the replacement of the traditional construction methods by more speedy means. Nonetheless, one still finds vast areas where nothing has changed or only to a very slight degree, for centuries past.

About 10 years ago, the Portuguese architects' association undertook an enquiry into the whole of the metropolitan area. By this means all the

manifestations of architecture were revealed, the richness of which is due in large measure to the geographical variations of the country.

Its position, and its form of an elongated rectangle running North/South, means that Portugal is influenced simultaneously by two climates: the Mediterranean, hot and dry, in the South and the Atlantic, wet and cool, in the North. These two influences directly affect the culture, the distribution of the population, the structures of the towns, the architectural forms and expressions.

The dryness enforces monoculture, the latifundia are also enlarged by the system of crop rotation, an agricultural calendar at spaced intervals, a meagre yield from the soil, and the need for a salaried labour force. That is the image of Southern Portugal: in between the big estates have grown up large compact villages, which house the workers who possess no land. On the other hand, in the North the winds of the Atlantic allow a rotation of crops throughout the year, polyculture, small estates and a dispersion of the population. The land is sewn

with small holdings, each one with its farm and its agricultural installations. This is the family group that cultivates the soil with the utmost care, profiting from every square inch.

Whether it is in the North or the South, the house or the urban agglomeration is only rarely erected in the plain. This may be for reasons of defence or to economise the fertile ground of the valleys, but the fact is they are usually to be found on a rise, which means a constant need for walls, staircases and ramps. Adaptation to the terrain excludes straight lines so that every use can be made of ground that is slightly rounded, where the multiplication of the volumes that cling to the knolls breaks, in the changes from light to dark, the hard brightness of the Southern sun or rise in water-colour tints through the Northern mist. The image of these clusters is constantly being renewed. A knowledge of it demands a cinematographic vision that allows a synthesis of the symbols, which arise at every turn of the road.

The capacity of the populations to "live" is shown in the houses themselves and in the com-

munity areas. Created without the protection of a special occupation for the region, the group of popular origin is a living organism. It relies on itself, following the lines of force, in full accord with the laws of its own existence to which is brought the gleam of intuition. The basis of its development is the combination of lane—"largo" (boulevard or main road), which makes up the framework for the said lines of force. These latter are the elements of a structure, the tissues that keep the body united and complete. The suburb is an idea that does not exist. It is only later that speculation favours the growth of cancerous agglomerations.

The apparently individual activities of their authors, that is the popular milieu which has built them and lives in them, does not however create a blind addition of buildings. They reveal, on the contrary, a vigorous collective feeling that is particularly eloquent in the creation of the "largos". The force that comes from the necessity of life in common, of living together, of social affirmation, gives birth to a tacit law, which makes edifices retreat and makes way in the very body of the group for a living space with very special characteristics. Its functioning has

considerable importance in the Southern cities. The fêtes, fairs, shows, sometimes the corridas take place there. They are the affirmation of the town as a social entity. Art asserts itself as the most collective of all. It is a spectacle in which the actors are at the same time the authors, where the colour of the buildings, the design of the ground, the flowering of the trees are a painting in all its dimensions, builder of spaces, emanation of a function that is strictly epidemic.

In the villages of the South, the houses are close together and form a whole. Architecture and town planning arise out of the same methods of procedure. The town-sculpture is a spontaneous and many formed succession of white volumes and generous surfaces, where the openings are reduced and appear like black rectangles. The house gives onto the road with a façade that clearly defines the communal and private sectors, that is the exterior space with its violent lights and the interior with its delicate shades. That corresponds to life in the South: every day life is strongly centred round the patio, this semi-enclosed space, which forms an intermediate solution between the exterior and the

interior. It is protected by the plants that intertwine on the light pergolas, in such a way that they allow the sun's rays to pass in winter and they create a micro-climate that is fresh and repose in summer. The patio can be set into the walls or jut onto the road, but in the latter case it is all the same enclosed by walls that are high enough to isolate it from passers-by and neighbours. There, one does the domestic chores and the handicraft work, that occupies the family when the rain does not permit activity in the open air.

If the architecture of the South has a centripetal character, that of the North shows the opposite tendency. The buildings open more frequently to the outside and the transition areas take the form of covered verandas. These latter also serve, in rural dwellings for different purposes, in particular for drying the produce of the earth.

It is useless to seek a preference, each type of popular architecture corresponds in a coherent way to the geographic setting and to the human factors which are its basis. It constitutes a lesson in the sense that it shows that intuition and love can conquer the meagre material means that a popular builder has at his disposal.

Michel Ragon A Retrospective view of Prophetic Architecture

In 1924, in Gropius' book 'Internationale Architektur', of 80 designs presented, only about half were projects. Of these, some were later built. For example, Mies van der Rohe and Le Corbusier realised their youthful dreams only in their 65th year — the first in building the steel and glass sky-scrapers in 1951 which he had designed in 1919, and the second in completing in 1952 the first 'unité' of his 'Cité Radieuse' for which the sketch designs were prepared in 1922. Gropius' Total Theatre however, which was designed in 1927 was never built, nor were the exciting designs of Robert Maillart, nor the more daring schemes of Perret, Sauvage, Van de Velde, Le Corbusier or Frank Lloyd Wright. The history of architecture is a history of lost opportunities.

The Chicago School, in 1893, was to the forefront in architectural thinking, but when Louis Sullivan submitted his plans for the World Exhibition at Chicago, these were rejected. The highlight of the exhibition was the "White Town", designed in "The Imperial Roman Style" by McKim, Mead and White, who were to enjoy great success as a result. Stucco and timber were used in abundance, whereas the Chicago school had, over a period of ten years, demonstrated the possibilities of metal structures. Forty years were to pass before the U.S. again produced progressive architectural thinking. There was a ray of hope in 1922, with the competition for the Chicago Tribune headquarters, for which Gropius, Adolf Loos and Saarinen submitted designs, but the first prize went to a neo-Gothic skyscraper designed by Raymond Hood. In 1925, for the International Exhibition of Decorative Arts in Paris, the planner Agache proposed 'an expansion of Paris towards the West' by building the exhibition pavilions as permanent structures. This proposal was approved, some 30 years later, but in the meantime, a remarkable collection of architectural gems, typifying the best work of the period, was demolished — the Perret Theatre, the Pavilion of the New Spirit, by Le Corbusier, the Russian pavilion by Melnikoff, the Austrian pavilion by Josef Hoffmann, the Lyons pavilion by Tony Garnier, the Spring pavilion by Sauvage.

