RICE UNIVERSITY

A SCHOOL OF ARCHITECTURE FOR
A UNIVERSITY IN INDIA

by

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ABSTRACT

Introduction

The architectural education of India is outdated. It fails to turn out architects who can cope with today's problems. The aim of this thesis is to examine the causes of the problems, the role of architects in the contemporary society, and the formulation of educational concepts which can produce the kind of architects we need today.

Crisis

A good, healthy environment is essential for the growth of human beings. At the present, we are going through an environmental crisis which has caused many social problems like juvenile delinquency, lawlessness, and mental disorders. In this section the six causes of the crisis are discussed in detail. They show how architecture is affected by them.

India

This section gives some information about India regarding its size, geography, climate, economy, community development, social changes, and village life.

Indian Architecture

In this section, the history of Indian Architecture is traced from the beginning to the present. It also covers the state of professional practice at present.
The New Function of Architects

With the changing times, the roles of professional men also change in society. In the present context the architect's role should be as (1) the shaper of physical environment, (2) leader, (3) urban-rural planner, (4) the reconciler of techniques and esthetics and master-builder. This would help him to be more effective and influential in shaping human environment.

The Educational Concept for the New Role

For the new role of architects, the educational concept is based on an integrated curriculum, design, management, and technology. It is conceived to bring the profession and teaching together, the profession and the public together, and communication and student participation in the formulation of the program. In this section these concepts are discussed in detail.

Curriculum

For the implementation of the new concept, a new curriculum is suggested which takes into consideration (1) reorganization of syllabus, (2) re-examination of existing courses, and (3) introduction of new subjects.

Conclusion

This section contains the six principles on which architectural education in India should be based. It also includes the written program and graphic illustration of the concept. The design illustrates how the six principles are expressed in physical form.
पदिय્ય ભૂમિકા,

ભારતની સંસ્થાપનાની જાણા તથ્યો ક્ષમતા બાદ જાણવા દેવી મિત્ર. ભારતના પ્રદેશીય સામાન્ય વિષયને કીંવડા વડીલા જાણવામાં આવીને સાક્ષાત્કાર કરી હતી. જાણી પ્રદેશીય સામાન્ય વિષય કે તે પ્રમાણ સામાન્ય કે જાણા, ભારતના સમાધાનના સમયમાં સંપત્તિ સાથે છે તેથી આધુનિક દેશે કે તેથી સંપત્તિનો કોઇ કરા લખક ને માટે કેઢભુજિની કલાના સોફ્ટવેર લે બાદ નિર્ણયનો કરેલું હતું.

આ પ્રકાર ભારત કહેલો યોઢના માધ્યમક સુસંગત પૂરી પાડી સંભાવયે બાદ બનાય જે કે પરિસ્થિતિને ભારતના વસ્તુદાતા, સમાજના વિકાસ, જે સમાધાન કોણ સંબંધિત હતો જે વિકંડ પરિસ્થિતિને છોડી દેની ચિંતાની વિચારે યાં કલાના કરા છે. સંપત્તિને પ્રધાન માટે મુખ્ય ભારત ની સ્થાપના હેઠળ હેરા રહી હતી.

ભારત :-

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આ પ્રકાર ભારત કહેલો યોઢના યોજના સુસંગત પૂરી પાડી હતી જે જે વસ્તુદાતા, સુસંગત સંભાવયે બાદ બનાય જે કે પરિસ્થિતિને ભારતના વસ્તુદાતા, સમાજના વિકાસ, જે સમાધાન કોણ સંબંધિત હતો જે વિકંડ પરિસ્થિતિને છોડી દેની ચિંતાની વિચારે યાં કલાના કરા છે. સંપત્તિને પ્રદેશ કરા હેરા રહી હતી.

ભારતની સંસ્થાપના :-

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આ પ્રકાર ભારત કહેલો યોજના સુસંગત પૂરી પાડી હતી જે જે વસ્તુદાતા, સુસંગત સંભાવયે બાદ બનાય જે કે પરિસ્થિતિને ભારતના વસ્તુદાતા, સમાજના વિકાસ, જે સમાધાન કોણ સંબંધિત હતો જે વિકંડ પરિસ્થિતિને છોડી દેની ચિંતાની વિચારે યાં કલાના કરા છે. સંપત્તિને પ્રદેશ કરા હેરા રહી હતી.

સંપત્તિનું વિકંડ કરા :-

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પહેલા સમસ્ત સાથે સાથે ઘાટી માટે માટે દ્રાર કે તેની સંભાવયે બાદ બનાય હતી. ભારતની પરિસ્થિતિને સંપત્તિ તથા વિકંડ કે તેની સંભાવયે બાદ હતી.
1. સારી વિશેષ વિષય વિષણુ વિધાન.
2. હેરા.
3. ભારતની પરિસ્થિતિને વિભાગ શિખરના વિધાન.
4. ભારત માટે સંસ્થાની સંભાવયે બાદ બનાય હતી.

... 2.
નવા લેખકની વિશ્વાસના:-

સંસ્થાનની નવી જીવિતકાળ, રેખા, ધ્યાનતા કે ટેકનોલોજી પર મહત્વ હોય છે. પરંતુ અને વિશ્વાસ ને વાત માટે તથ્યો ને રીતે ના વિશ્વાસવાર ફરાર છે. બીજે આ પદાર્થની માળખો તથા વિચાર્યો પણ જીવન દર્શાવે પ્રકૃતિમાં માટ કલા શકે ને રીતે ગેરે સાદર પ્રથમમાં બાંધી છે. આ વિચાર્યો પણાર વ્યવસ્થા બદલ બાદ વે વિચાર્યો વિંદુરી ધ્યાન છે. આ નવા વિચાર્યો જેનાની મૂળભૂતમાં બેઠામાં શદ્ધરામણ વાતાં પર ધ્યાન એવા પૂર્ણ થઈ છે.

1. જીવનસભુમિ પુણ્યયોજના
2. વચનાર જીવનસભુમિ દેર તપાસલી.
3. નવા વિચાર્યો પ્રભાવ.

ઉપલબ્ધકીય:-

આરામેલ સંસ્થાન લેખકની શ્રીમતી ને રીતે ધાવણારી જેવી જેવી છે તેની છીંદનો અને વિચાર્યો સમાય છે. પેશ કરે જીવન અને શ્રીમતી તપાસલી છે. અને વિચાર્યો વિચાર્યો શિક્ષણ પૂર્ણ છે. આ છીંદનો શિક્ષણ શક્ત મૂર્થ જીવન પાઠ્ય શિક્ષણ જેવી રીતનો નથી ઉતારી છે.

Gujarati translation of the Abstract
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I

INTRODUCTION

"The surest test of the civilization of a people . . . is to be found in their architecture, which presents so noble a field for the display of the grand and the beautiful and which at the same time is so internally connected with the essential of life" (1).

Architecture reflects the ideals and aspirations as well as the intimate everyday life of people. An examination of architecture, therefore, will reveal the state of existence of people. In India and the United States, the state of architecture indicates chaos and lack of order, though their origin is due to different factors.

In the United States, the chaos is due to urbanization. In an industrialized country like the United States, urbanization is inevitable but the problem is to give order to the forces created by urbanization. Though cities are growing dynamically, the unhealthy and cancerous growth is the outward expression of chaos. Instead of mature growth, it is uncontrolled sprawling and scattering growth around the periphery; a growth which destroys the beauty of landscape and nature, a growth so unplanned that public services -- water, sewers, roads, schools -- lag behind. Scatterization, transportation, pollution (air and water), vanishing nature, octopus-like growth of auto-roads and freeways are some of the urban problems in the United States.

In India the signs of chaos are not only present in urban areas but are also present in rural areas. In the former, congestion, lack of services, housing shortage, and shelterless people are the vivid
expressions of chaos. In rural areas lack of medical hygiene and school facilities, and unemployment are the expressions of chaos.

But, the very difference between the American situation and the Indian situation is that, while in the United States, with rural areas gradually diminishing, the urban problems are increasing. In India even after 1981 only 33 percent of the population will live in urban areas. Furthermore, unlike the United States, the urban life and rural life in India are a world apart.

What does this mean to architecture?

We, as a part of society, should accept the fact that this lack of order, or chaos, is partly our responsibility. We have not been too successful in creating conditions where chaos would be checked and human values -- physical, spiritual, and intellectual would be augmented and enhanced. This situation raises questions about our professional capability, our professional role, goals and aims, our ills, shortcomings and defects. Profession and education being interdependent and inter-connected, this will require reexamination of our architectural education, its qualities, its effectiveness in producing an architect who can cope with any situation capably.

In the United States this examination has already begun and there is lively concern and dialogue among professionals, and educators themselves; and to some extent between professionals, educators on one side and students on the other. In India it has to be initiated.

In this thesis I intend to explore the above questions, in the context of the Indian situation and conditions; investigate problems,
look for needs, and arrive at a concept of architectural education. In the final part, this concept is put into concrete form as a design for the school of architecture for a University. I have selected The Maharaja Sayajiroa University of Baroda, Gujarat State, India, as I have graduated from there and am familiar with the University, the people, and the city.
Many of our social problems like juvenile delinquency, crimes, lawlessness, and mental disorders, when traced to the roots, are found to be caused by a lack of proper environment. Doctors treating mental disorders are of the opinion that one of the most important therapies is good environment.

In the words of Dr. Karl Menninger, "Frustrations have become unbearable, disappointments, temptations, and aggressiveness have overwhelmed control. Human maladjustments -- or say crime and illness is directly related to social structure, social pathology, social improvements. I am using the word social here in a sense which includes the works of architects, engineers and builders" (2).

Sociologists studying human group behavior, have found out that a very large part of the behavior of a group has to do with their finding or building a habitat, maintaining, improving and decorating it in a manner which contributes, to some degree, to the values which they cherish -- their survival, security, and gratification of certain desires and longings which we can specify only in terms of emotions and the relief of some of the tensions of group living. That is in addition to objectively demonstrable qualities of function such as convenience, shelter, protection, and feelings of awe, exaltation, repose, etc., which they consider among the subtler but nonetheless important functions of architecture.

