

THE STUDENT PUBLICATION OF THE SCHOOL OF DESIGN
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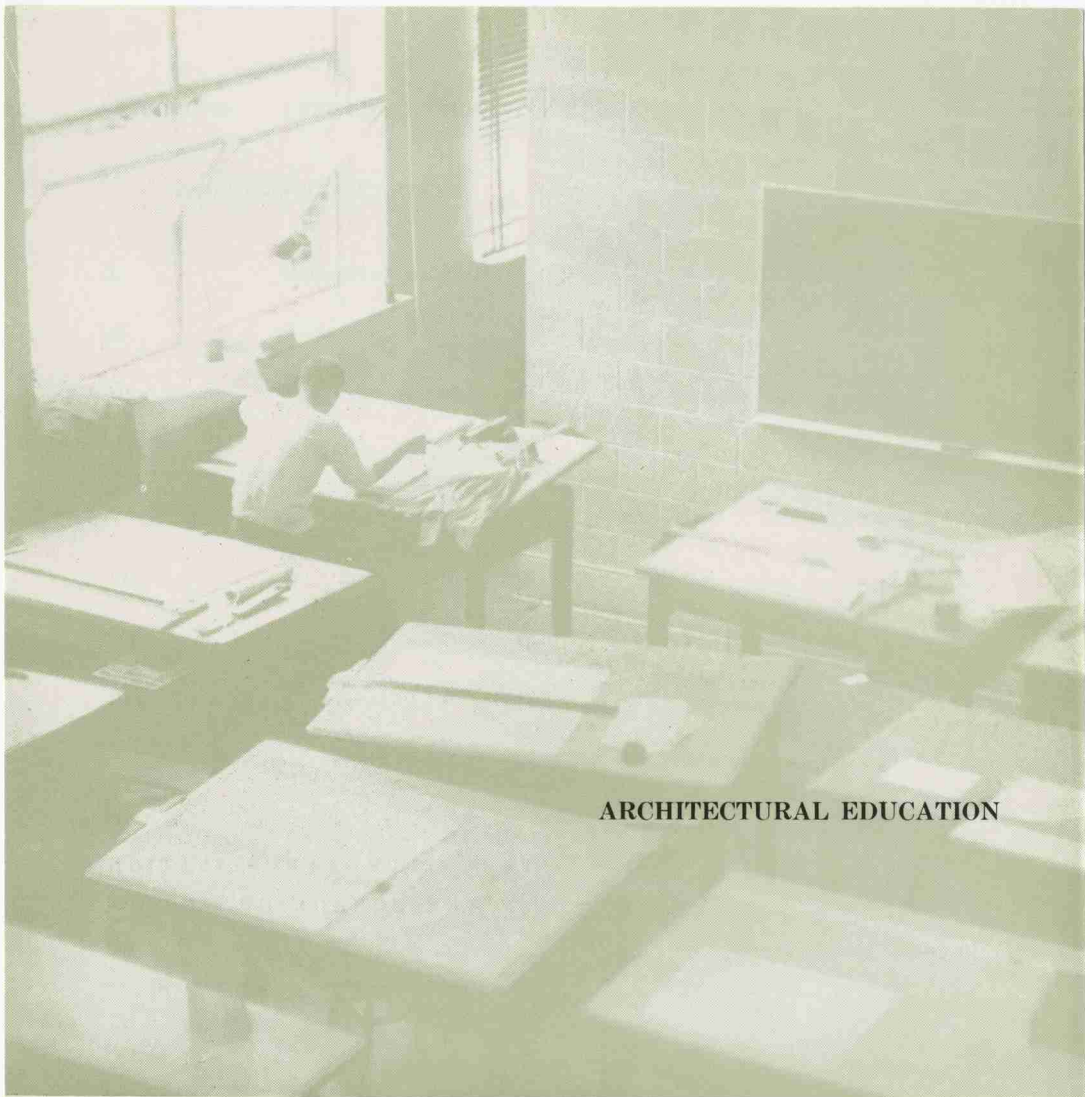
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ARCHITECTURAL EDUCATION

I HENRY KAMPHOEFNER, *Dean of the School of Design at North Carolina State College, delivered the address published below at the Division of Architecture, Texas A & M College on April 28, 1958. In this address the Dean discusses the status of the schools and goes on to make proposals concerning those elements which combine to create a good school of architecture.*

It is not generally recognized in America that modern architectural education in the United States is less than a quarter of a century old. About a third of the Biblical life span, a quarter of a century is not a very long time in a movement of the Arts. When we consider the 20th Century already in its third quarter, it appears to be a very little time at all.

Joseph Hudnut, who understood the degenerating and demoralizing practices of the Beaux Arts system, had already discarded the system during his three short years in the deanship at Columbia University before he left New York for Harvard in 1936 and invited Walter Gropius to the United States and Cambridge. Joseph Hudnut and Walter Gropius with a distinguished new faculty organized the first school of modern architecture in the United States at Harvard in 1936. In dozens of discussions with friends and colleagues in architecture over the last two decades, no evidence has been given to show that a modern school of architecture of importance existed in the United States prior to that year.

It is indeed one of the facts of architectural life the modern architect has had to live with, that he has had to learn for himself that the architect was not a respected professional man in American society in the early part of the 20th Century. As architecture was taught in the schools and practiced by most of the profession, the architect was an expensive luxury indulged

in by the wealthy who could afford to pay for the cost of something added. Few architects at that time understood the complexities of the budget. Solutions were based on an eclecticism and a kind of pseudo-taste. The schools discouraged imagination unless it conformed to the strict discipline of one of the established eclectic formulas. Structure was negated as it was in the Renaissance. Students were taught that engineers could adequately prop up a building and that form and the aesthetics of form were most important. Functionalism later became an essential element of modern design, but during the early development of functionalism as an expression in the architecture, structure was still neglected. In the Beaux Arts system as practiced by the leading schools of architecture twenty-five years ago, the emphasis was on a shallow aesthetic and that effort was further strangled by a desire to win the competition, demoralizing to the integrity of the student and the schools, as demoralizing as big time, win-at-any-cost athletics is to the character of many American colleges and universities of today. Instead of a head coach, we had the head critic; instead of the line coach, the facade coach; instead of the trainer, we had the rendering coach who made everything look pretty if the student was incapable of doing it himself. Architecture was in a most unfavorable position in the schools and in practice in the middle '30's when Walter Gropius went to Harvard in 1936 to organize

the first modern school of architecture in the United States. Since that time, major changes have taken place in almost all of the architectural schools, and today all the schools are making some attempt, according to their competence, to teach modern architecture based on the new aesthetic and the new technology. Along with the evolution in the teaching of architecture, we have also developed the Doctrinaire School where the student's thinking is narrowly channeled toward the philosophy of the master at the summit. This could be proper and has been satisfactory in a few schools, but only where the master thinks in broad terms, looking for fresh solutions after considering all or a great many of the complex problems of architecture and design.

The decline and fall of the Beaux Arts system of education fostered the reaction that led to the development of that new educational phenomenon, the Doctrinaire School where the program of the school is directed to the personal philosophical thinking of the master at the top. Leading examples of this new school were formed at Taliesin in 1932 under Frank Lloyd Wright and the Illinois Institute of Technology with Ludwig Meis van der Rohe as the head, and under lesser leaders in various schools throughout the country. Generally the master's architecture is too personal to permit it to be the core of a valid educational philosophy. The disciple or follower, therefore, narrows the personal philosophy of the master to a dogma or formula, and it becomes a crutch. Original and creative problem solving with a fresh approach to each problem was not encouraged in that type of school.

Regardless of this diversion, architecture did make giant steps in the middle of the 20th Century, but the position of architecture in society is still in jeopardy if the great body of our profession accepts the thesis that solutions to architectural problems can be found by concentration around a single idea. Architecture is in-

olved with many complex problems. It is almost always a series of compromises and the best architecture comes from the solution that recognizes all the forces and tensions, considers them, provides for them, adjusts to them, and achieves a unique solution with the least number of objectionable compromises. The word "compromise" has been a dirty word in the vocabularies of young architects, but compromise in its highest sense, as in Nature, can be a beautiful manifestation of the design process. In Nature we can see it exquisitely at work in the formation of crystalline structures where forces and tensions act and react, adjust and readjust to one another, ending with a right, and a beautiful organism. In architecture all problems must be considered and dealt with. Adjustments must be made for proportion, structure, water proofing, problems of maintenance, factors of the sun—shutting it out where it is offensive, and drawing it in where it is needed, and so forth.

During the last two decades or thereabouts, the most dominant philosophical and creative forces in the Arts have been based on freedom. The painters, the novelists, the poets and actors, and perhaps the jazz-musicians have stated their positions most clearly. Individualism and romanticism have been put temporarily aside by the architects who at this time are more involved with technology and invention than with creation.

To be led to believe that great architecture is based on technology or a single element of design alone, such as structure perhaps, or for that matter, any other dominant factor of design to the exclusion of other considerations, or to be led to believe that technology will solve all problems of human habitation or that the thin-shell dome or the hyperbolic paraboloid can cover all human habitation is going to force the public to look at us with distaste, disbelief, and a jaundiced eye. The right structure is produced through knowledge of mathematics, me-

chanics, and technology; and those factors of design must be acknowledged in the design process; but single factors, no matter how strong, must not consume us. Such notions result from a failure to distinguish between great architecture or even good architecture and the great forces and directions as only elements in the modern movement in architecture.

Architectural education has had a most unusual opportunity in the past decade to rebuild the schools of architecture in harmony with contemporary society. The leadership and direction of most of the schools has been relinquished to younger heads, but generally the opportunity has not been accepted with daring adventure or inspiration.

The person charged with the responsibility of heading a school of architecture must possess organization ability, a desire to build a strong and talented faculty of every possible valid point of view and then turn the men he has found loose with a minimum of interference. There is a tendency of dubious validity *apparently* among normal faculty to try to have colleagues appointed in their own images. Diversity rather than conformity of appointment is best for the school. Two men alike results only in one man for the price of two.

Within the past quarter of a century the head of one of the American schools of architecture could have brought Le Corbusier to his school. The great Franco-Swiss needed a post of that nature at a time when he could have been persuaded to come to the United States. The head of the American school rejected the thought because he believed he could not manage him. It is not essential for the head of a school to manage his faculty. The head's obligation must be to appoint men of diverse and complementary abilities to provide an atmosphere for inspirational teaching and a climate for independent, creative, and productive work. Coordination is needed, but not management.

During the early years of Joseph Hudnut's deanship at Harvard a bright and eager Radcliffe College student came to him to apply for admission to the Graduate School of Design. The Dean whimsically suggested that it might be better for her to go elsewhere where she would share the company of other young women, but she insisted by saying that she wanted Harvard above all schools because at Harvard there was a faculty of stars. In fact, she told the Dean, that at Harvard there was a whole constellation of stars. The Dean's comment was that wherever there is a constellation of stars there is also a moon and he confided that at Harvard, he was the moon. She considered the thought briefly and then replied, "Ah, yes, I know, and the moon shines from reflected light."