By 1927, functionalist architecture had come of age and there were high hopes for the competition for the League of Nations building in Geneva, which could have been a living proof of the vitality of the new architecture. The jury placed the entry of Le Corbusier & Jeanneret first, but Mr. Lemareshquier, the French delegate, succeeded in having their entry disqualified because it was drawn in printer's ink and not in Indian ink as specified!

In 1931, hopes were raised again by the competition for the Palace of the Soviets in Moscow

— Le Corbusier, Mendelsohn & Gropius were amongst the entrants, but once again it was a waste of effort, and conformity won the day. The history of modern architecture in addition has had to put up with a series of misrepresentations, and this has continued to the present day. For example, there is the case of the 19th century architect, Horeau, whose name commands a few lines in most books on the history of architecture and who is even erroneously described as an engineer. He, in fact, built practically nothing, but consecrated his life to the attainment of an ideal — the construction, in metal, of vast transparent halls capable of covering large spans and housing exhibitions of art and industry.

He was 34 when, in 1835, he presented his first project on these lines, a sort of multi-purpose umbrella — a very modern concept giving the maximum usable area with the minimum of internal supports. It was in this spirit that Henri Labrousse in 1843 built the Bibliotheque St. Genevieve in Paris, which is considered as being the first "futuristic" metal building of the 19th century.

Encouraged by this first realisation of this idea, Horeau exhibited some large-scale models in 1849 and 1950 at the Palais Royal and the old Hotel d'Angivilliers. When the Great Exhibition was mooted, he brought out his 1835 scheme and designed a vast hall which was unanimously awarded first prize out of 333 entries. It was Paxton, however, who was commissioned to build the "Crystal Palace".

Paxton's first proposal was for a ziggurat-like skyscraper, but he returned to a scheme which was in part influenced by Horeau's ideas. It was highly original, though, in that it was completely pre-fabricated. In 1855, Paxton proposed an extremely forward looking piece of urban planning, the Great Victorian Way. This consisted of a 20 kilometres belt around London, designed to control traffic problems, and included an aerial railway and a road covered in glass, with shops and houses on either side. To return to Horeau, he naturally entered for the competition for the construction of "Les Halles" in Paris. His scheme had considerable support, but in 1851, the foundation stone of the new buildings as designed by Baltard was laid and the first section was completed in 1853. This mammoth stone structure was considered so unsuitable, however, that it was demolished and Baltard redesigned the buildings based on Horeau's original project. Later, Hittorf built the Gare du Nord in Paris, also based on Horeau's ideas.

In 1868, when he was 67, Horeau published an extraordinary booklet on his ideas and hopes for the future. Besides some ingenious and

naïve proposals we find some quite remarkable forward thinking, and a grasp of such concepts as spatial and underground planning, mobility, prefabrication, polychromatics, roof terraces, machines for living in etc. Some of his ideas have yet to be realised.

Also as yet unrealised are floating and suspended towns. In 1920, Wenzel A. Hablik published a scheme for a floating metal sphere designed to house explorers. In 1928 Daniel H. Burnham designed "Skyscraper bridges" along the lake shore from Michigan to Chicago. These are related to those proposed by Perret in 1922 for the Paris suburbs and the project of Mart Stam (1922-24) to run circulation routes over the buildings of Amsterdam. Le Corbusier's idea of enormous viaducts spanning the city of Algiers over the general building level also belongs to this period (1931-34).

Perret was the author of many avant-garde schemes in the 1920s which have been little illustrated. The Plan Voisin for Paris, prepared by Le Corbusier at about the same time was no more extraordinary than many of these, but it was always he who was accused of megalomania. Apart from Hector Horeau, Le Corbusier broke all records for the non-execution of presented designs. The plan for the League of Nations building in 1927, the plan for the re-construction of the Porte Maillot in 1929, with its segregation of pedestrians and vehicles plan, for the Palace of the Soviets in 1931, seven plans for Algiers from 1930-1942, plan for Anvers Rive Gauche in 1933, plan for Nemours in 1934, plan for a cooperative village in Sarthe, 1934-1938, skyscraper for Algiers, 1938-1942, and innumerable plans for Paris from 1922-1956.

These facts are well known, but it is less well known that Frank Lloyd Wright at the time of his death left 37 designs as yet unbuilt, including the extraordinary plans for Baghdad and Pittsburgh, the Sporting Club for Hollywood, the Capitol for Phoenix, Arizona and the "mile-high" skyscraper.

Who remembers that Frederick Kiesler, one of the great unknowns of 20th century architecture, exhibited in 1925 the design for a "spatial town", on which he had been working since 1918? This "city suspended in space", a theme which is considered avant-garde even at the present time, was at that time considered completely lunatic. It can be argued that the real history of architecture is that of these schemes which were never built; or else that there are, in fact, two architectures, one of research and projects, the other of completed buildings — the second being but a weak echo of the first.

Are Tony Garnier and Sant' Elia less important than other architects who built a lot? In his 'Industrial City' in 1900, Tony Garnier defined what

came to be known 20 years later as the International Style, and formulated the basic principles of modern architecture and town planning. The industrial City pre-dated by ten years the famous Steiner House by Loos. The form which Garnier gave his buildings is an astonishing premonition of what was to follow in his use of glass bricks, big windows, roof terraces, pilotis, cantilevers and such technical innova-

tions as mass produced sanitary units, collective electric heating to avoid atmospheric pollution and temperature control. He eliminates internal courts to create more green space, segregates pedestrians, plans his school in parkland and provides a social centre. The Charter of Athens, published in 1943, did little more than set down his principles, which had been formulated 40 years earlier.