This function of architecture seems to be present whether one considers the primitive seeking a cave, or a modern family looking for
an apartment or a house.

Architecture, broadly defined, is of more prevailing social significance than any other art or science, in that we spend our lives largely in the grooves and the patterns laid out by our habitat, from the individual house to the local, city, and statewide community.

Architectural building activities are some of the largest items of spending. Building construction and the production and distribution of materials, create a major source of employment and income. A large amount of capital investment in these activities forms a part of the natural resources.

From a sociological point of view housing, or lack of housing, is a major item in the standard of living. It is a mark of both the degree and kind of civilization which a society has achieved.

Architecture touches every individual at all periods of his life span. Its provision from the beginning to the end of life engages a major portion of man's time and resources. It may be a determining factor in his whole standard of living, his attitudes, and his way of life.

But, from the deteriorated environment around us, it is apparent that we are still far from being that effective as environmental shapers. The whole cause of this disorder is that we find ourselves living today in an age of great transition, an age where the rate of change is accelerating from day to day. This rate of change is the most characteristic phenomenon of our age, whether we speak of technological progress, population growth, economic development, or of social
or cultural phenomena. Our transition is from old to new, from traditional to modern, from the concepts of the past to the problems of the future (3).

It is obvious that our architectural confusion is due to the stages of transition we are passing through, and that this also constitutes the main problem we have to face. It seems necessary, therefore, to try to find the real causes of these problems.

These primary causes of transition are also basic problems in themselves. The problem of the rapid growth of population, for instance, is a cause of many other problems, such as lack of food, lack of shelter, etc. In other words the ratio between the increase in population and the capacity to meet its various demands is distorting. The pace of production is not up to the pace of population increase. In this respect we can say that the main problems and the causes of the crisis are basically one and the same.

The Growth of Population:

The cause of the first problem is population explosion. The world has never before witnessed such an expansion of its already teeming millions, with the result that while the population grows faster with the development of modern medicine and health program, its increase is not matched by any comparable increase in architectural activity, so that very many people are left without houses and buildings.

Whenever and wherever there is a growth in population, the production of goods lags behind for some time until the whole production
machine has geared itself to the increasing need. In architecture, a field of human activity where great and varied production efforts are still required, from building materials to finished architectural products, this lag is perhaps bigger than elsewhere. Unlike the past, there now exists a gap between the increase in number of architects and the increase in population.

Basic to many of India's problems is her population. With each succeeding generation the overcrowding of land increases. The problem of population increase is not confined to India, but it has particular significance because the land was so crowded to begin with.

The people of India constitute 15 percent of the world's total population, although the nation itself occupies only two percent of the world's land area. The 1961 census, which revealed that the population has risen to 439 million, came as a particular shock, for it indicated a growth of 21.49 percent in ten years (against an expected growth of 17.45 percent). India had acquired 77 million more inhabitants in one decade, more than the total population of many countries and almost half the population of the United States. Until 1950, her rate of population growth had not differed greatly from that of the United States. The birth rate was higher, but, so was the death rate, leaving the net increase in the decade of 1941 to 1950 a mere 13 percent, as compared to 14.5 percent in the United States over the corresponding period. The rise in the rate of growth in India since 1951 has resulted from successful public-health measures, control over large epidemics,
and especially the decrease of infant mortality from 13 to 9.2 per thousand (4).

Economic Development:

The second problem and cause of our transitional period is economic development, which is taking place at an unprecedented rate whether considered as the average for all humanity or as a special rate for particular countries. This acceleration of economic development creates a variety of new problems which are of the greatest importance for architecture. For, while everyone requires better and better buildings, the demand for buildings grow at a higher rate than that of the increase of wealth or the general rate of growth of the economy. This is due to the fact that the government has devised financial schemes such as creation of cooperative housing societies and loans for building houses. So now, greater numbers of people will need architectural service.

This economic improvement carries with it a qualitative as well as quantitative demand. Once the people reach a higher income level, they ask for larger houses or schools. What is more, if the people are already properly educated, they will demand a higher aesthetic standard. This would mean that quality of architecture would have to be improved.

Socialization:

The third basic problem, which is at the same time a fundamental cause of our problems, is rapid socialization of every aspect of
our lives. In the past, the architect had to work for priests, kings, and nobles. At times he had to work for committees or groups, in cities where the municipality assumed responsibility for the central parts, or for individual wealthy citizens who wanted private mansions or villas built to their own specifications.

Now, however, our whole attitude is changing. The attention of government, societies, and local bodies alike is turning to the service of all citizens. Opportunity is to be provided to people for earning all the facilities offered by modern technology and having their own living establishments. This is taking place everywhere, regardless of political systems, although at rates varying with the economic development programs and social policies of the countries concerned. It amounts to a major change in concept. This means we no longer build only monuments.

In India the housing shortage is the most acute problem, both in urban and rural areas. There are large numbers of people still without this facility. With this situation, one can see what an impact socialization is having on our demand for greater architectural production.

Even if we assume that present architectural production is adequate, and will increase correspondingly with an increase in population, even then, numbers of people shelterless at present will remain the same.

This means that the rate at which architectural production should take place should be much larger than the corresponding increase
In India, past and present, architectural production has been less, compared to increase in population. This would mean that architectural production would have to be manifold more than anywhere else to catch up with the present deficiency. As the need for architecture becomes all the more apparent, its rate of increase must be higher than that of the population growth and the development of the economy. It seems that this ratio will have to remain unchanged for many decades to come, simply to bridge the gaps and discrepancies created in the past. The single factor of rapid socialization alone demands far greater architectural production than at any other time before.

Automobile:

A major cause of problem in developed nations of our world is the automobile which has entered into our lives. Its effect is due to the changing pattern of transport and is an effect of scale. The style of architecture was, formerly, defined by taking man together with his machine. Now, it is the automobile that stands central to our concept of architecture. For, the automobile is the most significant mechanical element to have entered our lives, changing our pattern of transport and thus influencing architecture.

Formerly, there was man, walking at a speed of some three miles an hour; now there is the car, moving at speeds up to and over sixty miles an hour; so that man and his motorcar are at odds. Both man and motorist are dissatisfied due to conflict. The scale of life,
together with the scale of architecture, has broken up. Man is unhappy, for he has become a mere displaced person within his own city. The motorists are unhappy, as they are compelled to cross the city at speeds as low as six to ten miles an hour in the cities like Glasgow or London. The story in the United States is not too different (5).

The effects of this situation on architecture are numerous. Primarily, it is loss of public space. In Los Angeles two thirds of the central part of the city is covered by cars, whether parked or in motion. Because of this change in the distribution of open space in relation to buildings, man has lost his normal relationship to architecture. Buildings are no longer related to man, for in many parts of the greatest cities they appear to be floating in a lake of cars. The monuments and statues, too, can no longer be seen in their proper perspective because of the break in relationship between human beings and their normal surroundings.

The second effect of this eruption of the motorcar is that, in many western countries, people are tending to live at greater distances from the city. This tendency has raised many problems, like sprawling of cities, suburbanization, deterioration of central core, and need for more and more, bigger and bigger, freeways at mounting cost. Paradoxically, the freeways never remain efficient enough for a long period of time, resulting in a never ending race of increasing traffic and the need to widen or provide new roads.
This problem of the car in the city is not as severe in developing countries like India. But time is not far off when it will become one. With increased standard of living, rising income, expanding economy and increasing industrialization more people will be able to afford cars. So it is time that we start thinking about it before it becomes a problem. It is almost impossible to envisage the time in India when each family would have even one car. This is owing to the fact that car production is very low, thus increasing the cost of production, thereby limiting ownership to the upper society. Even at the end of the Sixth Five-Year Plan in 1981, car production will be only 500,000 per year, while population will have soared to 660,000,000. So transportation should consist of rapid transit, public buses, and smaller public vehicles. Of course, cars will be there but they could never become the major means of transport.

Industrialization and Technological Progress:

The fifth cause of our problem is industrialization and technological progress, both of which have contributed to the growth of architecture in the third dimension of height and depth. Because of this, we now have skyscrapers as an element in our architectural environment and consequently new problems in both technology and architecture.

Industrialization and technology have given us buildings moving into the third dimension not only in height but also in depth. There is considerable exploitation of the sub-surface possibilities offered within every city. This exploitation takes place under buildings as well as
under public spaces and provides means of transportation, community facilities, installations, etc.

In these circumstances, the traditional methods and simple types of construction with which we were formerly content should gradually be giving way to a complex architecture in which modern methods and materials must exist.

For the first time in India, the third dimension is playing a very important role in the creation of the total architectural shape of our cities. Besides, the other new factor we now have to face is the third physical dimension, which starts in effect as a technological one. The complexity of problems which it creates forces architecture out of the era of handcraft, even if we have to build only one, two, or three-story buildings.

This force of industrialization and technology has made more impact in developed countries owing to their advanced developments in both the fields. Today it is not surprising to see high-rise office buildings, apartment buildings or commercial buildings in cities like Ibadan, Accra, Bombay, Madras, and Calcutta. With tremendous population increase these underdeveloped countries will have to plan more and more in the third dimension of height and depth to use shrinking land at maximum efficiency and so will have to rely on technology and industrialization to solve it.

Urbanization:

The sixth basic cause of our problem is urbanization. It is the result of the previously mentioned forces of population growth,
economic development, socialization, industrialization, and modern means of transport. In itself, however, it has completely altered the scale and environment of our architectural creation.

The population is not evenly spread through the country, and is much more dense in the urban areas. In several western countries, it is becoming clear that the rate of increase in population growth is decreasing in rural areas. On the other hand, in minor urban centers, the rate of increase is noticeably higher than the average for the country as a whole, while in the larger urban areas there is an even larger rate of increase.

Most of the buildings are now created within urban areas, and architecture is of course influenced by its new environment. This trend has brought means of transportation in conflict with it.