With scarcely a handful of exceptions where heads of architectural schools are most exceptional, brilliant, and versatile persons, self-disciplined, and organized, they will not because of the nature of their positions shine brightly in their own light. The dean must learn that his faculty will in all probability outshine him, but the reflected light can be most gratifying and rewarding. Administration means continual interruptions and frustrations, and does not, except with extraordinary persons, produce a temperament conducive to creative activity. The conductor of a symphony is seldom a master composer.

The choice of the administrative director of a school of architecture is the primary requirement in the establishment of a good school. Without a man of critical judgment, good sense, wisdom, and an inherent toughness, a brilliant faculty will never be found or organized, but while the choice of the director is the primary task in building a good school, the major task is the selection and appointment of a faculty of significant and diversified stature.

The faculty of a good school of architecture must have men of ambivalent talents and in-

terests. They must be equally interested in teaching and independent creative work and the word "equally" is the key word here because the teacher soon loses his effectiveness in pedagogy without the vigorous pursuit of his own program of professional or creative activity. Walter Gropius, one of the truly great men in world architectural education, a distinguished architect who has made significant contributions to architecture as an art, a science, and a profession was an equally distinguished teacher. His influence on world architecture through the less than two decades of teaching at Harvard after his contributions to the Bauhaus in Germany, has been far beyond the proportionate size of the effort. Gropius made teaching an adjunct to his practice and he made his practice advance the effectiveness of his teaching.

The academic life must be an intellectual hurly-burly if it is to stay vital and dynamic. Several years ago in an American architectural school, two members of the faculty made a pact—never to criticize each other's creative work. Now this pact, although by now a fait accompli, made a mockery out of the academic ivory-tower. The College must forever be a community of scholars continually interpreting the known and forever seeking to uncover and comprehend the unknown. Such a climate of intellectual activity is encouraged in large part by self-criticism and also by the intellectual give and take of colleague peering into the work of colleague, pulling off the veil of superficiality and of nonsense too, if it is found to exist. The person who shuns and detests criticism confuses his own vain kind of touchiness for sensitivity. The end result of his inclination will result in nothing more than a mutual desire among the faculty to be left alone. To be left alone in a neurotic ivory-tower will make little permanent contribution in a community of scholars, unless, of course, the man happens to be a genius.

Few schools can afford the luxury of the so-called resident artist—where the man lives in

the academic community, practicing his art, hoping that something of his personality, his work, and his philosophy will rub off on the student. The dedicated resident teacher must carry his share of the work involved in the school and he must believe with sincere conviction that teaching is a high level creative activity.

The visiting lecturer, however, is not the same as the "resident artist." The visitor is vital to the full enrichment of any modern day teaching program. Two factors must be considered though in dealing with the visiting lecturer or the visiting critic. First, his stay on the campus should not be too short lest it be superficial. Four days to a week for a good person is short enough and periods of up to a month would be preferable for certain persons who hold up and wear well. The student and the faculty should have the opportunity to be around the visitor long enough to know him so that the shyness of newness is broken down and the give and take between student and visitor has accomplished an understanding. The second factor that must be practiced is the integration of the visitor's talents and contributions into the existing teaching program. The visitor, to be most effective, should not come to the school to add a superficial frosting, but he can best be used if he can emphasize and reinforce work already under study with the resident faculty. This second factor for effective use of the visitor is not easy to achieve; collaboration is hard work. The visitor must also assume his obligation to the program of the school. The visitor who comes in and disrupts the entire school may have value and is often needed, but the visitor must realize and understand what he himself is doing to the school where he is working. Good preparation, sensitivity to his surroundings, and a share of responsibility are needed. There is one other consideration in the selection of a visiting lecturer that might be worth a passing comment, and that is the high

level of competency necessary. This point is perhaps obvious and should need no further emphasis.

The burden of the teaching program rests in the competency of the permanent teaching faculty and they above all must be first-rate teachers, able to communicate with fluency, patience, and inspiration. When vacancies occur they must be filled according to the best academic practices of finding the best men available for the positions after a world-wide search. The position might be filled by appointing your best friend or one of your ex-college professors, but it would not be good academic practice and would involve probable risks. In the recent search for a \$5,000 instructorship at North Carolina State College, candidates were considered from Calcutta, London, Ankara, New York, Ohio, Colorado, and Massachusetts. Even then we could not be certain that the best man had been appointed. Good teachers are hard to find and the search for them in any first-rate college is never ending.

There is one other academic arrangement important to the vitality of a good school—the temporary appointment. In a faculty of twenty or so, at least four or five, or one fourth, of the members should be given temporary appointments. These temporary appointments of a year or two need not necessarily be only at the level of instructorship. It is a fact that many first-rate persons of all ages are willing to seek a temporary change if the post is in a stimulating spot. A short term academic appointment can be good for both the school and the appointee. Nothing could be more dreadful for everyone, students as well as faculty, if the entire teaching staff should stay in one place year after year after year. A permanent faculty can be constantly refreshed by good people coming and going. The temporary people also receive invigoration from a dynamic permanent staff. This comment on the need for a small temporary group in a faculty should not belittle

the need for a core of brilliant permanent staff members. The quality of the permanent staff will determine the real stature of the faculty.

The center-line of any discussion on architectural education must inevitably center about the student. A school could have a great creative genius as the administrative head, the physical plant could compare to Shangri-La, the faculty could be a combination of inspired brains and talent, but without enthusiastic, gifted, eager, sensitive, and intelligent students, the school would have a most limited contribution to make. The final test of the school's adequacy rests squarely in the ultimate value of the school's graduates to contemporary society.

The school in its teaching must recognize the dangers inherent in a materialistic-mechanistic, socio-economic culture. It must provide compensation for the over reliance on the machine lest the mechanical gadgets and devices available for man's use shall consume him. The teaching of architecture, therefore, must respond to a larger responsibility of life and develop the art of humanizing the environment.

Regional controls should be examined and understood by the student of architecture, but the natural and organic aspects should not be over-emphasized to a point of provincial parochialism. The international and universal aspects should also be respected and combined with all other factors in an order that acknowledges the humane patterns of life.

The modern student of architecture is under constant pressure from all of his personal influences to dilute his activities and to spread his energy to the point of perpetual mediocrity, by trying to do more work than he can do well. After living through the frustrations of a depression and the architect's attempt to live down a long period of public lack of recognition, it is a paradox of 20th Century life that the greatest building boom in the history of mankind should force us into a position where we are unable to

do all the work that comes to us and do it well. This is one of the facts of contemporary society and one of the most cancerous diseases of our time. The American student is by no means immune from it. The modern pressure to want more than you can afford, to try to do more than you can do well in order to complete the vicious circle of providing for the ever increasing need for contemporary life's luxuries and to spread oneself too thin in doing so can only lead to an expansion of the most ethically demoralizing manifestation of today—the ever widening cult of mediocrity. Unless the student of architecture comes from a family of more than moderate means, the acquisition of a first-rate education in architecture must normally call for some personal sacrifices. To secure funds for an education is the very best reason possible for the borrowing of money. It should be done if necessary. The luxuries of life can come later. If the student learns that an education and preparation for a useful life comes first, the necessities of life to parallel the education and the luxuries of life to come later, he will have his life in focus and his values correctly established.

The integrity of the individual student in architecture, a dedication and a devotion, and an absolute professional commitment are primary essentials in any creative activity where the social responsibilities so touch the core of social human life. The character of the student is more nearly the essence of the responsibility of the school than the development of brilliance and talent. Responsibility to the social order is therefore the essential goal.

Today the American people are not yet "sold" on contemporary architecture in the sense that they are sold on medicine, or on public education. It is up to us to put it over. We have the resources to do so in our organizations and through the great talents and abilities in our profession as individual architects. We need to broaden the base of our effort. We must encourage areas of concentration by the great inventors and the creative minds such as Meis, Fuller, and Le Corbusier, but to be uncritical followers of such single concentrations will only lead architecture as a profession back down the rocky road to public abuse and disrespect where we were twenty-five years ago. As we encourage adventure, experiment, research, and creativity in architecture, we must not lose sight of the essential character of our obligation—the total solution of the whole complexity of problems that face us in contemporary society.

The campus, as a community of scholars and creative minds where each man is searching for the truth as he sees it, can give the young student the benefit of professional knowledge, technical training and experience, and a true vitality as a citizen. The student will then be encouraged to sift and sort through this diversity of opinion even though in the process, while usually stimulated he may be occasionally confounded. In the end, if the teachers and the school have provided a pedagogical climate of authenticity the student will provide his own creative method and processes and will establish an ability to shape his own conclusions. Only such a school can justify its existence in contemporary society.

II

PIETRO BELLUSCHI, *Dean of the School of Architecture and Planning at the Massachusetts Institute of Technology*, contributes to our survey on architectural education with a review of its origins in this country.

Education, like most human endeavors, must forever be re-examined and tested in the light and circumstances of a continually changing society; from this it follows that the school should be willing to try new ways to attain their goal, even at the cost of failure. Nevertheless, we know that certain basic facts do not change. Education is a process of utilizing as well as of acquiring knowledge; by the sheer weight of numbers, this process is becoming progressively more difficult; yet we still find that one person may make excellent use of very little knowledge while another may be a helpless bore with a very large amount of it.

Because the aims of architecture are both technological and humanistic, it may be said that architecture is a link between engineering and the humanities; and while an architect's professional education is oriented towards design, he must also be led to acquire a knowledge of the principles of underlying sound construction. He must unite, in a measure, the man of affairs, the artist, and the engineer. The taste of any individual will naturally incline more strongly toward one or the other of these branches of his profession, but even so, he must possess to a very considerable extent the essential elements of the other two if he is to become a successful architect and not simply a draftsman.

I will say in parenthesis that an aptitude in draftsmanship is too often confused with aptitude in architecture. One may become a successful draftsman with a very limited equipment;

but a good architect must acquire a breadth of understanding and wisdom and a general culture. This can best begin in an architectural school which is a part of a great institution of learning. Obviously schools cannot begin to teach all subjects broad or narrow that an architect should know; yet they have been accused of neglect in preparing students for the specific demands of the profession, and many practitioners claim that the schools have lost touch with the realities of the profession. The fact not always fully understood is that a school's task is not to produce draftsmen or experienced journeymen or specialists—it has rather the duty to educate young men to think.

I shall not try to say that the policies of our American schools are the best that can be devised, but they are the result of a long period of experimentation in architectural education. As the recent A.I.A. survey reminds us, the apprenticeship system was for centuries the only way to learn how to become an architect. From an apprentice, in time one became a journeyman; from journeyman, if he was a good one, a master. In that system there was no gap between training and practice, but finally it became a drain on the practitioner who could not give enough of his limited time. Some masters lacked patience, sympathy, or ability to teach, or it became too expensive for them both in space and in time. In other cases pupils were exploited or kept at menial jobs for too long a period. The pupil had no chance to obtain coordinating insight, nor

to acquire the wisdom which is the mark of the professional man.

Formal classes began in the Italian and French academies in the 16th and 17th centuries, with the goal of giving supplementary instruction to the apprentice. In the academies there evolved the project method of instruction which in turn led to competitions and the Beaux-Arts system. The great expansion of technology in the 18th century gave impetus to the establishment of schools of engineering in France and Germany. The 1½ year curriculum of the time included math and architectural, mechanical, topographical, perspective, and freehand drawing—the physics of construction, statics, mechanics, building construction, history of architecture, design, city planning, machinery, highways, harbors, and river works.