As for Sant' Elia, in his Citta Nuova of 1914, he laid down the principles for the first time of movement in architecture in stepping back on successive floors, aircraft landing platforms, motor access, moving staircases and lifts for pedestrians. It was considered that Citta Nuova was 50 years ahead of its time, but now, after 50 years have passed, it still seems remarkably forward looking.

M. Pinchis Sculpture — Architecture

At the beginning of this century the old marriage between architecture and sculpture was dissolved through the democratisation of architecture, the renunciation of all decoration, the simplicity of proportions and the use of new materials. Industrialized architecture, without the benefit of sculptural effect, soon became banal, monotonous and devoid of personality. Sculpture itself, however, refused to adapt itself and remained faithful to the Graeco-Latin culture, traditional methods and materials. In a mechanized world, sculpture and sculptors retained an old world, artisanal character.

Sculpture, even in our time, remains classical in spirit, showing as it does neither development, imagination nor self-confidence. Protestations expressed in twisted pieces of metal, badly welded rusty steel or ill assembled baulks of timber cannot represent a reply-reaction or a solution-road for the sculpture of tomorrow, being no more than superficial diversions which hide the real ills. The artist's imagination,

however, linked with modern techniques, could create a new sculpture of strength and character. These new works of art will be expression of the union between science and aesthetics, the artist and the engineer. The sculptor must have had a widely based scientific and artistic training. His work must have been undertaken in consultation with a large number of specialists. He will have considerable advantages, because his sculpture-architecture, not designed for living in, and freed from the discipline of superimposed loads, will permit the use of new and freer forms, more courageous than those normally encountered in buildings. At a time when the banality of many housing programmes is restricting the possibilities of modern architecture, the sculptors could take the initiative in reconsidering the brilliant work of Kasimir Malevitch in his "Dynamic Architecture".

Buildings of the future will have the possibility of being able to be constructed in complex hyperbolic-paraboloid forms of great height. An

advanced technique such as the use of shell concrete will make possible the use of entirely new forms. Other structures, not as yet fully investigated will open up yet further possibilities. With the use of ordinary materials, gravel, sand, marble chips, etc., ordinary work procedures — shutters and moulds in wood, steel and plastic materials — and with relatively little expense, all manner of dynamic sculptural compositions which reflect our age can be produced. The various elements of a family of sculptural forms could be joined together in aerial arabesques, creating, as it were, a permanent fireworks display in space. These forms can be designed in such a way that they can move and flex under the effect of the wind.

Sculpture should be in the open air, with the sky and nature as a backdrop — sculpture in a museum smells of naphthalene. We already have enough graveyards of sculpture — let us now have some living works.

R. Le Ricolais Introduction to the Notion of Form

The object of this lecture is an effort to clarify the difficult notion of form, by taking into account some fixed point of reference. As we know, Plato was amongst the first to give to the problem of form the importance it has to-day, but Plato, as all geometers of his time, had more in his mind a static structure of form than the more extensive meaning it has to-day.

A certain part of our survey will concern a more fluid concept of form, often linked with the parameter of time, and involving motion — which introduce form as we see it into living organisms, the connection between the static and the dynamic should be made more comprehensible by the fairly recent introduction of wave mechanics and the understanding of vibratory motion. At the beginning of last century, Monge (1748-1818), founder of the Ecole Polytechnique, and originator of the laws of orthographic projection had the concept of form as being the boundary of three dimensional bodies, limiting thus his attention to an exterior perception of form.

On the contrary, about at the same time, Carl Friederich Gauss, the Giant of Mathematics had a much more profound concept. He considered form as a pure mathematical entity, enjoying, what he called "intrinsic properties". This concept is as valid to-day as it will ever be, and it is accepted to-day that reality mould itself, sooner or later on pure mathematical abstractions.

It is of common acceptance that both in the fields of theoretical or applied Physics, Mathematics have brought to the fore a fantastic repertory of forms, and it is both fascinating and disquieting to witness the total abstraction made by scientists of the real nature of things, limiting their role to a specification and comparison of certain relationships.

Gauss was the first great Architect of Mathematics, introducing the art of composition between mathematical symbols, instead of limiting himself as was done before to the notion of numbers, he introduced the notion of groups, and classes resulting from the results of those compositions. Despite their virtuosity in handling geometrical problems, the Greeks could never have reached this vision, paralysed by the formalism of the rule and compass.

This may be why all the artistic bigotry surrounding the so called "Divine proportion" is nothing else than museum pieces and a mere collection of dry bones.

Before discussing form, it is of some help to become familiar with Gauss' concept of space. As soon as 1816, Gauss had come to the conclusion that the famous Euclid Postulate, about two parallel lines meeting at infinity was impossible to demonstrate, and that time had come for a new geometry where could exist more than one parallel to a straight line passing through one point. Let us here admire the complete destruction of the Kant principle of intuition. This point is a turning point in mathematical history, showing that reality and mathematics have nothing in common, confirming the saying of Renan, "everything is fruitful save common sense". The extension of Gauss' principles, known as Intrinsic Geometry, has been the departing point for Riemann's theory of the Topology of Surfaces. What conclusion can we draw? Possibly a certain distrust between truth and images perceived through our senses.

Should we assume that without mathematics the art of Architecture is wont to disaster? This, I certainly do not believe, but what seems probable is that Architecture will follow somewhat similar lines as Mathematics, and will gain in raising some questions about the validity of some of its principles and of the methods used.

It is a common saying that Science is a well made language. To be sure of the opposite, one has only to be confronted with scientific reports as edited to-day, exuding more than is necessary a most pretentious jargon, where incomprehensibility is the synonymous of competence.

Our civilisation of so-called specialists is wont to sink into an outrageous and meaningless noise if we do not bring some order to this situation. I always wonder to ask myself why, in this age of vapid verbalism we should not return to the study of the Rhetorics of old ages, where instead of words, the composition of words had such an importance in conveying a message in a due style. Just like a telephone conversation, we have to guess 50% of the meaning of the words we use, because of the distortion of meaning introduced with each word. If we scrutinize the etymology of each word, of the conversation, we are lost, just as someone not used to a code and who has to guess the undecipherable meanings of abbreviations. This confirms the basic attitude of modern man

who cannot afford the time involved in thinking. Universities are not immune to this kind of idiocy, who is willing to explain the meaning of "Environmental Studies" and its distinction with non-environmental studies. Just as if asking for the air temperature, someone answered the air is ambient.