In 100 years, while the world population has doubled, urban population has increased five times. Around 1800 A. D. less than two percent of the urban population lived in towns and cities numbering 50 with more than 100,000 people.

Today, out of 3,000 million people on this earth, 1,000 million or one third of them live in shanty towns of more than 1,000,000 population at the fringe of a metropolitan city.

By 2000 A. D., the world population will be 6,000 million. Of this, 60 percent or 3600 million will live in urban areas.

This problem of urbanization is more acute in developed nations than in underdeveloped nations, acute in the sense that major problems
are located in urban areas, as a majority of the population is residing there. The process of urbanization is proceeding at a more rapid pace in developing areas than in either Western Europe or the United States.

Japan can be taken as a typical example. In 1950, 38 percent of the population lived in urban areas. Today 68 percent live in these areas. The land area of the metropolitan regions of Kein hin, Kin ki, and Chukyo, which accounts for just 19 percent of the area, absorbs 48 million people, almost 50 percent of the population.

In India, by 1981, about one third of the population, or 200 million people will be living in cities and towns. This will mean that 55 to 60 million people will migrate to urban areas.

More striking is the fact that today one fourth of the urban population lives in the seven metropolitan areas of Calcutta, Bombay, Hyderabad, Bangalore, Madras, New Delhi, and Ahmedabad. Furthermore, one half of the urban population lives in towns and cities with a population of 100,000 or over.

Following are the figures of population growth in the seven metropolitan areas between 1931 and 1961.

<table>
<thead>
<tr>
<th>City</th>
<th>Popu. 1931</th>
<th>Popu. 1961</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcutta</td>
<td>2.5 million</td>
<td>6.6 million</td>
<td>160 %</td>
</tr>
<tr>
<td>Bombay</td>
<td>1.3 &quot;</td>
<td>4.2 &quot;</td>
<td>220 &quot;</td>
</tr>
<tr>
<td>New Delhi</td>
<td>0.4 &quot;</td>
<td>2.3 &quot;</td>
<td>475 &quot;</td>
</tr>
<tr>
<td>Madras</td>
<td>0.6 &quot;</td>
<td>1.7 &quot;</td>
<td>130 &quot;</td>
</tr>
<tr>
<td>Bangalore</td>
<td>0.3 &quot;</td>
<td>1.2 &quot;</td>
<td>300 &quot;</td>
</tr>
<tr>
<td>Ahmedabad</td>
<td>0.3 &quot;</td>
<td>1.2 &quot;</td>
<td>300 &quot;</td>
</tr>
<tr>
<td>Hyderabad</td>
<td>0.7 &quot;</td>
<td>1.3 &quot;</td>
<td>85 &quot;</td>
</tr>
</tbody>
</table>
In metropolitan Calcutta, which constitutes 7.5 percent of the total urban population, nearly 33 percent or one third live in slums. Densities in some of these areas are calculated to be 2400 persons per acre! Thirty percent share one room with two other families. Fifteen percent live in shops and 17 percent have no home at all. Only 0.7 percent of the total land area is allotted for parks and playgrounds and 5 percent for transportation uses (6).

These statistics indicate the urban situation in India, and the magnitude of the task to provide the basic necessities of life.

The drama of architecture is always played on the stage of life. In the next section, I intend to give some additional information about India.
III

INDIA

In the words of Professor T. Walter Wallbank, "the Indian subcontinent is racially, religiously and linguistically one of the most complex areas in the world" (7). There are all sorts of contrasts, ranging from the very rich to the very poor, from the widely traveled to those who have not moved out of their villages more than once or twice in their lifetime; from the literate who are honored members of the highest scientific societies in the world, to illiterates. There stands an old hut built with construction techniques used 3,000 years ago beside the newest atomic complex producing atomic energy to electrify the country.

Size: The Republic of India occupies the major part of the Indian subcontinent with Pakistan on the west, China on the northeast and Burma on the east as its neighbors, and the ocean bordering the remaining three sides. The land area is 1,200,000 square miles with a population of 490 million people.

Geography: The Indian subcontinent stretches from a point in the north in the same latitude as Norfolk, Virginia (37°N.) to within 550 miles of the equator (8°N.); from 68°E. to 98°E. longitude. There are various geographical contrasts -- from altitudes ranging from sea level to over 28,000 feet, from aridity to the heaviest rainfall in the world (Cherapunji in Assam with an average rainfall of 450 inches per year), from great fertile plains to a desert, from dense jungles teeming with wildlife (tigers, elephants, monkeys, birds of brilliant plumage)
to the high, dry, rolling tablelands and low-lying tropical coastal plains.

Climate: Great climatic variety in rainfall and temperature exists in India. In the deep south the annual temperature ranges from $10^\circ C$ to $34^\circ C$; while in the northern parts the annual temperature ranges from $-4^\circ C$ to $20^\circ C$. A feature common to the whole country is the three regular climatic seasons. The winter is from mid-October to mid-February, which is very pleasant and could be considered temperate. The summer, from mid-February to mid-June, is dry and ranges from hot to very hot, and the monsoons last from June to September. No country has ever been more influenced by its climate. India's hot climate has undoubtedly conditioned the social organization of its people and their attitude toward life. Nowhere has monsoon and rain affected the economic and religious life of the people so much.

Economy: At present the most pressing problems are population growth, illiteracy, food shortage, unemployment, etc. The national leaders stress that all these problems must be tackled simultaneously, and that each has a direct bearing on the others. For example, they recognize that population increase cannot be controlled without education that will provide incentive and motivation for birth-control. They recognize that, as more people are educated, the demand for better jobs will grow, and that agriculture cannot be fully developed without effective land reforms, without industry to provide fertilizers, improved seeds, tools, and hydro-electric projects to irrigate farm land
and provide power to factories. They recognize that both agriculture and industry require scientists, trained technicians and efficient managerial personnel, and that industrial development requires the simultaneous exploitation of new materials and the improvement of transportation to carry these materials to the factory and convey the finished products away.

India aims at a socialist pattern of society. In a country where 70 percent of the people are illiterate and poor, it is essential to have this kind of society so the minority does not rule the majority and the distribution of wealth is more balanced. The principle of mixed economy is accepted where major elements of economy, like defense, defense industries, transportation, railways, and steel industries are governed by the central government. The private sector develops other elements.

In March 1950, a six-member Planning commission was established with Nehru as chairman. Its aim was to prepare a plan for the most effective and balanced utilization of the country's resources. In the First Five-Year Plan, from 1951-1956, the total investment was equivalent to 7,896 billion dollars. The major stress in this plan was to build India's agricultural potential. In the Second Five-Year Plan, from 1956-1961, investment was equivalent to 16.17 billion dollars. In the Third Plan, from 1961-1966, total expenditure was equivalent to 24.36 billion dollars.

Following are a few statistics about the five year plans.
According to the plan document, the per capita income has gone up from Rupees 275 to Rupees 325 at 1960-1961 prices.

At the end of the Fourth Plan it will go up to Rupees 417 (Rupees 532 at 1965-1966 prices).

About 28 million new jobs have been created which will further increase to 47 million by the end of the Fourth Plan.

The per capita availability of cloth has increased from 11 meters to 15 meters.

Life expectancy has risen from 32 to 50 years.

About 52,300 villages and towns have been electrified, compared to 3700 in 1950-51. Under the Fourth Plan 57,700 more villages and towns will be electrified.

700,000 wells have been sunk in villages and 17,000 villages have been provided with pipe water supply.

The number of children at school has gone up from 23.5 million to 68 million and will go up to 97.5 million in 1970-71. The number of college students has increased from 300,000 to 1,100,000.

The number of hospitals and dispensaries has risen from 8,600 to 14,600. There are also 8,000 maternity and 48 child welfare centers.

Family planning centers have increased from nothing to 11,474 and will increase to over 48,000 by the end of the Fourth Plan.

The country has 240,000 hospital beds, 86,000 doctors, 45,000 nurses. There will be 3,000,000 hospital beds, 131,000 doctors and 87,000 to 99,000 nurses by the end of the Fourth Plan.
Ownership of 7.3 million acres of land has been conferred on 3.3 million tenants.

Community Development: A cornerstone of rural uplift is the community development program. The objective is to develop self-reliance in an individual and initiative in the village community. The government offers technical help. Agriculture receives the highest priority in a vital struggle to increase food output. The emphasis is also placed on communications, housing, health, sanitation, education, women's and children's welfare, and cottage and small-scale industries.

Social Change: Throughout the entire structure of Hindu society new forces, some obvious and strong, others subtle and weak, are transforming the ways of life of the people. Despite the restrictions of caste, there is increasing intermarriage between Hindus and Europeans, between Hindus and the Muslims, and between Hindus of different caste groupings. The old joint family system is breaking down. Young men now set up their own homes and do not take their brides to live with their parents and relatives. Wives of middle class families are going out to work because of economic pressures. Quite a few women have become State and Cabinet ministers and we have a Lady Prime Minister. In the field of education, more and more people are going to primary and secondary schools and colleges. The village life is changing due to new economic forces; radios, posters, and documentary films are widening the horizons of people. In the cities, caste has little meaning in Government offices, factories and stores. The old taboos against intercaste marriages are
weakening and young people increasingly disregard them. Untouchability has been outlawed.

Change in Village India: In rural India one must often look beneath the surface to find change. Outwardly most villages are what they were fifteen years ago -- suffocating with dust in summer, chilly and ill-sheltered in winter, and mired in mud during the monsoon. Infants are naked or in rags, their bellies puffed by malnutrition, their skin often covered with sores. Sanitation is primitive or non-existent.

Yet malaria, once the biggest killer, now cripples very few, except those in whom it has been recurrent for years. The infant mortality rate has fallen sharply, for medical care and advice have spread widely, though still inadequate and sometimes rejected by those who are superstitious. New roads, though often adequate only for ox-carts, pedestrians, and jeeps in all weather, have broadened horizons, and more children are going to school.