These polytechnic schools in many ways were the prototypes of the schools we have today. Yet it was the French Ecole des Beaux Arts that had by far the greatest influence in American architecture at the end of the last century and at the beginning of this one. One of the reasons for its great success was the high quality of its student material. Since it was maintained by the State, students paid no tuition, and the 60 to 80 young men admitted were the very cream of the nation's schools; usually there were 500 or 600 applicants from which to choose. As we all know, there is no substitute for talent to make a school successful and influential. At the Ecole, examinations were very rigid. To prepare for such exams they had to depend on tutors in various disciplines. This system unfortunately prevented an integrated curriculum of instruction. Furthermore, once in the school, the instruction in design was given in ateliers under a patron. The atelier was neither school nor office and thus lacked the disciplines of both. Competition was over-emphasized to the detriment of sound education.

Following the American Civil War, the Morrill Land Grant Act gave great impetus to the establishment of technical schools throughout the United States. M.I.T. was the first to give formal

courses in architecture. In writing the preface to the catalog at the opening of the School in 1864, Mr. William Ware stated: "The courses must be extensive and thorough, but their object will be to furnish the instruction and discipline that cannot be obtained elsewhere, rather than cover the whole ground of architectural study. Much of the ordinary detail of work must necessarily be left for the students to acquire in architects' offices.

"It is in establishing a high critical standard of performance that educational institutions find their proper role. Whatever scheme of instruction is adopted, it is their aim to exhibit to their students the field of knowledge in all its extent and variety and teach them to explore it for themselves; to give them such varied, difficult exercises as shall lead them truly to know their own powers. An architect's work in design lies then in discovering every possible solution of his problem, testing in turn the merits of each, and wisely judging between them. To do this work thoroughly requires not only ability, learning, and wisdom but also good habits of work which can hardly grow up in the pressure of practical life and the formation of which is the peculiar privilege of a school, as it is ever its greatest achievement."

This was written in 1864 and the basic goals remain unchanged even though our set of values and our tastes have greatly changed.

Many other schools followed M.I.T., but in 1898 their total enrollment was only 362, or an average per school of 40 students, a very small fraction of the 10,000 architects listed in the 1900 census. At Illinois and Cornell the aim was to train in the preparation of working drawings; at M.I.T. Le-tang, a former Ecole des Beaux Arts man, gave greater emphasis to design. But all early schools aimed at a just balance between the esthetic and technical aspects of architecture.

In the meanwhile, an increasing number of students went to Paris and upon their return formed a society to encourage the Ecole principles. The Paris Prize was established, and a veritable influx of Ecole teachers filled the schools and the Beaux Arts Institute of Design dominated their

philosophy of education. It took a long time to outgrow its narrow approach and to allow each school to assume its responsibility to determine, organize, and control its own objectives and methods of design teaching.

Each school had the chance to develop along different lines—although the Bauhaus influence became rather strong in many schools and led some people to think that the evils of the Beaux-Arts were being repeated. But it is apparent now that there is enough variety and difference between philosophies of education to create a healthy condition and to promote emulation, change, and competition. This variety is the real strength of America, and the non-existence of a central authority promotes experimentation and progress.

It is not easy to tell in the early years of a student's life which combination of aptitudes will make him a good architect, at what rate and in which direction his mind will develop, or how he may react to various external stimuli. We believe that the young architect should be given full opportunity to add specific knowledge in the field of structures and techniques; but he should be ever reminded that the spirit of man demands more than mere function, and that he must be sensitive to the visual and aesthetic demands of his environment and acquire a sense of values. He will soon discover that the whole of architecture is greater than its parts and that mastery of the parts is necessary but not sufficient. A school cannot pretend to be the perfect tool for developing the genius as well as the dullard; the student will find no formulas to make him wise; no theory of education will ever be devised that will automatically give the best results. Much depends on the wisdom of the teachers; if the student is in earnest, he will receive from them a glimpse of the excitement which will be part of his life-long growth in the profession. In many schools a constant effort is made to keep alive this sense of excitement by inviting outstanding, even controversial, personalities in architecture or in the arts, so that by their words their works

may be judged. This also encourages one to believe that a good architect can learn to work as a member of a team, without losing the heavenly spark of the individual.

Education lasts a lifetime because it is above all a process of discovery, to which there is no end. Once exposed to the aesthetic experience of the visual arts and having become acquainted with the methods and aptitudes of engineering, a great world opens before his eyes, where passion and common sense become his guides. Whitehead said that education needs both freedom and discipline and that the only good discipline is self discipline and this is acquired by a wide use of freedom, which means that initiative and training are important; but training must not be allowed to kill initiative because initiative alone produces active wisdom—*wisdom* having been defined by Whitehead as *Freedom in the presence of Knowledge*. In other words, we must seek out for ourselves the sources of wisdom; we must learn to convert facts into the body of our personal experience. An architect's work in design lies then in discovering every possible solution of his problem, testing in turn the merits of each and wisely judging between them.

I believe that in no other fields of education is the motivation of "doing" so freely provided at such an early stage as in our schools of architecture. At the Academic Council meetings at M.I.T., this fact is often recognized with some degree of envy, and there are efforts of emulating it in several courses of science and engineering in order that the imaginative faculties and the use of judgment in making decisions may be encouraged before more precise intellectual and mathematical instruction is given.

I have heard many people say that creativeness cannot be taught, that it is a gift from Heaven. I for one believe that the seed of creativeness is in all of us and that while there may be various degrees of native ability, a proper climate will germinate whatever seed a man of good will possesses.





PAUL BUISSON, an Instructor at the School of Design, is a graduate of the Ecole des Beaux-Arts in Paris. Mr. Buisson gives us an interesting picture of life at the Ecole today.

During the dark years of the German Occupation, the French Order of Architects was born under the auspices of the Vichy Government. Membership in this professional organization was required of anyone wishing to practice the profession of architect. Applicants were accepted directly if they could produce a diploma approved by the government or if they had practiced architecture for more than twelve years. An examination similar to the American license, held once and for all in unheated rooms in freezing weather, decided the fate of the others.

The Fourth Republic was to keep the Order of Architects without any major change. New members were accepted only upon presentation of a diploma granted by a government-approved school. This last condition was going to bear heavily on the development and teaching of architecture in France. Only two schools were recognized: the "Ecole des Beaux-Arts" and the "Ecole Spéciale d'Architecture."

The "Ecole Spéciale," Boulevard Raspail in Paris, follows more or less the Beaux-Arts pattern. It is available to students who are willing or able to pay its tuition fee and intend to dispose of their studies in a minimum amount of time. The emphasis in this school, if we compare it to the Beaux-Arts, is on a more limited

and technical side of architecture.

The highly-centralized Beaux-Arts network of schools gravitates around the Paris school and has branches in the main cities of France and the French Union. These latter schools are divided into regional schools which prepare for the Diploma and national preparatory schools, usually in smaller cities, which prepare only for the entrance examination.

The organization, work and spirit of the regional schools are strictly identical to, and closely dependent on, the Paris school. Most of the work done in them is judged in Paris—the entrance examination, architecture problems, the Diploma, etc. The "Ecole," the School as it is usually referred to, will remain a very important factor in the French architectural scene.

The little brochure published by the Academic Bureau of Statistics points out the requirements for the preparation of the entrance examination. The candidate, if he does not have both baccalaureates and has not majored in mathematics, will be obliged to take, in addition to the regular examination, a very tricky "general culture" examination. The baccalaureates are government examinations and diplomas which ratify secondary studies—Junior College level in the United States.

The entrance examination consists of a twelve-

hour sketch problem in architecture, one eight-hour charcoal drawing and clay sculpture copied from a plaster cast, one written and oral test in both mathematics and descriptive geometry and an oral test on the history of architecture, including the presentation of a folder of the student's work and sketches. The sketch problem is executed with elements of classic architecture—Greek, Roman, Renaissance, etc.

The tests are graded on the basis of 20, and a candidate receiving a grade lower than 7 on one of these tests is automatically eliminated. This examination usually takes place twice a year. Each time over nine hundred students take the examination and only about sixty are accepted for admission. The booklet then states in a more reassuring manner that architectural studies last about three years after admission.

Provided with this information, the would-be architect heads for Paris where he is immediately faced with the problem of finding lodging in proportion to his modest means. There are over sixty thousand students of all nationalities in Paris, and the University City houses only a small percentage of them in its dormitories. His quest will more than likely end in a tiny room under the roof of an eight-storey walk-up apartment building. But since this is in the order of things, he remains unperturbed and drops in at the school office as soon as possible.

Then a secretary asks him what *atelier* he belongs to. *Atelier*? Sometimes the word is new to him, and he will be told that it is a self-organized group of students working together with the assistance of a master, the "boss," whom they have chosen themselves. These ateliers, managed by the students, are located either inside the school or somewhere else in the city.

"Atelier" in English means work-shop and designates the locale in which the students work. But the word has gone much beyond its original meaning, embracing at the same time the people

who work there and their numerous and colorful activities. Each atelier bears the name of its boss or bosses and each of them has its own characteristics, its own traditions. Some are best known for the quality of their work, others for their pranksters, their outstanding "fanfare" (band), the extravagant size of the float they build for the parade of the Rougevin, their annual dance, or the awesome treatment they inflict on their freshmen.

The atelier gathers in the same room an explosive blend of students in different stages of their studies, from preparatory to thesis. Their status within the atelier depends on their spirit and how long they have been there, but all of them work and have fun together.

The first contact of the freshman with his atelier is usually an experience he will never forget. For example, the tall glass and concrete building which houses a few of these ateliers, Rue Jacques-Callot, is very business-like and reassuring, but the concrete staircase has been blackened by roaring fires. Somebody always "carelessly" drops a match into the heaps of tracing paper that are swept to the landings after every charrette. Smoked out of their atelier, the people in the upper storeys usually answer by pouring buckets of water down the staircase to quench the fire and flood the ateliers on the lower floors. The building still stands, a tribute to reinforced concrete construction.

A building housing five or six ateliers is subjected to terrible wear and tear. A few years ago one of these ateliers chose as the leitmotiv of its annual dance "Roman Water Jousts." So they proceeded to build a dam across the door and filled up the room with water. As dancing barefoot in the cold water proved to be uncomfortable and water was leaking through to the lower floor, they finally released the water into the staircase, thus obtaining a good approximation of Niagara Falls.