In technical jargon we hear also some strange things, I have so much wanted to know what is for an example "discontinuous compression", and what about "Tensegrity" and "Synergetics"? It is good that Molière is not alive, but can we not remember Voltaire who once said that what is clearly conceived is usually clearly expressed...

In the domain of form, marginal knowledge is dangerous, because we are no more in the field of literary culture where success is brought about through seduction and charm. Deductions and statements must rest on facts and not intentions; this may be why a certain sort of "acesis" should be attempted by the student, following the wise Socratic advice of "Know thyself". We have collected a few archetypes of perversion.

The Geometrician, thinking in terms of rigid configurations acting more or less as Procrustean bed, usually as inefficient as the iron grid pattern of street in San Francisco.

The Pattern Maker. Amateur of aesthetic geometry, based on repetition of the tomtom style. This sort of illness is frequent amongst Space frame makers assuming wrongly that the stresses will follow their contorted minds.

The curvaceous form lover à la manière de Corbu... that sort of illness introducing aerodynamics into perambulators.

The Sensationalists or lovers of so-called exciting forms. Ex. A pyramid on its apex. The New York fair displayed an aggressive proliferation of those passing stupidities.

The exotic Vernacular, of the Zen type, disciple of the tea ceremony into a suburban mass transit.

The organic world observer, who would like to convert caterpillars into monorails and honeycomb into Cities.

Structures are nowadays invaded with the notion of shells, and referring to biological observations, we hear a lot about "the protective action of shells"—is that rigidity found in animal structures good or bad? It is both.

Does Nature act as a Philanthropic Agency? Certainly not. And this turns to buffoonery when Arts come in—animal shells are nothing else than excreta opposed to movements found in more sophisticated beings called vertebrates. "In a world devoid of finality writes Nietzsche, there are no such things known as chances." This need of self analysis is, I think, important in order to determine with some accuracy our own coefficient of error, for instance, for some well trained ears the frequency of a vibrating string is almost as precise as given by computations. I know an engraver who can incise a steel

plate to a measured accuracy of one hundred of a millimetre. Besides, this self imposed discipline has also some cathartic virtue in helping us to realise the discrepancy between what we really are, and what we think we are. A very simple test works sometimes in order to determine what I call the Anthropomorphic coefficient of a Student: asked to draw a circle, nearly always, he will mark the centre which may be a system of construction, but which illustrates only one of the many locus properties of the circle. Unconsciously, he will mentally introduce himself at the centre.

Finalism, which means a final aim for an observed phenomenon, has plagued our scientific systems and theories during centuries. This naïve anthropocentric attitude has been at the root of the so called "Human Architecture", or Architecture for human beings. Such respect for the individual is certainly of a great value, but since most of our present problems deal with groups, I am far from convinced of the validity of this dogma. A man has a certain scale, but a man with a motor car has a different one, they constitute two different entities.

Forms and Structures are the consequences, but are not the origin of life.

They are the consequences of an everlasting work of evolution working through a chain of secondary actions. The French Zoologist Frédéric Houssaye, of the kinetist school gives the diagram:

Force → Motion → Forms

In this simplified but already formidably complex statement the factor time is not taken into consideration, and time is an all important factor in the origin of species.

Let us make here an important remark on the different values of absolute and relative time. The human appreciation of time introduces an anthropomorphic error, which results of the comparison of time with distances, or distance between events. This is a pure conjecture — time indeed has no reality save the instant — instant suspended between two nothingnesses: the past and the future. This notion, involving the concept of discontinuity, which in these last decades has been through the Physic of Quanta invading our notions, this is why we should not be surprised to hear philosophers speak of the "granular nature of time".

In some regards, this concept helps us to understand that accidents are at the root of all evolution — we can thus refute the childish idea of Progress associated with repetition. The incertitudes of the present age, as well as the violent behaviour of groups or individuals witness in its reaction to the idea of progress contaminated by anthropomorphism and the dream of an everlasting life.

The most simple attack towards a definition of form, is to study the influence of forces on solid of various shapes. This study covers the field of "Statics", which by itself is already a formidable enterprise, together with the Strength of materials. By virtue of paradox the notion of matter requires a greater power of abstraction than the concept of any divine power. Under the pressure of technological problems great steps have taken place, but much remains yet to be done specially in the study of failures. But this aspect of forms, is too much a specialisation to be discussed in this paper.

In the course of the last century, the notion of crystals expounded by Bravais, gave rise to a new discipline known as Crystallography, illustrated by the geometry of space networks, yielding some powerful indications on the Architecture of matter and its automorphic properties, automorphism being the strict conditions of a given geometrical repetition. We have endeavoured to show that some relatively easy topological transformations yielded the diagram of stresses, which is also an automorphism, under given conditions of exterior constraints, this of course, being the extension of graphic statics to the study of networks. Crystallography has, I think, framed a new concept of order and raised fruitful questions about the hypothetical geometry of space resulting from the so-called "space filling conditions". Such knowledge is priceless for the industry of metallurgy, as we all know since old ages, that mundane power is given to the best weapons, i.e. the one who knows how to make the best steel.

The rigorous mathematical conditions of space filling were admirably summed up at the end of

the last century by Lord Kelyin, in his famous report to The Royal Academy, under the title "Homogeneous Partition of Space", leading to a semi-regular polyhedron, having 14 faces, 8 hexagonal, 6 square 24 vertices and 36 edges, known since, under the name of Tetrakaidecahedron. This momentous contribution, was I think the greatest made to geometry since Plato's discovery of the 5 platonian solid, the tetrahedron, the octahedron, the cube, the icosahedron and the dodecahedron.

Furthermore, it involves the notion of pulsating functions which are at the base of the study of vibrations.