India is suffering from the conflict between religious beliefs and material needs, for example the problem of the cattle. Cattle population in India is 175 million and about 90 percent of it is uneconomical and non-productive, but still religious beliefs prevent the use of it as a source of food. It is undeniable that this attitude should not continue, but only education can help to change this belief.
IV

THE INDIAN ARCHITECTURE

From the very beginning, the Indian people's concern about their destiny, religion, and God can be seen from the fact that the only remains of the past architecture are temples. Architects served the highest class -- Brahmins and rulers were their main supporters. Recent discoveries indicate the existence of a civil architecture but most of the remains are temple architecture, as they were built with long lasting material, stone. The Hindu architecture began with Buddhist architecture at Bhaja, Karla, Chaityas, and stupas at Sanchi. It was followed by the classic period during Guptas, then followed by a mannerist period of short duration and subsequent rococo. Early temples carried a minimum surface decoration, followed by a judicious and extremely well employed sculpture and ornament in the classic period. These increased slightly in the mannerist period and burst into a vast, flowering, profuse, and elaborate boroque period, until in the short lived rococo, it truly covered every inch of surface and "killed" the design by its sheer exuberance of detail (8). The main element of all these different periods was the change in external decoration while the space concept remained the same. But, there was one remarkable thing about arts and Indian architecture that, at that time, the architect, the sculptor, the painter, and the builder was just one man called by the Sanskrit name "Shilpi." Sculpture was invariably painted in colors by him. Up to the twelfth century architecture was mainly Hindu architecture. In the twelfth century the Mohammedans invaded from the northwest, and
by the thirteenth century they made India their home. In the beginning they brought their own forms of Persian and Sarsenic architecture, but gradually as they integrated with Hindu society and culture, the Islamic architecture changed into Indo-Islamic architecture. By the fifteenth century architecture reached its zenith. Akbar built the new city of Fatehpur Sikri near Agra and his grandson Shah Jahan built the famous Taj-Mahal. There are also other remains of Islamic architecture, viz. Kutub-Minar, Tuglakh's tomb, Akbar's tomb, and Red Fort in New Delhi and Agra (9). At this time, the English, Portugese, Dutch and French reached the shores of India and established commercial relationship with Indians. Gradually they entered the political field and as India became weaker and weaker due to many kingdoms, lack of unity and internal strife, they consolidated their gains and extended their economical and political influence. By the end of the eighteenth century, the English were in the saddle, and they became the rulers. They built their own residences, shops, houses, and churches. There are few remains of the architecture they had brought along with them.

With firm establishment of the East India Company, private and public houses were built and there are some splendid examples of bungalows and rest houses in the Georgian style. With the change to Empire, there came the Victorian architecture with its revelling imitation of antique styles, such as, the Greco-Roman temple for banks and clubs, Scottish baronial buildings for private residences, neo-romanesque for offices and neo-gothic for churches and other public erections.
At the end of the nineteenth century and in the first thirty years of the twentieth century, the main architectural activities were offices, residences and other large structures built by the Public Works Department. It is difficult to call all these architecture. Many were designed by draftsmen and civil engineers. The basic consideration for these buildings was that everything had to be as cheap as possible.

The greatest architectural event before independence was the transfer of the capital from Calcutta to New Delhi, decided on in 1911 and completed in the 1930s. The job to design the capital was given to Sir Edwin Lutyens and his associate Sir Edward Baker. The first designs for the new capital project of India were akin to the neo-Roman Imperial style of the 1910s, as a deliberate attempt to reflect in these buildings the concept of the mission of the Empire. The design was so inappropriate and outrageous, that a petition was submitted to the Secretary of State for India by the committee headed by George Bernard Shaw and Sir William Bothenstein, demanding that the designs be revised. This they did by leaving the basic designs untouched, but by adding a Buddhist railing, or an Islamic pavilion here and there. They changed the dome of the Viceregal Lodge into an imitation of a Buddhist stupa, thereby superimposing some Hindu and Islamic ornaments on the fabric of the building.

One of the pleasant, beautiful elements of the Lutyens and Baker's design for the "Imperial Capital" was the imposing size of the Central Vista, a long alley of trees flanked by water tanks (an Islamic element adopted from Mughal gardens) leading up to the complex of the
Viceregal Lodge (now Rashtrapati Bhavan) and the two Secretariats, on both sides of the main road running to the Lodge.

After independence, the responsibility of creating Indian architecture suited to Indian needs fell upon the shoulders of the Indian architect. Like in all other spheres of life, there was confusion as to the methods of approach to architecture. There was an opinion of "moderns" who wanted to prove that Asians could do as well as, or better than, the West, in applying the new technologies. The traditionalists advocated a return to historical patterns in the belief that, why can not the glorious architecture of the past do it again, creating something typically Indian?

Some attempted to do this by superimposing externally the incongruous elements of ancient architecture that have (a) nothing to do with the structure or the spirit of the modern building, and (b) nothing to do with the material from which they are built. Thus, we have in Sapru House, or in the gigantic building, Vigyan Bhavan, New Delhi, reinforced concrete structures, on which are superimposed pale imitations of Buddhist arches or stupa-like domes, made of the wrong material. The great new ministries rising in New Delhi are functionally correct rococo structures, with utterly useless domes set on top of their concrete roofs. Cement covering is painted pink to imitate Agra sandstone that was used by the Buddhists and the architects of Akbar.

Many intellectuals thought that attention to climate and the use of local material would be enough to create a new style. Nehru was
one of the intellectuals. When the question of building the new capital of Chandigarh for Punjab arose, he entrusted the work to Le Corbusier. Chandigarh is the sign of Nehru's desire to modernize India and make it progressive. The High Court and the Secretariat buildings show that public buildings in India could be modern, contemporary, yet different by the same architect. This does not mean that they are really appropriate in the Indian setting. A public opinion among literate Indians would probably produce a strong vote against them. But more important than approval or dislike, is the fact that the buildings of Chandigarh were the first examples of postwar architecture that aroused heated discussion throughout the country. Their high costs enhanced, rather than diminished, their importance as focal points of the poor Indian masses to at least a new generation of Indian architects.

The greatest contribution of Chandigarh is the fact that it made Architecture known to the public. Of course, there are many people who would confuse "agriculture" with "architecture." Still Chandigarh was the most significant thing that happened to architecture in India in the post-war period. After the completion of Chandigarh, there has risen a breed of architects who, if they do not exactly imitate Le Corbusier, have the courage of their own convictions and try to find their own mode of expression so as to reflect life.

Architectural Practice:

Architectural practice is concentrated in urban areas like Bombay, Calcutta, New Delhi, etc. An architect practising in these
areas commands all the materials and equipment available to his colleagues in the west, but in practice he is restricted by shortage of steel; though India's steel production is increasing rapidly, it is still far short of the country's need. His choice of panelling, cladding material and fittings is limited. More and more building materials and components are being made in India. Many of the less frequently used items must be imported. The shortage of steel accounts for the nearly complete absence of steel-frame construction and the preponderance of concrete. The traditional building practice and local materials vary in different regions due to different social customs, climate, and the availability of local materials.

Since 1950 local industries have been established for making building materials. Portland cement is now manufactured in India, though the supply is not adequate. Concrete is now more and more used structurally, and hand-made bricks, wood, glass, and steel are other building materials used for construction.

Air-conditioning is used more and more in important commercial and public buildings but is still far too expensive for widespread application. In most buildings the architect must combat severe climatic conditions without it.

This general picture of the state of architecture reveals that, to this day, only occasionally have Indian architects mastered the conflicting influence of foreign manners, local vernaculars, the spirit of Imperial Delhi, and Public Works Department rules and procedures.
Architectural Education:

India has seven schools of architecture with five year courses and examinations controlled by a government board of technical studies which aims at standards comparable to those in Britain. The first school of architecture was started about fifty years ago.

These schools are spread over different regions of the country and serve the needs of only a particular region. This restricts the choice of getting the best students from all over the country. At the same time, for a student, there is no opportunity to select any school outside his region. This arrangement is owing to political reasons.

The enrollment in schools varies, but normally it is between thirty to fifty students in the first year. Prerequisite qualifications for entering architecture is either to pass senior high school, or to pass freshmen Science with a minimum of 45 percent marks.

The selection of faculty-staff members is done by a board consisting of the head of the Department of Architecture, the Dean of Faculty of Engineering and Technology, the Vice-Chancellor (President) of the University, and two well known architects. Once selected, a staff member nearly becomes a permanent member of the staff unless he decides to quit or is asked to quit.

A school year consists of two terms. The first term begins around the fifteenth of June and the second term begins around the first of November, and it closes around the fifteenth of March for summer vacation. For the first year architecture, second year architecture, and
fourth year architecture, there is a departmental examination at the end of the second term. For third year and fifth year, the exams are conducted by the University at the end of the second term.

Following is the present curriculum for each year. All the students in a class follow the same curriculum.

First Year Architecture.
1. Architecture Orientation
2. History of Culture
3. Language
4. Aesthetics I
5. Scale Drawing
6. Applied Mechanics I
7. Building Construction I
8. Descriptive Geometry (Solid Geometry)
10. Sociography
11. Building Materials
12. Design I
13. Workshop Practice

Second Year Architecture.
1. History of Culture II
2. History of Architecture I
3. Aesthetics II
4. Building Construction II
5. Building Materials II
6. Applied Mechanics II
7. Surveying and Levelling
8. Design II
9. Workshop Practice

Third Year Architecture
1. Building Economics
2. History of Architecture II
3. Aesthetics III
4. Building Construction III
5. Building Materials III
6. Applied Mechanics III
7. Specification and Estimating
8. Services
9. Design III
10. Building Models, Demonstration of Services

Fourth Year Architecture
1. Sociology and Civics
2. Indian Arts and Crafts
3. Landscape Architecture
4. Urban and Rural Planning
5. Architectural Acoustics
6. Advanced Building Construction
7. Advanced Structural Design I
8. Water Supply Hygiene and Sanitation
9. Advanced Specification I
10. Professional Practice I
11. Design

Fifth Year Architecture

1. Advanced Building Construction II
2. Advanced Structural Design II
3. Advanced Specification II
4. Professional Practice II
5. Design
THE NEW FUNCTIONS OF THE ARCHITECT

In this section the role of today's architect is examined. Architecture, like all other human affairs, is facing a new kind of crisis. Our problems are not just those faced by our grandfathers. The architects, unlike some other professional groups, are at once in a position to do the greatest good, and also, by not recognizing their responsibilities and opportunities, are in a position of doing the greatest harm, simply by default. It is not possible to return to the simple client-architect relationships, as it is impossible to return to the simple life of a few years ago. We are confronted with the fact that as the world has grown smaller and peoples and nations have become interdependent so have the responsibilities of the architect taken on increasing complexities. He now works for all men everywhere.