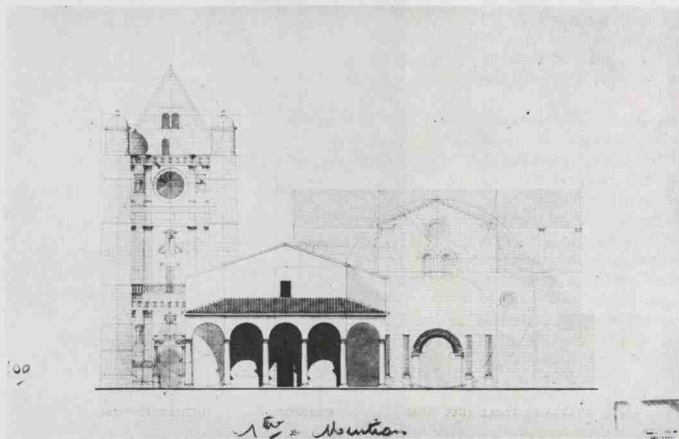
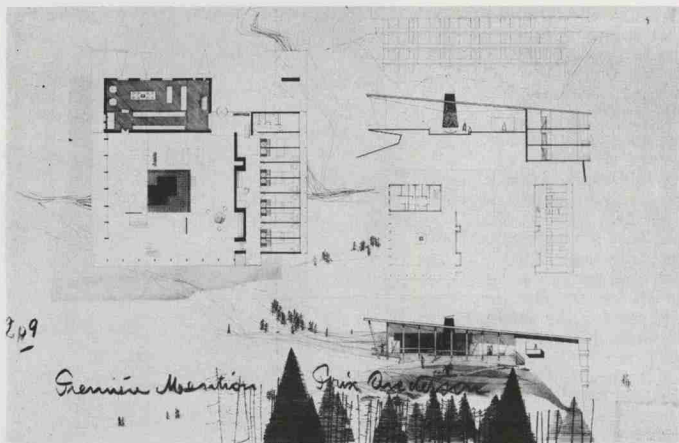
This is typical of the world which the boy

fresh from high school will enter: a lively group of fellows cemented by what is usually referred to as "the spirit," a solidarity developed by all the hard work and fun shared every day; and an utter disrespect for all forms of established authority and respectability.

As soon as he opens the door of the atelier, a candidate becomes a *nouveau*, a new boy, who belongs body and soul to the seniors, the *anciens*. Until he passes the entrance examination and particularly all through his first year at the atelier, he sweeps the floor, does all the chores of the older boys, helps them with their drafting and is subject to a constant and rough hazing. If he is unwise enough to disobey or rebel, he is usually given a choice of leaving the atelier or having his hair shaved. Such discipline, applied with much good humor, is very necessary for boys who have not yet learned how to use their freedom. This humiliating treatment will once and for all rid the *nouveau* of his petty egotism or pride and integrate him perfectly in the group. This practice has the advantage of eliminating dilettantes and people unfit for life in a group; these, if they really want to become architects, often try their luck again in another atelier aided by the lesson they learned in the first one.

In return, the older boys guide the freshmen in their work, give them corrections, organize classes and critiques with the loose supervision of the boss. All considered, the *nouveau* is very happy with his fate. He would certainly not trade this roaring atmosphere for a sophisticated and quiet classroom. He is making his first discoveries in architecture, working with more advanced boys on complicated designs, listening to their talk, marvelling at their skill; he is trying his first notes on a trumpet to join the atelier band; he is taking a very active part in the life of the atelier. One year, two years, three years or more will go by before a boy succeeds at the entrance examination, and his friends in law and medical school cannot believe





that he has not even entered the School. Many will never make it, and will find jobs more adapted to their potentialities.

Once he has been admitted to the School, the student will work his way credit by credit toward the ultimate goal: the Diploma. He begins to realize how much the booklet lied by fixing the duration of studies at three years. The student has already spent an average of two or three years in the preparatory class (before the entrance examination) and he is now faced with a minimum of four and a half or five years more of studies before he can hope to receive his Diploma. A good many people spend nine, ten years and more at the School, not including the thesis that at one time could be presented any time after the first class requirements had been fulfilled.

The system on which the School operates is simple enough in its principle. The studies are divided into three periods or classes, not including preparatory: the second class immediately after the entrance examination; the first class, advanced design and construction; and the thesis or Diploma.

A student passes from one category to another when he has collected the number of credits required in each discipline for that category.

The problem of critiques and juries is very acute. In the first class, for each problem a jury has to go over a minimum of four hundred drawings in about two afternoons. An impossible job which, everything considered, they do pretty well, though very arbitrarily. Students are not present at critiques. A report is given by their boss if they were lucky enough to have him on the jury. Otherwise they are given a very general critique by the theory professor and figure it out for themselves by comparing their design with the most successful ones. About five years ago there were so many unexplainable results that the *Grande Masse* (the students' syndicate) had to ask the members of the jury to raise their hands to fail a design instead of raising their hands to pass it. Everyone had the impres-

sion that some designs were just forgotten by the tired jury.

The problems are judged by very high and arbitrary standards. The percentage of refused problems varies from 40 percent to 80 percent. Only three to five percent are granted medals for outstanding work. The student is free to take or leave a particular design or course. All that is required of him is to succeed at a certain number of them. He can organize his work in whatever way he chooses. He will be judged strictly on results. Many students take advantage of this fact to work part-time at an architect's office even as early as the preparatory stage. Practically all the help needed by Paris architects is provided by students who, by the time they reach the first class, can devote much time to office work.

A *charrette* is a very useful contraption—a two wheel hand cart. In Paris it can be rented for the day in one of those tiny cafés which complement their wine sales with a small coal and kindling wood business. What is the connection between this and the term internationally applied to those hectic moments in the life of an architect? A very obvious one. The students in Paris work on large sheets of paper stretched on wood frames that they pile up in these carts and rush madly from their atelier to the School in the noon traffic. The charrettes in their broadest sense are moments of intense life in the atelier. Everybody is busy—the people doing the design, their friends who have come to help them, the worn-out *nouveaux* answering the raucous summons of their seniors. And everybody contributes to the tremendous uproar which is brought to a high pitch every now and then by the false notes of the band or the incredible rhymes of some lewd song. The charrette goes on throughout the night in the same mood, interrupted by an onion soup taken in the never-sleeping neighborhoods of the Central Market or Saint-Germain des Prés. It finally reaches its peak before noon when the work is due, in the chorus of bawled commands, cursed

freshmen and the stifling smoke of the tracing paper bonfires the boys light to dry up their sheets. The last sheet gone, everybody gathers around the boss and drinks a toast to the department charrette to the accents of the school song.

Every year the atelier meets in special session and elects its president, the *massier* and the council of the *anciens* which will rule the group for the coming year, make decisions and take sanctions. In their turn, the *massiers* of different ateliers in the sections of architecture, painting, sculpture and engraving which form what is called the Council of the *Grande Masse* will elect the *grand massier* who represents four or five thousand students in the school. The *Grande Masse* when it is well managed is a force which the School administration has to reckon with in its decisions. When in conflict with the School authorities and when not consulted on a controversial issue, it uses, wisely enough in general, the power of organized strike and other concerted pressures.

The *Grande Masse* is also in charge of public relations, festivities, and has committees of students working on ways to raise the standards of their studies. For example, it was the student organization which requested the new first class construction courses and examinations which compare very favorably with what is taught in American or other European schools. The students print courses taught at the School, something that the School administration has never been able or willing to do.

Needless to say, a dynamic *Grande Masse* does not get along with the School authorities which strive to maintain an uncompromising status quo and to gain complete control of the students by bringing as many ateliers as possible within the School itself.

It is impossible when mentioning the Beaux-Arts not to speak of the exciting festivities in the life of the School.

Some time during the year each atelier organizes a dance in its own quarters. A theme

is chosen, the scant furniture is stacked somewhere else, decorations are put up and the band polishes its battered brass in expectation of the tumultuous night ahead. When evening comes, the boss, former members of the atelier, the crowd of students and their guests—some in hastily made costumes—spurred on by free flowing champagne, wine and Martinique Punch mingle in a whirl of color, "music" and shouts that dies down in the early hours of the morning.

The *Grande Masse* gives a dance which takes place in the great exhibition hall of the School every year and is part of the summer festival of the city of Paris. Important persons are present and the atmosphere though very colorful is more serious. One of the most impressive of these dances had Venice as a theme and was enhanced by a naval battle on the River Seine at two o'clock in the morning, with ships burning to the accents of "Santa Lucia" and in the background giant sprays of water sent by fire department boats as the crews of the burning galleys, one hundred life guards, swam to shore.

The Quatz'Arts Ball, the wildest and best known of these festivities, is extremely rough and is a survival of the boisterous Eighteen-Nineties.

The Rougevin Parade which takes place at dusk at the end of the Rougevin Decorative Art Competition, is one of the most dazzling displays of the school spirit. The freshmen of each atelier build a huge float, sometimes sixty feet high, which they miraculously balance on one of those tiny charrettes. These floats are gathered in the crowded school courtyard among the detonations and glare of fireworks and the sound of drums and trumpets. The students and their bands form a parade and race the floats through the jammed traffic of Boulevards Saint-Germain and Saint-Michel to topple them down at last in a great bonfire in front of the Pantheon, while people cheer and frightened pigeons wheel in the dancing light.

Once a year students from every class and full-fledged architects as well gather to try

their luck at the twelve-hour sketch which is the first step in the selection of candidates for the Rome Prize. The few students who pass this first test successfully will join those who have enough medals for outstanding work to dispense with it. They will try their skill in the more complicated twenty-four hour sketch, during which the candidates remain confined to private cubicles in a special wing of the School. This last test will select the handful of candidates who will take part in the Rome Prize competition itself.

These will soon be placed in confinement again for a period of six days during which they are given the program and put their idea into a sketch, the dispositions of which they have to keep in the work that follows. This work is a slow and careful process of ameliorating the sketch until it reaches an ultimate stage of perfection. Then follows an exhaustive and conservative rendering, a tremendous and expensive job that will sometimes spread out on one sheet measuring something like 10 x 15 feet!

After a critique held behind closed doors, the first prize is given, usually accompanied by two second prizes. The students who reach the finals or win the prize are always outstanding designers or they would not be able to complete such a breath-taking exercise. However, their architecture, done to please a jury usually composed of professors of ateliers specialized in the Prix de Rome, is simply distasteful. Distasteful too is the haggling which goes on between certain professors at this occasion. A competition which is certainly the steepest in the world of architecture and involves people of considerable value finally produces an architecture that could earn the School a bad name.

The first prize winner—bachelors only are accepted in this competition—is offered a two-year stay at the Villa Medici in Rome, where he will do research and archeological work and will later have access to important administrative jobs.

Once he has his Diploma, the young architect

who applies for membership in the French Order of Architects is accepted directly upon payment of a fee. This gives him all the prerogatives of an architect and is the equivalent of the American license. There is of course no necessity for an additional examination, the studies having been made under government control.

His prospects however are not too bright in the beginning. Many graduates simply go on working for another architect until they find an opportunity to start on their own or associate with an older architect. Some will take examinations to enter the Civil Service, for example, the Historical Monuments Service, or a municipal architecture department, which have the advantage of guaranteeing a fixed salary. A few will join forces with two or three friends and start a kind of "architects' collaborative." And finally a few will start a modest business of their own.

With a few encouraging exceptions, the older architects—as in the United States, many of them are better businessmen than architects—seem more interested in exploiting than in helping their younger friends. But sooner or later matters take their normal course, and everyone finds a decent practice of some kind. An architect graduated by the School never ends up as a draftsman.