In the course of the 17th century, through the help of analytical and differential geometry, the mathematician Lagrange had speculated on the existence of "Minimal surfaces", i.e. surfaces for which the algebraic sum of the two curvatures are 0 (if we define curvature as the reciproque of the radii of curvature), enjoyed minimal properties, or minimum of matter for a given surface. Such surfaces were made conspicuous through the action of soap-films, as was shown by Plateau experiments studying capillarity.

This illustrates, amongst many other proofs the predictive power of mathematics as hinted before. As expressed by Poincaré: "There is more intelligence in the behaviour of soap-films than Man's imagination can conceive".

In the quest for scientific discoveries, observation should be the companion of intuition.

The introduction of the parameter time into Mechanics, started by the pendular laws, discovered by Galileo, opened a triumphal way, one of the greatest achievements of our civilisation: Wave motion Mechanics, which could and was probably perceived by some receptive minds such as Pythagora, but who had not at this time the mathematical tools necessary for its study.

I am not certain that the history of Science is a prerequisite to the study of forms.

To trace, as historians do, the place, the name, and the date of memorable inventions, seems to me as of little value and importance, but of what I am convinced, is that going through modern courses on Wave Mechanics, without studying the steps taken in the course of time, is a crucial error. To my own feeling, it is a waste of time to integrate differential equations before seeing the vibration of a string, and giving some experimental demonstrations of this chapter of Science known under the name of Acoustics, more or less ignored in the curriculum of to-day. The history of Science is not the history of scientists, but what is of importance is the controversy between concepts and the emergence of their changes in the course of evolution of knowledge. At least, such approach would help the student to understand that if theories pass, only remain facts, and it is the simple collection of facts that makes the best contribution to Science.

Forms and Vibrations

The image of a vibration, or more precisely the amplitude in terms of time, as it is well known, is given by a sine curve, the distance between two crests gives the period T, or the length of time taken by the propagation, λ being the wave length, V, the velocity of propagation, we have:

$$\lambda = V.T \text{ or } V = \lambda : T = \lambda . N$$

N, being 1/T, and named the frequency expressed in periods per second.

This frequency varies according to the form of the vibrating element, which may be a string, a rod, a membrane or a plate. For some problems, it is important to determine this frequency, to avoid the case of resonance which may entail the collapse of the structure.

Two perpendicular kinds of vibrations can take place. The longitudinal or axial vibrations, as we see in a coiled spring where successive condensation and expansion occurs, or transversal vibrations, which is connected with a dynamic deflection of the spring. The velocity of propagation into the spring, varies with the material, more exactly in terms of the Young or elasticity modulus, and also with the density of the material, following the relationship:

$$V = \sqrt{Eg : w}$$

For steel, $V = 5,400$ metres per second, approx. 17,750 feet/sec. It is interesting to remark that the velocity of sound which govern aero-and thermodynamics concerns also the transmission of sensory perception.

Another remark could also be made. If we assume to take time as parameter, the Theory of Elasticity collapses, because this theory is founded with the limited hypothesis of very small deformations, and when large deformations take place the elastic deformation is accompanied by many other phenomena. It has been a puzzle for the Acoustician Savart to realise that the large elongations resulting from longitudinal vibrations were independent of the section area of the vibrating rod. It is less surprising if one consider the time taken by the rhythmic impulse. As an example a small child can ring a bell of considerable weight, and there is no relationship between the weight of the bell and the weight of the child.

The stresses due to vibrations involving elongations much greater than the tensile stresses are witnessed in musical instruments calling for a frequent tuning up of the chord.

Such phenomena are of importance in highly stressed tension structures, and clearly indicates the necessity of damping those vibrations.

As pure form is concerned, any corrugated sheet of metal will give an idea of what we call automorphic shapes, which reproduce itself with periodicity. The modulus of inertia, express this periodicity by the coefficient π involving periodic cycles.

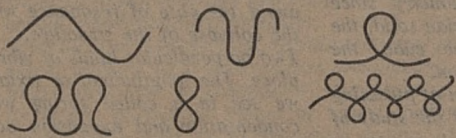
The research of an optimum design for columns, which we name automorphic tubes gives an example of how the study of vibrations may lead to the creation of new forms. The scheme consisted in splitting the fundamental into its harmonics by means of an adequate triangulation, in such a way as to avoid buckling if the same weight of metal had been used in a thin axially loaded tube.

When a light powder such as balsa wood sawdust is spread on a vibrating membrane very interesting configurations are obtained, known under the name of Nodal configurations. They clearly indicate zones of 0 amplitude or hinges of vibrations. These nodal configurations form orthogonal networks, or sets of radial and peripheral configurations. It can be thus ascer-

tained from the nodal position a given frequency, which can be a determinant of form.

We met this problem concerning an advanced design for Radar dishes consisting of an extremely thin aluminium membrane stretched on circular frame, and for which the segment of spherical profile is obtained by creating a vacuum.

The complexity of the physical world that surrounds us is demonstrated by some phenomena classified under the term of capillarity. They exemplify very well the difference between the small and the large, and the study of those have enriched considerably the notion of form, since in the living world many small animals and organisms display this worm-like appearance especially in the class of the flagellas. As said before following J.A.F. Plateau's experiments, mathematicians developed in the systematic way which is their own style a classification of those curves known as Elastic Curves, of which we show some examples:



The curious variation of shape of those curves results from the indeterminacy of the curvature radius sign.

E. Corona Brazil

Brazilian architecture is linked on the one hand to the cultural evolution of the country and on the other to a variety of different factors which have influenced it, particularly of late.

Our architecture has managed to keep its own style, while making use of technical progress and profiting from foreign contributions. The necessary impetus was given by Le Corbusier who visited the country in 1929. His valuable advice has borne fruit in the alertness of Lucio Costa and the creative imagination of Oscar

Practical applications of those forms may be of interest. We see some application for some Liquid tanks, calculated in accordance with this theory.

The importance of reducing to a minimum the radii of curvature and yet obtaining a given capacity, suggested to us for tanks working under tension, a composition of curvature along an economic pattern. This technique is still waiting for a practical application.