The basic problems in India are population increase, illiteracy, unemployment, food shortage, and lack of shelter. Of course the architects cannot solve all these problems, but still they can play a major part in solving the problem of lack of shelter. Along with shelter, the community will need other facilities like hospitals, public schools, colleges, shopping facilities, offices, and recreational facilities. Looking at the size of the country, its population and the minimum amount of building work that is absolutely essential, it becomes apparent that there is a tremendous amount of work to be done. At the same time it is obvious that with the traditional methods of construction, it is impossible to cope with the requirements. The school of architecture, therefore, should lay major emphasis on industrialized architecture.
From the preceding sections it becomes clear that we are living in a different world today, even different from fifty years ago. In the words of S. Giedion, "The main task of contemporary architecture is the interpretation of a way of life equivalent to our period" (10). The social structure of society and economy is changing. So, to be alive and dynamic rather than static and dead, architecture should change too. Architecture in India should no longer serve as self-expression. In the words of William Pereira, "Self-expression is in architecture an ingredient that must be used sparingly and with great discretion. In this respect the architect is an interpretive as well as creative artist; his primary duty is to express not only himself but the image of his client through the agency of his own taste, talent and knowledge. . . . The more he concerns himself with interpreting the needs of his client the more genuine his artistic accomplishment is likely to be" (11).

Furthermore, with wider concern for the people, the architect will have to widen his scope of influence.

Dean Burchard asks a pertinent question, "Can we have good architecture that is concerned only with providing seats for the powerful and secure?" (12)

Today the image of the architect carried by the public is: The Impractical Artiste and Ornament Applier.

"We don't need an architect for such a straight-forward building."

"Now let's get an architect to draw a pretty picture."
"What is it going to look like?"

"He has good ideas but God knows what it will cost."

"He's a luxury."

The Architect-Engineer and Practical Businessman.

"They are architects but they're practical."

"This is just a site engineering problem -- why not get real engineers?"

"He can turn the work out on time and control costs, but every building looks like a shoe factory."

Roark: "The Fountainhead."

"He won't follow instructions."

"You'll never get what you want -- it'll be a monument to the architect."

"Wait until he gets off the job and we'll fix it up to live in."

"He doesn't know the meaning of compromise."

"Blandings"

"A nice guy, but what a bumbling fool."

"Don't ever get mixed up with an architect -- you'll never know where you stand." (13)

The image of an architect as carried by the public should be:

A Creative Coordinator.

Who else is trained specifically to study a puzzle and put the pieces together -- to control the end result of the whole design? Who else is trained in program formation and in dreaming what should be -- not what it is?
The Systems Engineer of Design

The complexity of modern science now demands a systems engineer, to control and piece together the many specialities into a functioning entity. The complexity of modern construction and planning require overall organization, integration and control.

The architect should be thought of as this expert.

One of the disciplines for which he would be responsible is cost control.

The Environment Shaper

As the doctor is now developing the concept of treating the "whole man," the architect is concerned with the whole human environment of man.

He can be the ecologist of man's surroundings.

The public should come to think of architects whenever their environment is threatened or is to be modified.

What other profession is concerned, trained or qualified?

The Analyst and Synthesizer

What other profession is trained specifically to analyze general objectives, aims, needs and requirements, assemble them into component, related parts, and develop them into an integrated, harmonious whole?

The Profession of Creative Thought and Imagery

Who else will raise the vision of the people above squalor of accidental development?
Who else is trained to imagine what is not there but could be?
Who else will change the value of the people by picturing more desirable goals — things worth living for?
Who else is trained specifically to draft a harmonious plan?
The architect may well be "of the peace."
Now, to create this image, the architect should change his traditional function to the following:
I. As the Shaper of Physical Environment:

Whether India in the next decades is a land of beauty, sordidness or ugliness is for us to decide. The actual shape of things is for us to accomplish. There are others who share this burden: businessmen and the government who provide the capital; clients for whom we build; also, of course, those in allied fields such as Urban Planners, sociologists, economists, who help us to create the atmosphere and style of the time. It would be true to say that others share this responsibility, but at the same time our responsibility is great.

The sheer mass of buildings required at present and in the next decades is unbelievable. There is the need to house millions of people. This is not the question of providing just housing, but other facilities such as markets, shops, health clinics, schools, and colleges. Even new cities will have to be built. The opportunity is tremendous. With the help of other specialists, like engineers, urban designers, sociologists, economists, and politicians, we should create new environment. It is the architect's responsibility to coordinate all these activities and integrate them in design.
II. Leadership:

Exploding population, insistent demand for shelter, urban explosion with cities slowly strangling in their own traffic, over-stretched utilities and services, overcrowding, advances in productive technology coming so fast that they tread on each other's heels, ever increasing mobility, and many other factors, obvious to us, insure that we must build.

But whether we build well or poorly will depend on the extent to which the voice of architecture is heard and heeded.

We cannot depend on the voices of a few leaders in the profession, however impressive their status, to make the necessary impression and penetration. The voice of architecture, to be effective in the face of the challenge of tomorrow, must be the collective voices of all architects everywhere.

There is a strong growing awareness of the need to bring about order into a confused and chaotic situation. Who other than the architect can take this leadership? Saying, we are ready with the talent and perception if you will but use us, is being on the defensive. More than offering architecture, we must assume leadership, so as to make architecture a necessity rather than a luxury. Only this could raise the hope that in an era of the demonstrated capacity to give more and better tools of living to more people than any other economic and social structure ever built by man, we will live a spiritually rich, intellectually stimulated, and physically happy life.
III. Urban-Rural Planner:

The Indian government since 1950 has been concerned about raising the standard of living, providing job opportunities, industrialization and education, and raising agricultural productions, etc. The five year plans have been formulated to achieve these objectives. There is no interrelationship between broad physical planning concerned with the pattern of economic planning and the pattern of urban growth. National and economic planning are primarily concerned with the overall economic policy in budgetary terms, not with locational patterns or interrelationships. Public-works planning is focused on resource development, utility and transportation systems and other overhead facilities often in regional terms but unrelated to future patterns of activity or population distribution in any concrete sense. Furthermore, urban planning is either solely concerned with the area within principal municipal limits or, as in the Delhi plan, with a metropolitan region.

It should be the job of the architect to provide the missing link of interrelationship and approach it in an integrated manner. In India there is very little awareness of the impact of the physical planning on environment. As Barbara Lamb says, "Indian leaders have just begun to think in terms of urban planning to prevent cities from growing even worse" (14). When the highest bodies concerned with environmental planning have this attitude it should not be surprising to know that architectural schools deal very little with design.

On the contrary, urban and rural planning should become a very important part in the school curriculum, as we are concerned with
An urban planner should be an architect with a generalized knowledge encompassing the wide economic, political and social factors involved. It is a fearsome sight to see statisticians taking over planning without knowing how to compose data into three-dimensional concepts. It is equally futile for architects to try to compose such concepts without understanding the underlying social, economic and political aspects.

Besides urban planning, rural planning cannot be overlooked in India. Even after 1981, 70 percent of the population will live in villages. As we are concerned with bettering environment and serving humanity, architectural professionals should not act as if they do not exist.

Rural studies are essential to investigate the living conditions. Architects should offer their services, and help the villages to create a more wholesome community life. This will reduce the immigration to the city, which in turn will lessen the pressure on urban areas.

At the same time, stabilization of rural life will result in more agricultural production, which is one of the most pressing needs of India today. The need will remain so, until population increase is stabilized. This stabilization will be the architect's participation in the economic growth, and if he has to better public relations and make the profession more widely known than at present, what could be a
better place to do so than in rural areas where 70 percent of the population live?

This will create greater job opportunities for architects in local and state governments. A village would not be able to afford a private architect's services. It is only through the government that the architect can participate in village reconstruction. Furthermore, the government is the greatest source of employment, as it is the major element in the development of a country. With more and more architects in the government their voice will become stronger and will gain respect and authority.

IV. The Reconciler of Technics and Esthetics:

Prefabrication adds new dimensions to architecture. Increasingly, the house becomes less a hand-made object. The calculations of the mathematician assume a larger role as buildings take on the complex and daring forms which new techniques of construction permit. It almost seems as if the relationship between the architect and the engineer will in time be reversed, with the architect not conceiving and creating, but merely acting as consultant to a technical staff.

The architect should not allow this to happen. He has a supreme role, and is charged with the obligation to maintain it. His position today is like that of the great printers in the fifteenth century. They saw the creation of books suddenly mechanized, and managed to place upon the rigid types, seemingly so dull and uniform compared to manuscript letters, a timeless beauty of their own. He is like an artist, such as
Brancusi or Mondrian, who uses elements characteristic of a machine technology, subtly transforming them into works of the spirit and the imagination.

The architect would have to fuse technology and esthetics to produce architecture. Using machines to produce parts, he would create through them a harmony and proportion which would lift human nature spiritually. The buildings he shapes will have their ultimate justification as to whether they satisfy spiritual needs or not.

V. Master Builder:

In the present world, architectural creation is influenced by forces derived from many uncoordinated centers of relations such as engineering, industry, government, and arts. The new task of the architect is to coordinate all forces influencing architecture, so that a total coordination radiating towards every area of architectural creation is finally achieved. Thus, the architect assumes the position of a master-builder -- a coordinator.