The Beaux-Arts' name is often associated in the United States with the unfortunate architecture of the turn of the century, such as the much-advertised 1893 Chicago Fair. For anyone who has travelled in Europe, the connection is very hard to make between these monstrosities and French architecture of the same epoch, whether inspired by the Beaux-Arts or not.

In any case, the Beaux-Arts is often criticized with and without good reason, and particularly by the French students and architects themselves, who usually accompany the School's name with colorful curses. French architects in their relations with each other and the public seem to be more interested in self-destruction than improvement or recognition, a spirit not altogether absent in the United States.

It can be said that there is no such thing as a perfectly successful school of architecture anywhere in the world. Some of the best known schools provide their students with a complete set of ready-made opinions and techniques. Others encourage developments in a very narrow field, or stress a purely emotional side of architecture. Some give a limited training, others an incomplete education.

This is due of course to the ever-increasing complexity of this discipline and its numerous and changing aspects. Today's architecture has advanced quickly, trying to bridge the gap between its traditions and the new industrial possibilities. The efforts of architects are dispersed in many directions. Solid ground has not yet been reached, and one wonders if it will ever be reached again in a world lost in the abstract and costly game of competition.

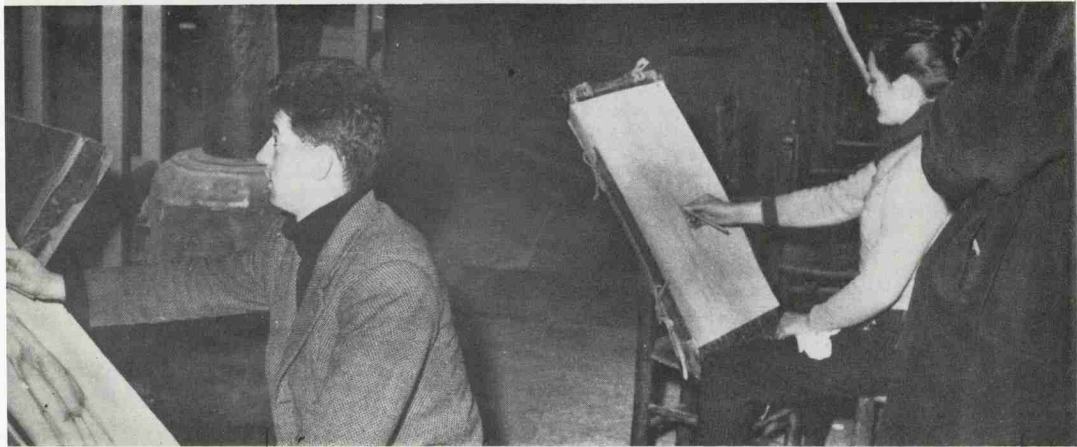
The ability to cope with unexpected situations should therefore be the main quality of the student at the end of his school years. His studies should have helped him to get his bearings in relation to the past and the possibilities of the

future, and give him a sound, general basis which will enable him to make his own contribution.

The absence of a specific teaching of architecture at the Beaux-Arts, the student's entire responsibility in organizing his work, the competition which is undoubtedly the severest of any architectural school in the world, leave the student free to choose his own way at his own risk and encourage him to set high standards for himself.

The Paris School, which issued from the 17th century French Academy of Fine Arts, was the leading school of architecture in the world for three centuries. Now many schools over the world can compare with it on some points. However, is not the fact that a student in the beginning of the first class at the Beaux-Arts is accepted directly for post-graduate work in the best American universities, an indication that the School, in spite of all its shortcomings, is still going strong?

But let us remember that at the Beaux-Arts the school does not make the students; the students make the school.



CURRICULUM

Second Class

- 3 analytic elements problems—classic buildings or elements of buildings, an exhaustive drawing exercise in ink and wash with shades and shadows
- 5 architectural designs
- 2 sketch problems—the percentage of sketch problems refused is usually around 80%
- 2 charcoal drawings and one clay sculpture from a plaster cast model
- 1 archeology examination—a folder with a minimum of twenty sheets of sketches on a given subject, and one oral examination on the same subject
- 1 oral and written examination on the following matters:
 - calculus
 - physics and chemistry
 - advanced descriptive geometry
 - stress of materials
 - stereotomy (determination of true dimensions of elements of vaults and carpentry) and general characteristics of materials
 - perspective

- 1 or 2 construction designs—working drawings of a problem given during the year and an oral examination on subjects treated in the construction course

First Class

- 10 architectural designs, four of which can be replaced by credits on sketch problems and special competitions
- 2 charcoal drawings from a plaster cast
- 1 clay model on a given subject
- 1 archeology examination
- 1 construction design on general construction and equipment
- 1 architectural practice examination
- 1 building legislation examination

Thesis: Presentation and working drawings (including electricity, heating, plumbing) of a building chosen and designed by the student. To present the thesis the student is required to show a certificate signed by an architect stating that he has worked in an office for at least one year.



IV

SHERMAN PARDUE, a graduate of the School of Design and an ex-Editor of this publication presently working in New Orleans, discusses briefly the more philosophical aspects of education.

History teaches us one inescapable fact: that since the beginnings of time each era has produced some men who believed in themselves and in their ideals strongly enough to preserve records of their age for posterity. No small number of these men have been architects. It is not, therefore, without guideposts of accomplishment through history that we inspire our young architects to believe in their profession and, most of all, in themselves.

The basic purpose of education is to equip the student to cope with life's problems and people. To the extent that much of this training is possible by mass indoctrination methods, schools are a logical means of achieving the desired ends. The capacity of the individual student for education depends largely on his ability to relinquish past beliefs in the face of new problems to which these beliefs do not apply. Only in this way is he free to formulate broader concepts for dealing with life.

Youth's general characteristic is that it is primarily emotional rather than intellectual. By the time a student is ready for graduation, he has had the opportunity to experience almost the whole range of human emotions, while his intellect is only beginning to provide him with a basis on which to formulate good judgments. Societies from the most primitive to the most civilized have held in common the belief that age precedes wisdom. Higher education, while it tends to elevate the individual above the masses of his contemporaries, does not impart wisdom. The diploma is not a ticket, but merely a part of the baggage helping to make the trip through life purposeful and comfortable.

For youth today, the urge to conform to a high standard of accomplishment, and the deep seated

fear of not being taken seriously are probably its two most typical characteristics.

For this generation which questions almost every thread in the fabric of human society, a spoon-fed education will not suffice. The system of group indoctrination, with its concept of an acceptable norm, is not good enough. Competition to achieve standing within the group is offset by the inner conflict of self-equation with the system. Respect for what is being imparted can only come if respect for the source is achieved. Emulation is a necessary part of education.

Probably the simplest summation of why the student seeks higher education is to "be somebody." This ambition takes many and varied forms: to rise above the masses of struggling humanity, to be in a position to contribute something to society, to better it in some way, to achieve the comforts and security that money can buy, or for the sheer joy of accomplishment. While not in themselves unusual to our period in history, these motives are given added meaning by the continuing threat to life as we live it, our highly competitive economy, the new attitudes of responsibility on the part of the individual toward the world, and the technological progress of man into the unknown.

The practical idea of education, of course, is that it equips the receiver for making a living at his chosen vocation. Very little taught in our better schools is taught with this aspect specifically in mind. Doubtless this is good, for we are in need of broad precepts from which broad philosophies can be drawn. Only in this way can each individual lift his life out of the routine tedium and rededicate himself to the freedom of self determination.

The growing belief that life is more and more a spiritual problem, and the unending search for inner satisfaction, which in our age finds itself not so much in the framework of organized religion, but in the self examination of personal motives—this is the ultimate strength of an introspective generation.

V A STUDENT PANEL DISCUSSION was held at the School with the purpose of exchanging ideas on several important questions relating to architectural education and related matters. The session was transcribed and the edited comments appear below.

Members of the panel are Ignacio Zubizarreta, 5th year architecture; Earl Pope, 5th year architecture; Warren Edwards, 5th year landscape architecture; George Colvin, 4th year architecture; Peter Pratt, 3rd year architecture; Bob Hirata, 2nd year; and Werner Hausler, 1st year.

MODERATOR

Let's commence our discussion with this basic question: What is an architect?

ZUBIZARRETA

Perhaps we can define him by elimination. An architect is not a priest, he is not a politician and he is not a philosopher. He is a man who works principally with materials as they should be used and according to the real physical properties of these materials. If he does this well, then he will produce good architecture. The most important characteristic he should have is a love of his profession. If he is happy doing it, then I believe he will be a good architect.

POPE

It seems to me that the best way to approach the question is to ask what characteristics make a good architect, and I would say that the most important characteristic of a good architect is his ability to assimilate and control a vast amount of material. In other words he must be a tremendous coordinator. It is said that the difference between a good painter and a bad painter is that the good painter can control the relationships throughout the painting but a bad painter can only control one or two relationships. The good architect is similar to the good painter in this respect.

MODERATOR

Let us go to more specific matters of education. Do you think a formal architectural education is desirable?

POPE

It seems to be the easiest way. However, many of our greatest architects arrived there without an architectural degree. We are exposed to concentrated amounts of architecture here (in school) and different philosophies are pre-

sented by people who are practitioners as well as teachers. I think this is a good thing.

HIRATA

I question the verbalized approach of formal education. This is appropriate for a writer, a philosopher, or a teacher, but I'm not sure it is exactly the type of development that is going to be most useful to an architect. I'm not sure that his time might not be more fruitfully spent in developing a vocabulary that is essentially non-verbal . . . that is in design, painting, structures etc. In relation to this, I don't think the philosophical approach is relative. It will help him explain his work to other people in his capacity as a teacher; but will probably have little effect in his dealings with clients.

ZUBIZARRETA

Most times what an architect says is not important. He talks with what he produces.

MODERATOR

What about Wright and Le Corbusier? They have expressed themselves quite a bit through their books and through other channels?

ZUBIZARRETA

But this is not what posterity will get from them. They have talked a lot, but the actual value is in what they have produced. Philosophy is completely different from architecture.

POPE

I think there is considerable value in courses which have no direct practical value. The philosophy of aesthetics is important not as a course but as an aid in helping you to understand your own work. I don't believe philosophy determines your work. Architecture as architecture has little to do with it. However, I think it is important to understand what you have done . . . to try to see into yourself. I think the important thing is to have a wide range of education. An excellent method may be found in those schools which require some general college education before commencement of architectural studies. I do not think one should enter architectural school directly from high school.

MODERATOR

Can an architectural education in combination with a liberal education be fitted into five years, or would it take a longer time?

POPE

Perhaps it could be set up in a similar manner to law school. If at the end of two or three years of liberal studies you have shown reasonable maturity

and have passed certain examinations, you would be admitted to the architectural curriculum.

HIRATA

I don't think it is the school's responsibility to see that a person is mature before entrance. A student should use this 'pre' period outside of school by working and living. I don't see what is to be gained by that extra course in sociology or anything else. I don't think valuable time and energy should be wasted on the school's part in finding people who will make good architects.

COLVIN

I agree. I don't think the school should have to burden itself with seeing whether or not the student is mature. However, the student should be given every opportunity to broaden himself in other fields along with his architectural studies.