Independently of the practical side, those phenomena bring forward the existence of cohesive forces or mutual attractions acting with great intensity at very short distance, but falling off very rapidly as the distance increases. Such action, for a given range, which is very small is yet very great compared with intra-molecular distances. This action is explained as superficial energy.

It appears that in the interior of a liquid, exists a certain intrinsic pressure which is superposed to the hydrodynamic.

From the pirogue to the rocket, the relationship between motion and form covers admirable examples of man's ingenuity. This is too wide a field to be covered by our brief exposé, and we will limit ourselves by considerations of a general character.

As we have seen, the mathematical language and its symbols have been and will always be an enormous reservoir of yet unexploited forms. It is a rule that abstract concepts purely devised for the support of thought, have found later their due place in the vocabulary of applied

Sciences. By virtue of the power of abstraction and the NON ANTHROPOMORPHIC attitude of the mind before the unknown. Probably Magic and Poetry in ancient time had the same power. Forms are often confused with objects that we see and can touch or hold in our hands. For a young one, the discovery of water is an unforgettable experience.

In order to control the art of flying, man had many more other things to do than to fix on his back a pair of artificial wings. It is the character of air flow that shaped the shapes of the planes. From the negative actions of curls and eddies a creative design has been produced enabling man to leave the ground. One has to follow the laws of Nature before commanding Nature.

How deeply can Man comprehend Nature? with its multi-million scales and its interlocking combinatorial actions? As has been remarked by Eddington, there is no confusion possible between natural and Man made objects. The latter are single purposed, while Nature is capable of fulfilling many requirements which are not always clear to our mind.

Most unmistakably, Life equates Forms, but as we have seen the reciprocal is not true. Together with life comes the problem of growth, and till now man is not yet capable of making machines that grow. It may very well be that before solving the problem of form, Man has to create life in an artificial fashion. To accomplish this, Man has yet a long way to go, beyond the visible and the understandable—which, of course does not mean the impossible.

Marc Gaillard France

Apart from the finishing of several blocks of offices in Paris, the architectural year in France has not been marked by many constructions of quality. Several tentative projects (like the "Village-Expo") should not give a wrong impression. Certainly the Public Authorities in France do nothing to help the promotion of a new architecture. Two competitions — one a search for industrialized buildings, the other for the construction of a thousand Youth Clubs give proof of this, ending in choices that were scandalous. As for the major town planning projects, there is nothing that is really convincing. The no. 1 problem this year has been the renovation of the central Halles in Paris, the most coherent and realistic project for which was that of A. & H. Fistowski.

It is the town of Grenoble and the surrounding area — taking advantage of the occasion of the

Olympic Games — that has the greatest number of modern buildings of quality. In Grenoble itself the building of the Olympic Village is being completed, as well as the Press Centre (Architect Novarina) the "Maison de la Culture" (Architect Wogenscky), Palais des Expositions (Jean Prouvé), the SNCF Station, the New Town Hall (Novarina) the Campus universitaire scientifique (Bovet et Cacoub) while the town is very proud to possess the three highest blocks in France, the three "Tours de l'Île Verte" by the architects Pierre Puccinelli and Roger Anger. On the purely sportive level, two works should be pointed out: the "Anneau de Patinage" and above all the "Stade de Glace".

But the Olympic Games have also been the pretext for the town of Grenoble to organize an exhibition that has no precedent in France

or even in the world: an international symposium of monumental sculpture. For two months, 15 artists from 11 countries, worked in stone, concrete, steel, aluminium and wood, to create large-scale sculptures that will be placed at different points throughout the Dauphinois city. This experience "of the integration of art and architecture" has been done in close liaison with the architects, town planners, landscape artists responsible for the different programmes and buildings. In addition, the rebuilding of most of the public buildings in Grenoble has instigated the ordering of many works.

Thus Grenoble — thanks to the dynamism of its Municipalité — will perhaps find itself the town in France that possesses the greatest number of works of contemporary artists at a time when it can already pride itself on figuring as the leader in the architectural and town planning fields.

M. Pinchis, S. Zalman Industrial construction in Rumania

Industrialization in Rumania has been carried out by the creation of large-scale industrial zones, which has avoided any dispersion. In 1963, the number of firms with more than 2,000 employees was proportionately 44.2%. The most important industrial centre is the steel combine "G.H. Ghiorgiu-Dej" at Galatz. Thanks to numerous industrial constructions in all fields, Rumanian architecture has devel-

oped through a strong sense of emulation and by an artistic and structural research. As well as the adaptation of sites that were the best from the technological point of view, the architects have striven to produce clear compositions, to group harmonious volumes and to make the specific characteristics of each industrial unit fully appreciated. They have also sought to offer the employees the best working conditions, light, ventilation and heating, and to

make the polychrome interiors and exteriors satisfy the needs of both comfort and aestheticism. The same care and the same attention have been given to the buildings designed for cultural and social life, as well as to the establishment of open spaces.

In spite of the numerous difficulties and preconceived ideas, Rumanian architecture continues to evolve and seeks to bring its own contribution to international architecture.

E. Girault Senegal

The present architectural work being carried out in Senegal can be classified in 5 categories:

- 1) The straw huts and traditional dwellings.
- 2) Buildings in "colonial" style.
- 3) Constructions based on the idea of the modern dwelling.
- 4) Public buildings and modern monuments.
- 5) Religious buildings. The churches and mosques are of great interest from an aesthetic point of view. The sources of inspiration for the architecture of the Senegalese mosques are threefold: the Sudanese style, the Hispano-Mauresque style, the pseudo-oriental style. The

A. Karvovski Competition of Ideas

The reconstruction of the centre of Moscow. The improvement of the central hub within the limits of the Ring B.

Short history

Moscow, capital of the Soviet Union, 6,400,000 inhabitants in 1966, administrative territory: 875 km² on the banks of the Moskova. A radio-concentric structure with as axes the Kremains and the successive fortifications. The system actually includes 3 belts, an intermediary 4th and 5th are in course of being constructed. The old city is within the 2nd ring, called Ring B (4-5 km. in diameter). Under the Soviet government there have been two main periods of readjustment: from 1931 to 1950 and since 1950 when the changes reached the periphery areas.