Within a house he is the coordinator of all the needs and elements of solution, whether it be economic, technical or social. He is to cover human needs with a physical shell which will have to be, probably, constructed of elements coming from different parts of the country or the world. For many houses taken together, he is also the coordinator working for the creation of the neighborhood, which is to serve the needs, not only of the family but also of the community. Moreover, he is to influence the industry for the production of the best type of
elements, and use social sciences for the formation of a better human habitat at the level of the house, or the level of the community. Finally he has to urge and help the government to conceive proper housing policies.

Today the architect in India is not the master of the building industry, but is still thinking in the terms of the handcraft methods and is unaware of the colossal impact of industrialization. The architect is in a very real danger of losing his grip in competition with the engineer, the scientist and the builder, unless and until he adjusts his attitude and aims to meet the new situation.

Complete separation of design and execution of buildings, as is in force today, seems to be altogether artificial. If we compare it to the process of building in the great periods of the past, we have withdrawn much too far from the original and natural approach, when conception and realization of a building were one indivisible process and when architect and builder were one and the same person. The architect of the future, if he wants to rise to the top, will be forced, by the trend of events, to draw closer once more to the building production. If he will build up a closely cooperating team together with the engineer, the scientist and the builder, then design, construction and economy will again become an entity -- a fusion of arts, science and business.
VI

THE EDUCATIONAL CONCEPT FOR THE NEW ROLE

All our thinking up to now has been directed to the problem of quality, and when talking about architecture, architects and laymen alike confine themselves almost exclusively to the qualitative problems. We talk of what we like, what is best, what is rational, and seldom think of the quantitative problems we have to face.

We discover that the large masses of people are not interested even in talking about the differences between old and new, nor do they care whether architecture is moving from handicraft to industrial production or whether we are dealing with local or international factors. In fact these are the problems which only a limited number of persons can in fact understand. The large masses of people are really interested in their way of life, but when talking about architecture they confine themselves to a cursory and superficial examination of our architectural production, our habitat, and our cities. They look mainly to the appearance of architecture. However if we proceed to look not at the facades of our buildings but inside, into the heart of our architecture, we shall discover that the homeless or poorly housed, who constitute the majority of the people on the earth, live under bad conditions.

It is not merely that the majority of mankind is ill-housed, but that many of our needs are not served at all or are badly served in the wrong kind of buildings or in buildings which are too small and inadequate for our needs.
How do we react to the fact that our building efforts are smaller than the corresponding needs, that they are in fact not comparable at all to the real needs of humanity? In our talks about architecture we usually forget the greatest number of our potential clients, that is, we usually forget the quantitative questions related to architecture, considering them to have no influence on the situation. But what percentage of the people, in fact, have the privilege of a proper house or a proper school building? We do not think of that, nor do we relate it to the problems of quality.

If we decide to do so, we must recognize that we have quantitative as well as qualitative problems to tackle, and that the quantitative problems should not be left to one side while we devote our attention mainly to the qualitative ones. If this bias continues, then we are doomed to remain in the epoch of transition. We will be unable to find any way out and, what is worse, our efforts to serve our real clients, that is, the population of the whole earth, will be a complete failure. How can we believe that we create an architecture when the solutions given are only good or possible for a certain very small class of people which may exist in all countries or only in some of them, but which nevertheless constitutes a minority in relation to the great masses of people we have to serve?

In this context I propose that the concept of architectural education be "Architecture should be part of life." Because architecture is concerned with creation of healthy human environment so it should touch all and everyone. With architecture becoming a part there
will be better understanding of architecture in public, which is lacking at present. Architecture is not just concerned with designing a physical container, but also for providing emotional, intellectual, and spiritual contentment. The satisfaction of the human psyche resulting from beauty is just as important for a full civilized life or even more so. So architecture should be for all and not for a minority.

The basis of our present architectural education is in the nineteenth century concept of architecture and the architect. At this time social changes and technical advances had greatly widened the range of knowledge required by an architect and made necessary many new kinds of complex and unprecedented buildings. The architects of the period reacted to this challenge by abandoning altogether the renaissance concept of the architect as "whole man," by excluding important branches of knowledge and by establishing the idea that "Architecture was an art with its own fundamental discipline quite separate from any other art, science or craft." (15) They withdrew both from the study of what was needed in buildings and from the study of building construction and technology by limiting the use of forms of selected range based on classical elements of doors, windows, arches, etc.

In India architecture is considered as an art -- the architect an artist. Being considered an artist, the architect is not considered of any importance or use and this has lowered his status. Henry Hope Reed, Jr. says "one significant aspect of today's chaos is the loss of status on the part of the artist including the architect." (16)
But architecture is not art alone. It is art as well as science. As a science it analyzes human relationships, as an art it coordinates human activities into a cultural synthesis.

I have stated the concept of architectural education above. For the fullest realization of it the following means would be used:

Comprehensive Architectural Practice:

To design buildings and their environment is a much more complex problem today than it was a few years ago. Now certain additional services will have to be added to the basis of standard services. The profession must then develop, within itself, with the help of related professions and others, methods of handling the entire process of creation and construction. To put it another way, the profession will have to prepare itself for comprehensive practice in the area of buildings and their environment. One of the important elements of such a practice would be an architectural analysis of feasibility, land, location, finance and the like. This would involve him with promotional activities since many projects today are speculative or entrepreneurial in nature and public relations is a necessary tool for success in many others.

The architect would find himself concerned with the nature of the operation to be performed in buildings, and would interest himself in programming and planning. He should play an increasingly important role in the construction industry as a consultant to manufacturers of building products. He has much to do with architectural graphics, fine arts, crafts, and a long list of other pursuits.
Better Understanding of the Human Being:

No one would disagree with the fact that the better we understand the human being, for whom we plan, design and build, the better and more pleasant, comfortable, and effective the architect-designed building will be. We must learn to better understand man, the complex social being, his varied ways, his aspirations, his needs, large and small, tangible and psychological. For we, architects, are responsible for his well being and for him we design to meet his various needs.

We should ask the question if architecture is for people or are people for architecture? Do we build communities to fit people or do we fit people into communities? We must learn to understand not only the principles of esthetics and technology, but the human laws of politics, sociology, psychology and economics.

There are specialists in all of these fields and so we need not be them but our job is to coordinate the sociological aspect of design with the engineering aspect. We will have to develop the ability to understand the language of these consultants to bring them together, and to direct them towards the highest possible common purpose.

These consultants alone, in each of their specialities, can never have a comprehensive view to bring all these needed areas of knowledge together into one satisfying overall solution and design.

Diversified Curriculum:

Normally all architecture schools have design as the foundation of their curriculum. Without design there is no architecture. Nothing
in any programme of architectural education should be permitted to stand in the way of maximum development of those with a real talent for design. But the question is, do all students have talent and capacity to become designers? It is Dean Burchard's estimate that only one-tenth of all the students have the talent to become good designers. So what happens to the rest of the 90 percent of students with the present trend of concentrating just on design?

The dropout rate of college and university architectural students exceeds the 50 percent common for college and university students by a wide margin. According to Dean Burchard "no more than one man in twenty of those who now come to our school could reasonably be expected to live up to the highest standards." (17) I do not think that many would disagree with Dean Burchard's estimate. Then is it essential to make a very heavy investment in a school with design as the central subject? Design is the essence of architecture, but does the large emphasis on design as so central to the entire curriculum for everybody seem justified? What happens to the rest of the students? Do they remain draftsmen all their lives?

To this problem diversification is the answer. Such a program would push the designers to their limit in the upper years, unencumbered by the lower-level skills of those who are dragging along. It could also push those with marginal designing skills, who have high aptitudes in some other areas and encourage them to pursue a greater concentration in relevant subjects outside design.
Besides, the realities of practice demand technically-oriented specialist architecture. The electrical, mechanical, and structural engineers are deserting the architectural consulting practice for various other fields and so the profession is already suffering from a shortage of the specialist consultants. The diversification of program is intended to produce technically oriented specialists.

Furthermore, as Mr. William H. Scheick mentions, architects are sought by the building industry, by government, educational institutions, and publications (18).

Cost Control:

In India, the problem of cost control is the stumbling block for the architects. It is not unusual to find that the cost of a building always overshoots the cost estimated by the architect. There are examples where, at the completion of a building, it has been found that it has cost four times more than the estimated cost. The same thing has happened with the music hall in Sydney, designed by the Danish architects and raises doubts about moral and ethical qualities of the architects. Nobody trusts an architect and the architects narrow down their field of potential clients. If we want to widen our influence and are really concerned about our role as environment shaper then we will have to prove that our deeds back our words. Besides, as architects we say that we are experts in the field of building design and one of the characteristics of building design is efficiency. From Mr. Hummel's article where he says "Finally and most important you can show, if you
try, that my fellow laymen will save dollars if they use our services, there will be savings in maintenance and avoidance of future costly structural alterations due to improper planning" (19), it is apparent that a layman feels that an architect is competent to design within his budget but he does not try. This impression should be replaced for better prospects. It is essential that right from the time a student enters a school he should be made aware of his responsibility as a cost controller.

Mr. A. G. Shepard, R. I. B. A. vice-president, aptly says that "the practice of architecture has changed radically to meet the vastly changed circumstances of world economics and progress in science and technology. It will be true to say that now it is a social service, very much of and for the people rather than an art catering for an aristocratic minority. The community makes new and exciting demands on the architectural profession -- measuring our success in terms of efficiency rather than esthetics. There is a real danger that the good architect, unless he is also the efficient architect, will fail to leave his mark on the contemporary scene" (20).

In India this becomes even more pertinent as there is nothing like building financing and a client normally spends all cash money for a house and so overshooting might mean financial ruin for him.