ZUBIZARRETA

All of these outside courses are a waste of time in higher education. By the time a student comes from high school he should have sufficient background for the study of architecture. Otherwise, we find ourselves taking so many other subjects that we don't have time for architecture. If the student does not have the background when he enters college, he finds that he doesn't learn the humanities, he doesn't learn history, he doesn't learn architecture . . . he doesn't learn anything. Therefore, better preparation presupposes a better high school education, and this is another problem.

POPE

I think the main advantage to preparatory college work is that it allows time to get the "other" things over before you commence architecture. I think that individual student projects are the essence of architectural education and the student should be able to give his full time to these projects without the interference of preparatory courses.

ZUBIZARRETA

We take very many subjects which contribute little or nothing. Some of these courses could be good but are not because of the way they are approached. I would include here the 'side' technical courses which are not fitted into the overall picture. The most important courses are architectural design and structures . . . and by this I mean a very good knowledge and understanding of mechanics, physics, and strength of materials. These subjects are the basics. History of architecture is important too. However a more generalized history would be more desirable.

MODERATOR

What do you think of a school committed to a particular philosophy such as Taliesin or I.I.T.?

EDWARDS

I think it should be something a graduate goes into only when he knows exactly what he wants to do.

COLVIN

The curriculum at these schools might not be broad enough for a student to discover his real convictions. The student might tend to become merely a copier.

PRATT

It might be of value after three years of general architectural studies. However, you might not want to follow any philosophy but desire to start one of your own.

HAUSLER

I don't feel that the "lieber meister" idea is valid. I don't feel that this is the way to approach architecture. Any preconceived idea is limiting.

PRATT

Out of the thousands of architects who graduate every year from schools, there are very few geniuses. Perhaps many would profit from copying something good.

COLVIN

Even if you do copy (and most of us do to some extent) you should at least expose yourself to as many things as possible and choose what is good.

MODERATOR

As students, are we aware of the larger responsibility of the architect relating to the broader fields of planning and the community in general?

ZUBIZARRETA

This is a part of the function of architecture, but I do not consider it architecture by itself. I consider architecture something else. I think we come back to this love of the profession. He must desire to produce a better job. If he is happy with what he is doing he probably will produce a better job. If he integrates his profession in what he is doing, then the community will receive real value.

POPE

Certainly he has a responsibility. Not only is he a member of his community, but he shapes the environment of the community. If he does this, he has a community responsibility not as a political leader but in everything he does. He must, through his work, establish good examples for others to follow.

HAUSLER

I think students are definitely aware of this responsibility. However, the

architect is often never consulted about the many elements which need correlation.

MODERATOR

Can the architect afford to sit in his corner waiting to be called in?

COLVIN

It did happen at Chandigarh.

HAULSER

Perhaps this "waiting" attitude is hurting our country and the world at large. There isn't the coordination that there should be. I think we should go out and speak for ourselves.

EDWARDS

We're faced with this same problem of lack of coordination all over America, and most American cities are hideous because of it. Are we going to sit back and criticize and take pot-shots at the planning commission and the 'politicos' that run the city? There was a time when the artist, the designer, and the architect were collectively the idea source in any community and they were the people to whom the general community listened because of proven ability. This is the position which the designers have forfeited today. Only through proven contributions to the community do we earn the right to express our opinions. We must start with someone who is willing to sacrifice . . . financially, time-wise, and in every other way in order to establish a precedent. Then it will be easier for everyone else. Any kind of public service job is thankless. If you can arouse the people in a community, you begin the process right there. The problem is to arouse them to the need.

HAUSLER

Could this be done through an organization such as the A.I.A. or the A.I.L.A., or should the individual take the initiative himself?

EDWARDS

Both ways. There is no reason to sit around and criticize these organizations or any other group simply because you don't agree with them. You must work within the group since these groups represent the only organized combined force available.

MODERATOR

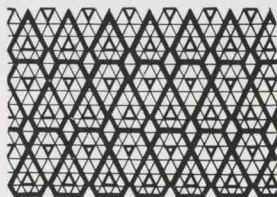
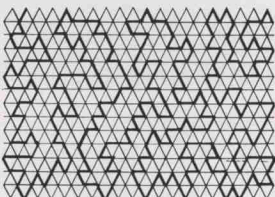
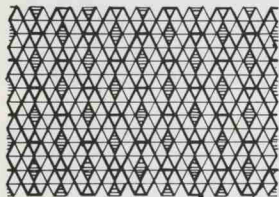
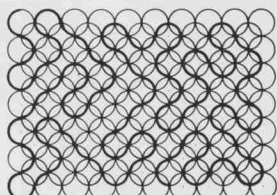
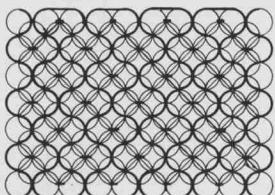
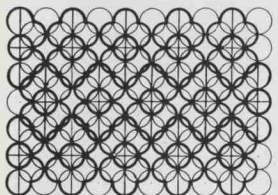
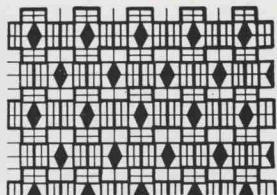
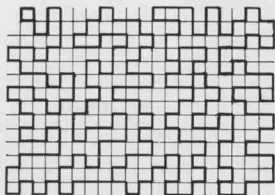
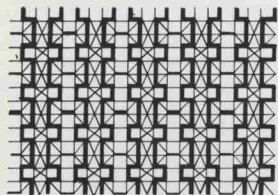
Are we in agreement, then, that architects have a definite social responsibility?

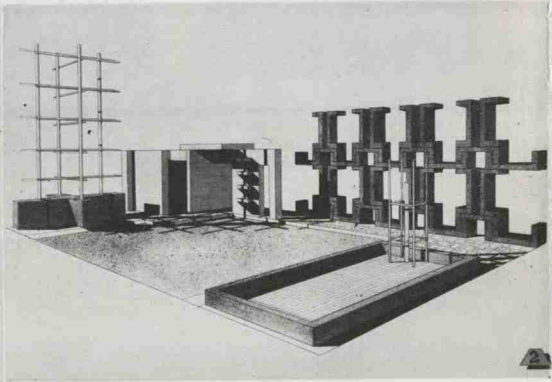
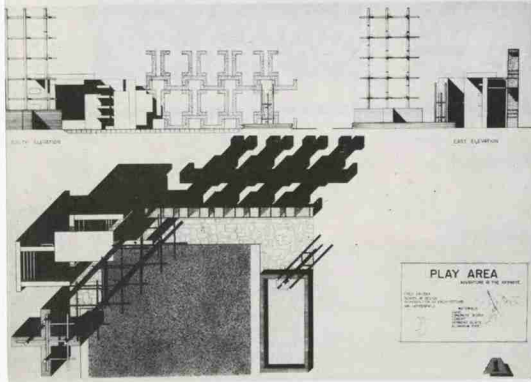
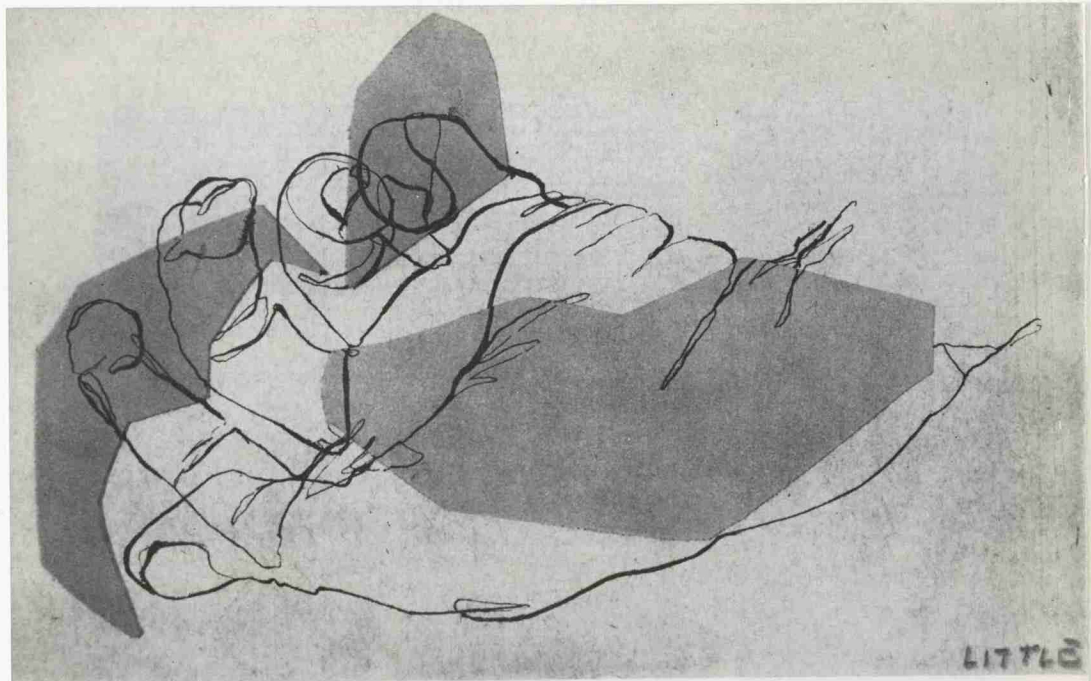
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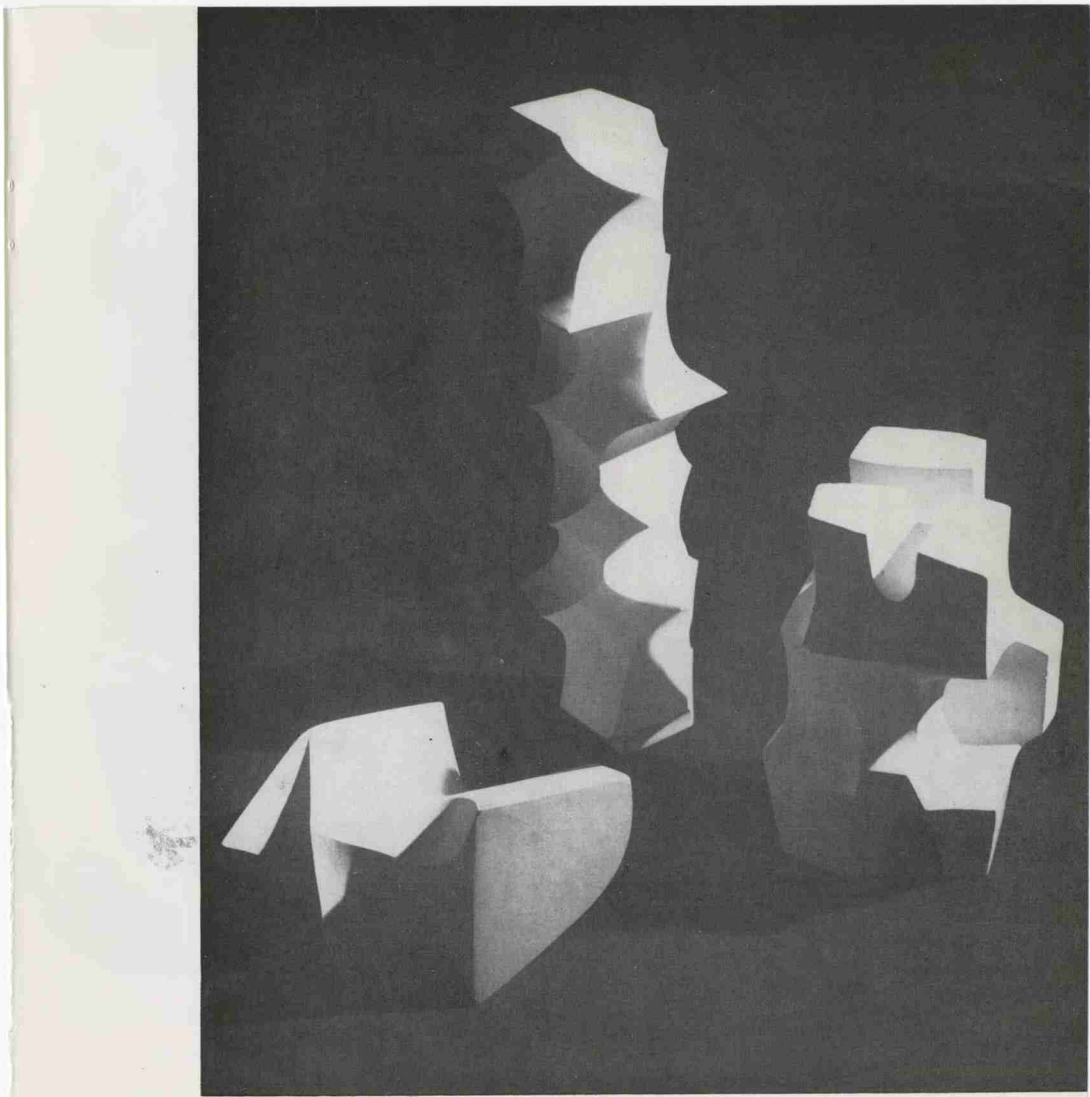
If we don't assume one, we are going to find that we have no places to put our beautiful buildings.