Several options

During the years 1920-1930 there were several very fruitful competitions for ideas and projects. All the schemes that we know now were put forward, twin towns, linear city, parent city and satellites, a rational restructuring, traditional in the style of the historic fabric. The actual measures taken for the remodelling were made official in a series of long term documents: The "Plan Directeur" of 1935-1950, the "Plan d'urbanisme" of 1951-60, the "Principes

three largest mosques in Senegal are the central mosque of Dakar, that of Diourbel and that of Touba. The interior decoration of the mosque at Dakar is principally ceramic and is truly a marvel, and it can be said that it is a real renaissance of the Hispano-Mauresque art. As to the future of architecture in Senegal, the first point to make is the priority that is given to the economic needs of a developing country. It is essential that the town planners and the architects, however eminent they may be, remember that in countries which are essentially poor, the conception of towns and of buildings must link the "beautiful" to the economic.

In order to be the "Greece of Africa", Senegal has invested relatively large sums in theatres and museums, but these works appeal only to a limited elite. Going a stage further, M. Arsau has proposed in connection with the "Restoration of Medina" the creation of focal points, true Senegalese "Agoras". From the architectural point of view, these centres must be models that are adapted to the aesthetic and to the realities of the local economics. The architects who plan them must therefore, steep themselves in Senegalese life and discover the soul of the country. From here stem the necessity to train Senegalese architects who would be associated with the Technical Assistance Architects.

d'aménagement" (T.E.O.) in force since 1961. To-day the idea that has virtually been adopted is that of the intensive use of the existing administrative area, which is to be found inside the Autoroute of the ring (40 km/60 km from East to West and North to South, 109 km in circumference). It was in 1960 that this area was given its present dimensions, including on the periphery very large green spaces; these mingled with the protected forest zone that was reserved on the outside perimeter for a distance of 50-100km. It was intended to create here a vast zone for leisure with the simultaneous development of the existing localities as satellite towns.

At the moment there is a trend towards the evaluation of the old quarters, while increasing their density (the figure given is around 250-500 hab.). The main lines of the adjustment tend, in contrast to lessen the concentration on the historic centre in order to make a privileged metropolitan centre and to favour the constitution of autonomous sectors of about 500,000 inhabitants with a parallel rise in the green spaces of the city and the periphery.

Object of the competition

In this context the problem to be considered was the restructuring of the historic centre of

Moscow, defined within the interior of Ring B, in such a way as to find a solution that could afterwards be integrated into the Plan Directeur of 1968. Those who entered the competition were asked to take into consideration the available alternatives that would fit into the readjustment plan for the next 15-25 years and possibly even later on. It consisted of suggesting an adequate zoning of the administrative, civic and commercial equipment of the habitat; of evaluating the historic heritage, chiefly represented by the Kremlin; of putting forward suggestions concerning the road network, transport and provision for green spaces.

The propositions received

15 projects were sent in. On the whole the competitors tried to integrate the system formed by the centre of the capital into a structural adjustment of the whole of the Moscow agglomeration.

The results of the Competition

The 1st and 2nd prizes were split between the Mattéev team (Atelier I de l'Institut du Plan Directeur) and the Poliakov team (Moscow School of Architecture). The 3rd prize goes to the Pavlov team (Atelier II of the Mosproekt-2 Agency).

A. Karvovski An Architectural Centre, germ of a city

Introduction

This study was prepared as a final thesis by a group of 3 students from the Candilis-Josic office and the Beaux-Arts school. They were joined from the beginning by students from other disciplines — an administrator, two engineers, a painter, a decorator and a sociologist.

Description of the Project

A. MOTIVATION

We researched in detail how, and by whom, the problem of the new towns to cope with the Paris over-spill was being approached.

The town chosen for our study was Evry, one of those covered by the overall development plan. It has a projected population of 500,000 by 1985. Being convinced that towns in the future should be the creation of society as a whole, we investigated how each one of them could be designed in collaboration between the professionals and the inhabitants. The essential problems were:

- to find an appropriate work-place for the professional nucleus, suitably equipped;
- to create an atmosphere in which it would be possible for the public to become aware of architectural problems and a place where its representatives could be sufficiently acquainted with these problems to enable them to contribute usefully to the design and growth of their town;
- to use the experience gained to the profit of architectural education generally.

The idea appealed to us of an Architectural Centre, foundation stone of the town, situated

at the very heart of the town centre where visitors could get a preview of its growth, and which could become one of the town's principal centres of activity.

Its functions could include:

- The Promotion of Architecture:

Information: exhibitions, conferences, discussion groups, etc.

Dissemination of architectural thought; multi-purpose work areas, seminars, etc.

Participation of the inhabitants: suggestion boxes, enquiries, etc.

— Research, with every possible aid made available.

— Programming, with the participation of the professionals.

— Architectural Creation, undertaken by inter-professional groups which will assume total responsibility from planning to interior design.

GROUP DESIGN MUST NOT PRODUCE THE AVERAGE OF INDIVIDUAL CONTRIBUTIONS, BUT THEIR SUM. IT IS THE GROUP WHICH IS THE ARCHITECT.

— Architectural Service, similar to a Health Service or Legal Service, which would enable inhabitants to have professional advice.

— Control, this would be a dialogue between the designers and those responsible for checking to planning and other standards.

— Architectural Education, in direct contact with research and actual building operations would enable students:

- to avail of communal equipment;
- to have lecturers drawn from all disciplines;

- to be in contact with other students;
- to gain practical experience;
- to participate in the life of the town.

B. THE PROGRAMME

1. The offices have been designed to create an atmosphere suitable to an inter-professional design team.

2. The experimental area, a large covered area capable of housing large scale mock-ups, structural tests, etc. — extended to the outside to form an exhibition area open to the public.

3. School of Architecture, made up of elements similar to those used in the offices and other areas such as libraries, exhibition rooms, etc.