Supra-Professional Responsibilities:

One of the shortcomings of architectural education in India is the preoccupation of design teaching with only two dimensional space
conception. In design, the students are taught to be concerned about hollowed out space -- interior space. The third dimensional space conception set in with the optical revolution at the beginning of this century, which abolished the single viewpoint of perspective, has not been considered yet. So building design totally disregards the environment around it. However architecture cannot function in a vacuum. In the words of Bruno Zevi, "Architecture is not art alone, it is not merely a reflection of conceptions of life or a portrait of systems of living. Architecture is environment, the stage on which our lives unfold" (21). So it will be necessary to take everything, houses, streets, buildings, into consideration in design teaching. S. Giedion says that "the task of the architect is placing volumes of different height and form in mutual relationship" (22). This is essential as nothing in space exists itself but is interrelated with everything around it.

This means that an architect will have to look beyond his client's needs, and the architecture of the individual building must, inevitably, give way to the new scales. The architecture should be concerned not only with individual but its relationship to the street, to group of buildings, superblock, the community and in due course the total environment.

Jan Rowan says that "if architects want to control man's environment, their actions must be supra-professional and all pronouncements made by the profession must be based on what is best for society at large and not what is best for some members of the profession" (23).
Eero Sarinnen had also expressed a similar idea: "we should stop thinking of our individual buildings. We should take the advice my father gave me 'always look to the next larger thing.' When the problem is a building, we should look at the spaces and relationships that that building creates with others... In the process the architect will gradually formulate strong convictions about outdoor space... the beauty of the space between buildings... and if he does he will carry his conviction on to the most important challenge... how to build cities" (24).

Bringing the Profession and Teaching Together:

One of the pitfalls of architectural education is friction between practitioner and teacher. They lack respect for each other. This is unnatural as both are related. What is taught in school will affect the profession and what is needed in offices will affect the program in the school, thus both are interrelated. Besides a teacher should be allowed to practice so he can continually develop his creativity and resourcefulness. Besides, this is essential for making a teacher's voice respectable so students would know that the teacher practices the theory he teaches. Thus teacher and professionals are merged into one.

Communication:

It is apparent that influence of architecture is limited due to lack of communication, communication between experts from different fields, between different schools of architecture and between architects and laymen.
Carl Feiss says that "we have reached that status in our society in which the expert speaks only to the expert in his own field" (25).

The same lack of communication between schools is also very essential to prevent doubling of efforts, to offer a wider choice of curriculum. As in the case of architecture it will in all probability be impossible to offer advanced work and research under inspiring direction in all aspects of the profession from engineering to urban design. Such outstanding resources are not to be found today in any one faculty, their curriculum and research will differ from school to school depending upon the special resources and interests of the faculty. Such diversity should be an asset to the profession. Experimental curriculum which actively searches for means of improving, extending and deepening the education of the architect will enrich one another not only through sharing of successful ideas but also by eliminating through experience those ideas that once seemed promising but which are no longer valuable.

The field which lags behind most in communication is between layman and architect. It is for people we should build and so they should understand what we can do for them or how we can be useful. Without the people's support our goal of control of man-made environment cannot be reached. Mr. Hummel, as the layman, expresses his viewpoint about the architect. He says, "to some people architects are an unknown lot, a small isolated group who do mysterious things." (26)
Honorable Robert Winters, formerly Minister of Public Works, Canada, addressing the Royal Institute of Canadian Architects, questioned "whether the work of Canadian architects receive the public recognition it deserves and urged that architects make a greater effort to communicate with people" (27).

Dr. Donald W. Mackinnon's observation is, "The majority of you will be introverts. Though your professional duties will require that you interact often with others including colleagues, clients, contractors and although there is every reason to expect that you will be effective as a group, at least according to your own reports, want just as little of such interaction as possible" (28).

To bring better appreciation of better design and qualities of environment, the architect should get away from the aversion to communication.

Walter Gropius says that "Good original architecture depends just as much on an understanding public as on its creators." (29)

This would mean that our participation in community life should be enhanced. It is mostly by the things that the individual architect says and does -- and by the range of his personal participation in community life -- that he and architectural practice in general become known to clients and the public. Without active participation on a broader scale he may fail.

For communication, we should use all the means available to us. News media is a possibility. There is much in the press and in
popular literature about science, industry and government and about some professions. But, frankly, even the well-read executive finds little about architecture or the men of architecture in the course of his normal reading. Nor can the younger generation readily find much information about architecture. Splendid books are available about virtually everything else, but there are very few good books about architecture which might be appropriately recommended to an interested young man.

The point is that architecture is little-known and poorly understood by most people who otherwise are literate, competent and well-informed about the world around them. This being the case, the architect has some high hurdles to overcome if he is to advance his profession and make his own practice and particular talents known to those who need his services.

Student Participation in the Formulation of the Program:

The program of a school affects the development of a student's ability, knowledge, and skill. It affects his view on architecture and most importantly his future. So there should be mutual sharing of problems by faculty and students. Because their future is the center of the issue, students should have an opportunity to express their thoughts. This will make a school's program more fitting to the needs of students.

These are the broad facets of the main concepts I have stated before, and they are incorporated in the formulation of the curriculum which is discussed in the next section.
VII

CURRICULUM

Curriculum is the tool to put the architectural educational philosophy into practice. In the light of the proposed philosophy, the present curriculum will need three things.

(1) Reorganization of Syllabus:

At present the syllabus is spread over just five years. This same syllabus will have to be accommodated within four years or eight terms, instead of five years. With the introduction of specialization, the fifth year is devoted to this, and each student will select a subject, with faculty's approval, for specialization. During the course of four years a student should acquire knowledge in all subjects which can be put into use in the last year.

With consolidation of courses in four years, realignment of courses is necessary. The subjects are fragmentary and so should be consolidated. For example, History of Architecture and History of Culture by themselves would seem meaningless to a student unless they were related to architecture. The underlying principle of teaching of all subjects should be that acquisition of knowledge of these subjects be essential for architecture and for making an architect a better man. An architecture student would not find physics or chemistry interesting if their contents were similar to the course taken by a science major. He would not consider them meaningful until he saw how these subjects would make him more competent in design.

(2) Reexamination of contents of existing courses:

There are subjects like History of Architecture, Structures,
which need to be taught in a different way today.

For example structures is taught in the same way as it is taught to civil engineers and the syllabus is also similar to civil engineers except that it is not that wide. But mathematical treatment of structures is not suitable for architectural students. They do not require the knowledge of how to calculate a size of beam or column or slab, but they should know the scientific principles behind each different type of structure, conditions under which they can be used, their advantages and disadvantages under a particular set of conditions. Besides, it should be integrated with studio courses, so a student would learn the use of the subject under supervision of design and structural critics.

The criticism can be applied to the History of architecture. History of architecture is not the study of styles or their different parts. Neither is it memorization of details, plans, sections of a particular building. It is not uncommon to find that the History of architecture is regarded as a useful dictionary from which one can select forms and shapes. The nineteenth century did this and there are architects in India and at present who do this, using the past as a means of escape from their own time by masking themselves with shells of a bygone period. History of architecture is not a study of styles but the study of methods and principles underlying the architecture of a particular period.

The recent work of art historians, particularly those working in the Courtauld and Warburg Institutes at the University of London,
make much positive use of history. The study of Renaissance architects by Wittkower shows how Alberti and Palladio themselves saw their problems, what they aimed to achieve and how they set about it.

Other almost neglected subjects are the Environment Sciences -- the group of sciences which deal with the human being -- both as an individual and as a member of a group.

The environment created by an architect impinges on the individual human being through his eyes and his ears, it affects his comfort through his skin and his breathing. To understand what he is doing when he designs a building, an architect must know how it will affect people. Therefore, he must be taught something of anatomy, physiology and the psychology of the special senses. He must also understand enough physics to predict the physical conditions which will be produced within his buildings by his design. In our present courses some consideration is given to these questions, but they are dealt with in the wrong time. Instead of presenting the physics, psychology and physiology of the human environment at the very beginning of the course as part of the theoretical basis of architecture, we usually give the student a short account of the practical problems of heating, lighting, and acoustics towards the end of his training. He naturally forms the conclusion that these environmental factors are something additional to the architectural design -- something to be solved by calling in a technical expert.

The social sciences are equally important, as they provide the means whereby we can fit buildings to the needs of human beings as
a group. Modern society is too complex for the architect to have automatic understanding of what is wanted in a building; the client does not know this either, although he sometimes thinks he does. For many modern buildings, there is no single client. Many people are concerned with the functioning of a hospital or a college, each may understand the workings of some part of it, but no one understands it completely, as a whole. Again, the long life of buildings when compared with the rate of change of human organization, means that people often adjust their pattern of life or work to fit an old building. If they are asked to specify their needs for a new one, they think in terms of the old familiar environment. They cannot break out to see what they really want. Therefore, the client's brief is nearly always wrong, and a bad brief inevitably results in disastrous architecture. The solution lies in the joint study of building function by architect and client. The techniques for study are those of the social sciences, and the architect's education must equip him to understand and use these methods.

Then there is a group of subjects dealing with building construction and building materials. Teaching in these subjects has become a desperate and hopeless race to keep up with the increasing range of materials available in building and the increasingly complicated techniques for assembling them. Fifty years ago an architect could be taught rather well all there was to know in this field, but even then it was formidable. Then, it was part of his job to design a window,
drawing out on paper the precise shape of the joint between the top and the side members, specifying how they should be wedges and glued together, and selecting the timber to be used. This never happens today. An aluminium window is not designed by an individual architect but by a factory design team. In studying building materials a student would benefit more from knowing about different kinds of building materials available, their properties, their sizes, than knowing just a few building materials and their process of manufacture and different types of equipment used to produce them.

The most neglected subject at present is the most important subject as we have decided, that the job of architects is to design and to control man-made environment. The subject is Urban-Rural Planning. With architecture operating total scale of activities Urban-Rural planning should be introduced at very early stage, and as the student progresses, the complexity should increase. By the end of the fourth year a student should be in possession of sufficient knowledge so that he can study "Total Architecture" and the full implication of his responsibility to the community in terms of control over environment.

Building Laboratory:

A course in Building Laboratory would not mean the same to an architectural student as it would mean to a civil or mechanical or electrical engineering student.