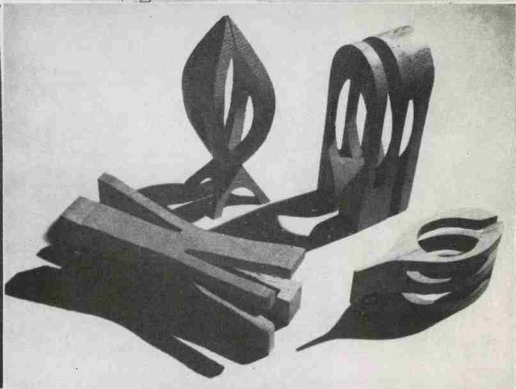
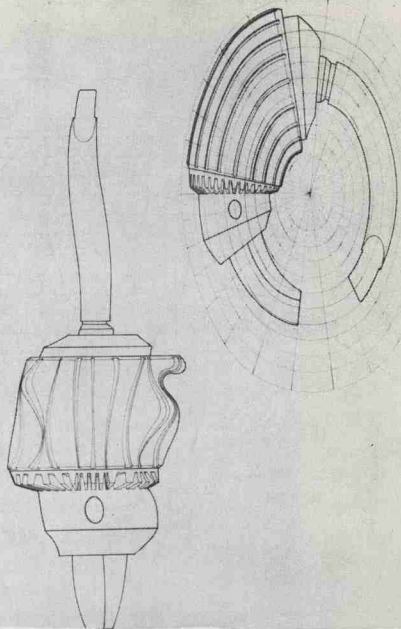
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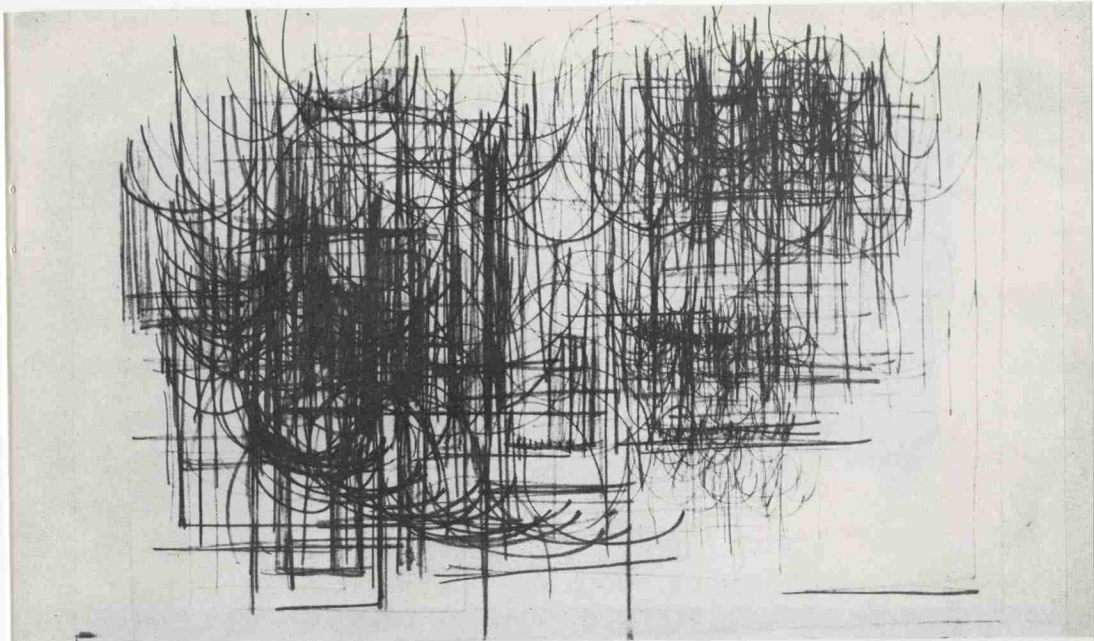
*A collection of STUDENT WORK
by students in descriptive drawing
classes in the School of Design.*

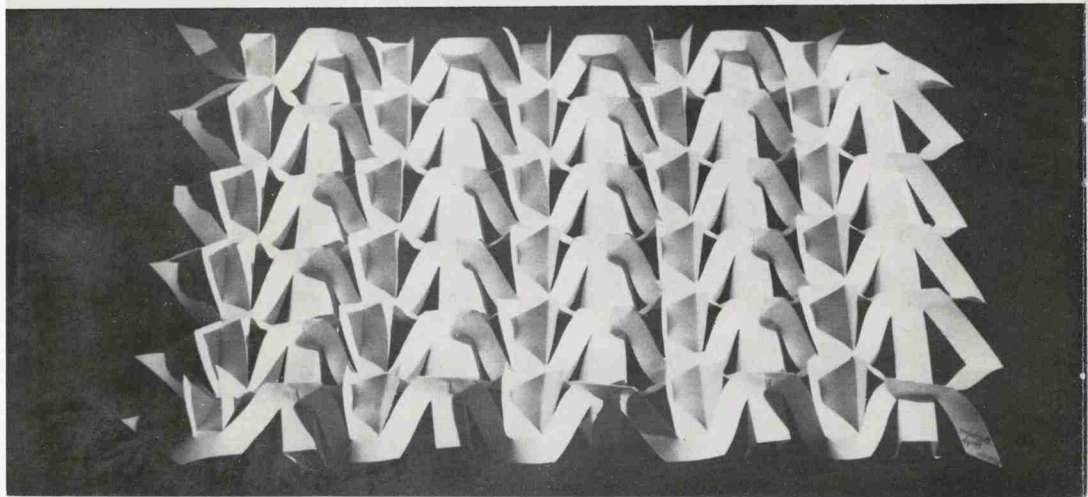
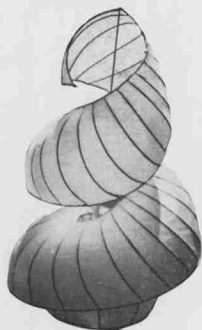
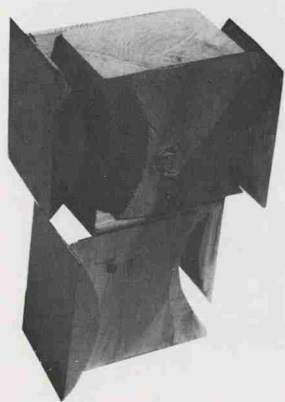












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VII

GUILIO PIZZETTI, *Italian structural engineer and professor at Turin's Polytechnic Institute, was a visiting critic at the School of Design in the Fall of 1957. Mr. Pizzetti considers various matters relating to architecture, structures, and engineering education.*

It has been said in our time that structures have a sort of "romantic attraction" for architecture. This is a clever statement considering the fact that this attraction is based on architecture's intuition of their importance and of the mystery which surrounds them.

This attraction leads to achievements which are sometimes correct and sometimes incorrect, chiefly due to the lack of understanding between architecture and structural engineering. However, there is a widespread desire to reach an understanding. It is difficult to guess just how long this process will take; perhaps only our children's generation will be able to touch upon it, since our own is still too strongly tied to the old ideas in the educational and professional fields. However, I consider every contribution important and therefore I think it advisable to recall some basic concepts which probably will be helpful in order to state clearly the problem we have to face.

What is a structure? Generally speaking structure can be defined as the complex of static channels used by men in order to convey to the ground given forces which have to act in certain spatial positions. Forces and their positions are defined according to a particular architectural problem (i.e. in connection with an individual

attempt by man to meet in an appropriate way certain needs of humanity). Therefore structure is undoubtedly something very important, but it cannot exist by itself, it must be considered always in connection with the basic problem responsible for its birth. An elementary statement, everyone will say, and elementary it is indeed, but of the kind so often forgotten if we are to judge from a great deal of modern construction.

We can never think of the structural "optimum" as an absolute optimum, for such optimum does not exist. We have always to think in terms of optimum related to some other factors, sometimes relevant, sometimes irrelevant. We can think of "optimum" to the conditions of the ground, to the better exploitation of the material, to the fulfillment of functional exigencies, etc. Sometimes the problem we have to face can be solved only by a structure of sizable configuration wherein the structure gives the fundamental pattern to the architectural solution. Sometimes, structure is irrelevant, since any structure can be used without disturbance to the architectural problem.

Therefore, it is evident that the correct approach to the problem of the relationship between architectural composition and structures is to be found by attributing to the structure the im-

portance it actually has and by molding it in such a way as to achieve an optimum in relation to the factors which "make sense" in the problem considered. As these factors are many and different, it will probably be helpful to remember which of them are the most important as intimately tied to the basic structural approaches of man.

We mentioned before that the structure is a complex of static channels. We shall now observe that the "passenger" to be carried in these channels are fundamentally two: the Force and the Moment of the Force. Generally, at the point of departure, the "passenger" is the Force alone. Then, during the trip to the ground, the "passenger" is generally disturbed in such a way as to require the companionship of the Moment in order to endure the ordeal. At the end of the trip in the ground (which is the resting place for everything and everybody) only the Force remains. The ground does not know the Moment; it accepts only the Force, thus solving everything, even the most complicated combinations of Forces and Moments in an appropriate distribution of Forces.