4. Multi-purpose amenities:

— Multi-purpose hall (conferences, exhibitions, cinema, theatre, indoor sports) surrounded by exhibition galleries;

— Multi-purpose work areas;

— Restaurant, cafeteria, shops, etc.;

— Hotel for visiting students, conference members, lecturers, etc.

All these elements would eventually become the property of the town.

C. TOWN PLANNING

1. Siting: a desire to situate this architectural centre at the junction of two main circulation routes and to integrate into it an underground station.

2. Infrastructure:

— interconnecting galleries

— road network at ground level for service vehicles only

- mechanical public circulation on a 400 m grid
- pedestrian walkways capable of extension to 3 levels.

D. ARCHITECTURAL AND TECHNICAL SOLUTIONS

Four principles permit the evolution and transformation of this organism.

1. Flexible density elements:
 - the pedestrian walkways
 - the towers (only one envisaged in the first stage). They can be increased in number on a 60 m grid. As a group of four, they can rise to 200 m.

A. Karvovskii Moscow School of Architecture

The school trains architects in three essential professions: Habitat and Civic Services, Industrial Building, Town Planning. Below are four projects handed in as subjects for diplomas by pupils who have recently finished the aforementioned studies. The Moscow School of Architecture (whose Director is Mr. Ivan Nikolaiev) is the only school for higher studies that specializes only in training architects. It also includes the Faculties for Landscape Artists, Rural Architecture, and Decoration. The complete course is 6 years; each year the school trains about 200 young architects.

A complex for sports

This sports centre would be developed within the Moscow suburbs. A football ground with stands for 50,000 is linked as one unit with the stands for 20,000 people for the rowing lake in a spatial composition. Under the stands are the training rooms, the various amenities for the sportsmen, restaurants and bars.

2. Demountable elements of the offices and school of architecture. A simple design allows for easy change of occupation or use.

3. Multi-purpose elements:

- multi-purpose hall, shops, exhibition galleries, etc., which by their multi-purpose possibilities, will remain to become the property of the town.
- 4. Re-convertible elements:
 - the experimental area could become at will a large shop, a museum or a gymnasium.
 - the tower and hotel, whose floors, cladding

panels and interior partitions are demountable and permit a future transformation into offices or flats.

E. CONCLUSION

Our fundamental idea was to create an organic structure on the scale of the new programmes submitted to architects, allowing a degree of participation by the inhabitants in the organization of their environment. We have avoided all "visionary" temptations and have restricted ourselves to solutions which would be structurally feasible at the present time.

A city in the far North

The main part of this diploma is concentrated on a scheme which fits the conditions of the town of Norilsk on the 72nd parallel (100 days of blizzard a year) winter winds of 40 m/s with a temperature of 45°C, snowfalls, polar nights and relatively warm summers).

General distribution: 4 units, placed alternately, of 12,500 inhabitants, forming on the ground floor a ramified system of streets and covered ways; screening buildings protect them from the winds. The buildings, alternately free and enclosed, assure relative protection against the wind, such as no other solution would give.

A fishing village in Viet-Nam

The town provides for a population of 20,000 inhabitants. It will be developed on an archipelago situated in mid-ocean, 60km from the continent. It is the lack of building land that governs the type of dwellings, which take on the form of

storied structures in the form of shells and towers whose master pylons rest on deep foundations (6 m max.). The civic services and the areas for the public also encroach on the sea. In this way, one keeps the maximum amount of the actual land and of the green spaces for the schools, leisure and sports. The link between the islands is guaranteed by boat and by a system of monorails. The city includes 6 neighbouring units that each occupy 2 to 3 floats.

A Foundry

The factory includes three identical foundry buildings, a building reserved for auxiliary products, a hangar for stocks and the block for direction and administration. The architectural theme was suggested by a new approach to the functional peculiarities of foundry workshops. In order to counteract the immense outlets of heat and dust the architect proposes a covering of parabolic design that would assure a strong natural ventilation.

to be in contact with other students
 — to keep practical experience
 — to participate in the life of the town

B. THE PROGRAMME

The effect was first designed to create an atmosphere suitable to an international school.

The experiment was a large covered area capable of housing large-scale mock-ups. The main part was enclosed to the outside to form an extension open to the public.

2. Study of architectural models made up of elements similar to those used in offices and other premises and having exhibition rooms etc.

4. Multi-purpose elements:
 — Exhibition rooms and conference exhibition rooms.
 — Multi-purpose shops etc.
 — Multi-purpose shops etc.
 — Multi-purpose shops etc.
 — Multi-purpose shops etc.

C. TOWN PLANNING

1. Study of the urban and architectural context in the town of two main considerations:
 — how to integrate into the urban environment
 — how to create a spatial level for service vehicles only

in the very heart of the town centre where visitors could get a view of the town and which could become one of the town's principal centres of activity.

Its functions could include:
 — The Professor of Architecture
 — Information exhibition conference facilities
 — Group etc.
 — Dissemination of architectural theory, design, papers, work, models, etc.
 — Participation of the students' exhibition
 — Exhibition of architectural models and made models, etc.
 — Research will be very possible and made possible with the participation of the students.

— Architectural models, models, models, etc.
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— to find an appropriate work place for the professional nucleus, suitably equipped;
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 — to use the experience gained in the past in architectural education generally.

The idea appeared to us of an international Centre foundation line of the town, Moscow

A. Karvovskii An Architectural Centre for a city

Introduction

This study was prepared in a first draft for a group of 3 students from the Faculty of Architecture and the design school. They were joined from the beginning by students from other disciplines — an administrator, two architects, a lecturer and a social scientist.

The origin of the project

A MOTIVATION

The research is in fact now, and in recent years, of the new town to construct the Centre for the city.

The first choice for the site was for one of the main squares of the town, which was covered by the recent development plan. It had a projected population of 300,000 in 1982. Being convinced that town in the future would be the centre of activity in which we would be interested for each one of them could be designed in collaboration between the professional and his inhabitants. The essential problems were:

— to find an appropriate work place for the professional nucleus, suitably equipped;
 — to create an atmosphere in which it would be possible for the public to become aware of professional problems and a place where its participation could be sufficiently encouraged with a view to enabling them to contribute to the design and growth of the town;
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