A report of the Royal Institute of British Architects mentioned the fact, that the common weakness of many architectural schools was the
absence of experimental and laboratory work. For the architecture student in the early years, basic design and workshop practice combined would introduce to the students the elements of construction and of "building" by developing three dimensional exercises to be carried out with materials and tools. In the following years continuous creating, doing, testing would help students to understand fully the properties and uses of building materials, problems of their durability, variety and capability of structural forms with thorough understanding of functional efficiency and its detailed implications and with the range and intricacies of the increasingly complex services so important in contemporary buildings. Knowledge of these things is vital to design. With increasing numbers of new types of materials and techniques becoming available almost daily, the architects' evaluation should not depend solely on data obtained from merchants, tradesmen, and manufacturers.

(3) Introduction of New Subjects:

Research: Architectural research is needed to cope with changes in architectural thought, to fulfill the requirements of evolving functions, to take advantage of the opportunities offered by the expanding technology and to deal with problems created by the increasing industrialization of the building process. It is becoming more and more necessary to conceive architecture in a wide urban, environmental and universal context; to reappraise the role of architectural education and practice; to dig into the past and to project into the future; and finally to capitalize on progress being made in related disciplines.
Climatology: Architects need for their professional work some knowledge of sociology, sculpture, mechanical engineering, painting, woodwork, electrical engineering, public health, geography, plumbing, landscaping, civil engineering, city planning, office administration, law, design, physics, sanitation, accounting, and besides many other items, climatology. Actually, the architect has been a climatologist much longer than he has been an expert of the other disciplines listed. Yet no training in this line is given to the university student although it has long been recognized that good architecture must be concerned with air -- the air of the outdoors, close to the ground and high in the sky which helps to make the climate we live in.

The climate has been playing a very important part in the life of Eskimos. In India people's religion, customs, and social life have been affected by climate and the architecture is also affected by it. So climatology, which plays an especially important part in India where there is no air-conditioning, should be added to the curriculum.
VIII

CONCLUSION

In an age of transition, Indian architectural education and architecture is hopelessly static and outdated. It serves very limited needs and a very small number of people. For the betterment of the human environment, architecture should serve all people. New techniques of building must be developed to meet the pressing demands of millions of poorly sheltered or totally shelterless people. The architectural school at Baroda is to prepare architects who can cope with India's staggering problems. The new building should reflect this total concern.

(1) To be more effective, architecture needs public understanding. The public must also be educated. The purpose of the school is to educate future architects and future clients. It is planned as a center of education for the public as well as the profession. In the building there are magnets such as shops, a cafe, and an auditorium for public use, university use, and use of the architecture students. Conceivably, villagers or school children might be brought in for lectures, exhibits, and architectural demonstrations. Within the school, laymen can see the work of students and meet them. The school is a place where interchange of ideas takes place, where new ideas are born.

(2) The population explosion is the basic problem of this age. Its impact is strongly felt in India because there exists a gap between it and the production of goods. In the case of architectural production, the rate of increase is inadequate even if the population remains
at a standstill. This indicates that our traditional method of construction will have to be replaced by modern techniques. The new School of Architecture symbolizes this need by the use of the most advanced technology—a highly industrialized precast concrete system.

(3) The decorative, ornamental architecture of India's past cannot solve its present problems. Simple functional structures which obtain a maximum result with a minimal effort will have to be employed if architecture is to assist in overcoming India's serious problems. At the same time it should be easy to erect. A layman, with little training, could build to meet his own needs.

(4) India is essentially a rurally oriented country. Even after 1981 only 33% of the population will be living in urban centers. This means that the majority of problems are totally ignored today. The village environment should be given attention. A course in urban-rural planning can do this. There will be an emphasis on rural problems. In a country like India, where the literacy rate is less than 25%, it becomes the moral responsibility of all educated persons and professional people that they participate in community upliftment. For this purpose all architecture students will have to spend at least two summer vacations in villages participating in community development programmes. They can teach many things like sanitation, health, hygiene, construction of housing and schools, etc. This will help the student to understand the problems of villagers. Villagers will come
to know that "Architecture" is not "Agriculture."

The building's concourse is planned as an exhibition area for architectural models, drawings, and exhibits which would help the public at large to understand architecture.

(5) The division between the professionals and educators in architecture is harmful. Both are interrelated and interdependent. To emphasize the continuity of education, both activities take place in the building. This aspect would lend a sense of "reality" to the student's work.

(6) For the creation of a better environment, the design professions must work together. Studio space is planned to integrate all professions: architecture, engineering, city planning, landscape architecture, and other disciplines. Here the specialists from other departments of the university would participate in the school's programmes. This consideration led to the location of the building on the site.

The aim of the School of Architecture is to bring life and architecture closer together.
AVERAGE ANNUAL RAINFALL

CLIMATE

AVERAGE MAX. & MIN. TEMPERATURE IN F°
ACADEMIC YEAR FROM 1ST JUNE TO 1ST MARCH

UNIVERSITY STRUCTURE
CHANCELLOR

VICE CHANCELLOR
equivalent to
president pitzer

PRO VICE-CHANCELLOR

SYNDICATE

DEANS OF FACULTIES

UNIVERSITY STRUCTURE
FACULTY

PRESENT STATUS
UNIVERSITY STRUCTURE

architecture a dept. in faculty of tech. & eng.
F - FACULTY

NEW STATUS

UNIVERSITY STRUCTURE

raised status of architecture
new faculty
PRESENT LOCATION
distances in miles

SITE SELECTION
PROPOSED LOCATION
distances in miles

SITE SELECTION
Demonstration:

Until recently the Department of Architecture at the M. S. University of Baroda was a part of the Faculty of Engineering and Technology, but now its status has been elevated to that of a University School of Architecture, to be located on a new site. It is to be designed for about 300 students. The current enrollment is 220.

The campus of the university is spread all over the town. I have selected this site. It is within five to ten minutes cycling distance from the dormitories and the town, yet it is within the main campus. The site is located between the Faculty of Fine Arts to the south and the Vice-Chancellor's residence to the north. Its main access is from the University Road to the east. The access is on the bus route connecting the center of the town to the dormitories and residential areas, viz. Pratapgunj Fatehgunj and the Polytechnic.

As architecture should be a part of life, besides academic activities, the building is designed for professional, cultural, shopping, and recreational activities. Furthermore the building is so designed that the main activity of architectural education is not disturbed. This is the main reason for level differentiation. On the upper level, all areas are for the public. As you enter the building, from the east, the administrative office is to your left. The balcony looking down into the jury space, on the lower level, is on the right. One can watch the proceedings of the jury from the balcony. A person, if interested, can go down to the lower level to participate.
The administrative wing houses the school secretaries' office, the storeroom, director's office, conference room, and offices of the staff members. The administrative wing, class rooms, and the auditorium form the court on the lower level. The concept of the main concourse is similar to that of an Indian bazaar, the space for walking, meeting people, and shopping. The walk on the main concourse is planned as a spatial experience, and for bringing people visually closer to the things going on in the studios on the lower level. The purpose of this is to raise curiosity and bring to the attention of the public the efforts, time and skill involved in architecture. One can, also, go into the balconies and have a look all over the studios. The two staircases in the main concourse lead to the lower level. The main concourse is also used for the purpose of exhibition of models, drawings, and paintings done by the students. A part of an exhibition will be on permanent display, and a part will be changing. The morgue, on this level, is for storing the exhibits when not in use. The auditorium is used as a buffer between the quiet area of the administration wing and the noisy cafe and shopping area. The auditorium is for multi-purpose use, so as to attract students from the university and the public to it. The auditorium can be used for all school and public lectures and symposiums, and for showing educational and recreational movies.

The open court between the auditorium and cafe is mainly intended for the public. The cafe will serve the needs of architecture and university students and the general public. This will be one of the
places where the public and students can meet and exchange ideas. The shops are for the use of the university staff and students. At the same time, it will serve the nearby community.

On the lower level the major space is the studio. It is a big open space, flexible, so as to suit the needs of changed curriculum in the future. The studios are lighted by the north light and have two roof levels, so that light can reach right up the rear side. The space for model making is also a part of the studio. Here, a number of tables will be placed, on which students from the first to the fifth year can construct models. This idea is to emphasize the inter-learning by students. A freshman can see how an advanced student uses the materials and techniques to construct a model.

The building materials exhibition space is across from the model-making space. Here, the different kinds of building materials, such as bricks, glasses for windows, doors and partitions and window sections will be exhibited. This will help students to be constantly aware of the availabilities of the materials. This will help him to design more competently.

The jury space is situated at the east end of the studios. In between the jury space and the studios is the morgue. The library is situated on the other side of the building materials exhibition space. Next to it, is the university architects' office. It is located here so as to bring teaching and profession together. Professional practice is essential for teachers to keep their creative thinking alive. At the
same time students will have opportunities to observe the professionals. This will enable them to relate their design to reality. The library and architects' office are located on the east side of the students' court. The court is typical of Indian life. It will be used as an outdoor space for informal meetings, relaxation, and cross ventilation. The two small courts also serve the same function. On the south side of the court is the laboratory. Its main purpose is for testing acoustics, properties of materials, experimenting with structures, and doing research. The students' lounge is situated on the west side of the court.

The wings are designed as single load corridors, for the purpose of providing efficient and natural cross ventilation. The band of ventilators below the beam level will keep the enclosed spaces cool by preventing the heating of the rooms, due to convicction currents of air.

The structure is precast concrete with precast columns, beams, walls, and double T-slabs for floors and roofs. This system is used to express the needs for industrialized architecture so as to meet quantitative problems. It is easier to erect, saves labor cost, and is reusable.

The building is designed to express the ideas of education for the public and the profession. For the students, it is a place of learning from everyday experience. For the public, it is a place to see what is involved in architecture. This will enable us to widen our influence over the public, so that we can have a better say in shaping the human environment. The building is planned to express the new needs of the changing society.
FOOTNOTES


5. "The Strangled Cities": The Houston Post, 5/22/1966 (Houston: The Houston Post Inc.).


9. Ibid., p. 41.


BIBLIOGRAPHY