Therefore it is easy to understand that the structural approaches of man have always been fundamentally two: By intuitive approach first, by rationalistic approach secondly, man has sought to mold the static channels in such a way as to satisfy chiefly the exigencies of the Force, or in such a way as to satisfy chiefly the exigencies of the Moment.

The first approach (historically speaking) is to take the Force and eliminate the Moment. This is the most elementary approach as well as the most logical one for a primitive mind capable of understanding the simple and visual ideas of compression and tension. It is the approach of

arches, domes, and latticed structures, and in modern times it is the approach of shell structures and of hung roofs. We could represent this approach by the curved line or the curved surface and affirm that, in general, it is the most economical in regard to material but usually the most expensive in regard to labor.

The second structural approach (which stresses the importance of the Moment) is that of the straight line and of the combination of straight lines. It gave birth to the beam, the frame, the framed structure, and the plane in space. We can say that this trend is less economical as far as material is concerned but, in general, more convenient as far as labor is concerned. It is evident that there are very few structures in which we can find only one of these approaches, since it is very difficult to separate completely the Force from the Moment. But we may affirm that these two approaches completely rule the world of structural forms. So it has been in the past, so it will be in the future. Structural trends will not be affected by future developments in the fields of physics and nuclear engineering. Statics adheres so closely to the basic law of mechanics of the universe that it will not be altered by future discoveries concerning matter and energy.

In the architectural world there are some who believe in only one of these approaches and discard the other. For instance, Mies Van der Rohe accepts only the straight line as a static channel; for him the curved line has no right of citizenship in the architectural and structural supposition. On the other hand, Nervi, although accepting the straight line, evidently prefers the curved line as a static channel and an architectural achievement.

Speaking in general terms, and attempting to reach a synthesis suitable to our point of view, we shall give to both of these approaches the same importance. We shall consider them as a kind of compass for the boat of our intuition and static sensibility. We shall not expect from them definite design criteria but we do expect a vision of the logic and economy of Nature in the field of Statics. We can say they are the expressions of superior laws of physics which rule the universe, and far from being a limitation to the designer's freedom, they will be the salt for his creations. They will explain the logic of structures in the plane or in space, they will guide us toward the shaping of an architecture still scarcely considered (i.e. the architecture of foundations and underground structures). Finally, in the same way they will enable us to evaluate the structural achievements of the past and will allow us a glance in the future.

In fact we have enough elements to predict one of the most important characteristics of the structural world to come—the importance of the distinction between plane and space structures. Until today our capacity for considering a space structure as a whole has been rather limited, since, in the majority of cases, we have tried to see it as a combination of plane elements. This form of approach (dictated mostly by the limitations and inhibitions of our mathematical mind) must be abandoned if we wish to create the really significant structures of the future. In the plane, the structural forms can be considered as defined in a rather limited field of variations. In other words the answer to Nervi's question, "Is the architecture of structures going toward limit forms?", is basically affirmative. This is true since, as far as form is concerned, we have al-

ready touched the limit of structures, although we are still far from the limit spans which can be reached.

Let us consider, for instance, the predictions concerning structures in the plane as performed by the French engineer Lossier.* He deals only with figures of spans or heights which can be considered to utilize the maximum in today's materials, but he does not take into account the possibility of changing the well known forms of beams, arches, or suspension bridges. Even new discoveries in the field of materials will not change the picture. In a word, future structures in the plane can be foreseen by the mere extrapolation of our actual knowledge and experience.

However, these conditions change greatly when we consider the structure in space. Extrapolation does not apply since the forms are far from being so well defined as in the plane.

In fact, space combinations of straight and curved lines are infinite, and all of them can perform the task of static channels. In space *any form can take any state of load* in a kind of "funicular way" (i.e. by an appropriate distribution of compression, tension, and shear stresses). In this immense and practically unexplored field the creativity of the designer will choose the most suitable form according to the exigencies of his particular problem. Limitations will be set more by materials than by forms since the logic of the Economy of Statics will have manifold possibilities.

* * *

The future is promising and exciting and full of wonderful possibilities. Will architecture and structural engineering be able to exploit these

* Annales de l'Institut des Batiments et des Travaux Publics—Paris—1957.

great possibilities in the best and most complete way?

This question is not easy to answer. Architecture and engineering will be up to the task if two basic aims are fulfilled. The first is the true and efficient cooperation between all human forces which act in the structural field and the second (evidently tied to and dependent on the first) is the promotion of well organized structural research.

Today, architecture and civil engineering are going separate ways, speaking different languages. The first views the structural problems from a broad point of view and in an irrational way; the second is tied to the mathematical approach in such a way as to be its prisoner.

To an architect static design means the creation of a form by intuition. To an engineer it means only a checking by calculation, a fitting into a mathematical frame. The static intuition of the architect (which generally has not been educated) degenerates often into static phantasy, in over or underemphasis of the structure, in fashion-following, or in some ill-conceived attempt at originality. To the engineer any intuition is a treacherous siren. Structure which cannot be calculated cannot exist. The formula is the basic tool of design.

The cause of these different aptitudes (which has created the great no-man's land between architecture and engineering) is to be found in the schools. Generally the schools think that a static education can only be reached by an opportune dosage of mathematical information on static problems. This is a mistake full of dignity and good will (if you wish) but nevertheless a terrible mistake.

As I had occasion to point out in other ar-

ticles,² there is an urgent need of limiting the function of mathematical language to a serving task, giving back to the static conscience and intuition the command in the creative field. Intuition and static conscience (intimidated and more often smothered by the display of mathematical weapons) should again be brought to the stage if we wish to reshape static studies in our colleges. In fact, if we commence the static formation of our pupils by teaching the qualitative language, by focusing on ties existing between common sense and static principles, and by explaining structural forms in their logical process of birth and development, we could build up a common and solid foundation for the future architect and engineer. From then on they will go their separate ways, the first toward the fitting of structures into a larger landscape, and the second toward the analytical interpretations of the structures. However, similar basic studies will give them a common *formation* and will allow the possibility of a mutual understanding.

The second aim to be performed is structural research really ordered and organized and well fitted into the general panorama of the architectural problems of our time. As a matter of fact this word "research" (so basic to all science as the key to their future) seems to have little or no meaning at all in our field. As for architectural research in the structural field, we are today at the same point and probably in the same mood as the alchemists were before the birth of chemistry. Romantic inspirations and irrational attempts have made it very difficult to separate the genuine from the fashionable amid the pea soup of general skepticism.

² I fattori del progetto e la loro valutazione nella Scuola e nella Professione "L'Ingegnere" 1953
Intuizione e linguaggio matematico nell'Architettura e nell'Ingegneria Casabella 1957

This situation is the resultant of many factors, but mainly it results from the lack of definite programs by people who should promote or organize research, and also from the difficulty in obtaining financial support.

As far as programs are concerned, they can be defined through the cooperative effort of architect, structural engineer, mathematician, and model analyst. Surely it will take quite a time before such a cooperation can reach the necessary degree of maturity and agreement, but any attempt of this kind will be thoroughly rewarded. Until today structural research has been kept alive in the fields of mathematics and models analysis by courageous first-rate researchers who do not possess (with very few exceptions) the capacity of understanding the problem from an architectural point of view. Furthermore, on one side mathematicians mistrust model analysts and on the other side model analysts complain about the nearsightedness of the mathematical approach. This stage of valiant but dangerous individualism must be overcome. Surely we cannot expect to reach the same kind of team work in architecture as in applied physics. It would be a basic mistake to think this way; but we have to admit that only a cooperative effort can allow an advancement of a common front and will enable us to study in a systematic and general way the problems of space structures.

At the same time it will be necessary to modify the mood of the ambience which, in the world of science as in the practical world of construction, considers structural research as an unnecessary luxury.

Our century, so liberal in war expenditure, rules out all sense of economy when it has to deal

with the most important creation of man—the architectural creation. Perhaps if our century would come to understand how strong the influence of architecture is on man and his conception of good and evil, and if it could understand that good architecture can be a basic defense program, then it would not consider it nonsense to support architectural research with the same amount of funds necessary to construct a giant bomber.

To spread this conviction and make this need strongly felt is again our task—is the task of our schools. In fact, only the schools can provide the basic raw material for this kind of research, which is probably the most completely human of all types of research, since it invokes an enthusiasm and eagerness for new and better creations which are able to improve and enhance the feelings of man toward Life. School must be, first of all, a preparation for life . . . but not only a preparation for the life of yesterday or even of today, with its mistakes and failures, but it must be a preparation for a better life tomorrow. And the life of tomorrow will be better and safer only if the schools will not smother enthusiasms on the grounds that routine is always safer and cheaper.

The life of tomorrow will be better if the schools will feed the flame of our enthusiasm and curiosity in such a way as to preserve it among the frustrations of life.

As for every important achievement of man, the future of structural architecture depends primarily on our faith, our belief, and our sincere desire to perform the task of continuous advancement which is the true task of man. For us, both professors and students, to believe this and to act accordingly is one of the challenges of this terrible Twentieth Century.

VIII

PATRICK HORSBRUGH,
*Chairman, Industrial-Municipal
Planning and Co-ordination of
Technologists, is presently a
visiting professor at the Depart-
ment of Architecture, Univer-
sity of Illinois. Mr. Horsbrugh*

*proposes a new concept and field of endeavor which he
calls "Omnitecture." This is a re-print from The Journal
of the B. Sc. (Estate Management Group) (November
1957) printed in London.*

The world is now living and its population expanding under a mounting threat far exceeding anything hitherto experienced by "Western Civilization," but it is scarcely appreciated as yet.

Most of us, besides our daily routine, are so preoccupied with recurrent political and local economic issues that despite warnings we still fail, in general, to comprehend the appalling wastage and misuse of LAND throughout the "free" (and perhaps also the "unfree") world, but continue to fritter away this priceless and diminishing heritage which we have always taken for granted.

So long as major conflicts in land use remain secondary to political expediency crises will occur with increasing frequency. Anyone, therefore, who is professionally concerned with the landscape—that is, with any part of the whole tapestry of land and buildings, has at this time a double duty; not only must he fulfill the clients' requirements but he must exercise guardianship of land values. Disregard for the latter will ultimately prove a disservice to the former, and ensure failure for both client and community.

This rapidly growing land crisis has, of course, not remained entirely unobserved. Many able individuals, organizations, and government de-

partments have achieved remarkable results in conservation of all kinds, but the urgency and the scale of the tasks are as yet scarcely understood; while effective counter-measures are hardly begun.

Perhaps the enormity of the immediate problem due to land scarcity may be re-emphasized by a reference to some estimates on population trends recently published in the "New York Times" (17th March, 1957). The Director of the Scripps Foundation for Research in Population Problems is reported as predicting that the population of the United States may be expected to continue to rise beyond the present figure of 170 million inhabitants to 228 million by 1974, some twenty years hence. This considerable increase in so short a period is likely to bring about an entirely different attitude towards landscape, and a completely new evaluation of territory in that country. The Director also foresaw an increase in the world population from the present figure of some 2,700,000,000 to the likelihood of the population amounting to 4,000,000,000 by the end of the century. Such figures cannot be regarded as final, they may continue to mount or, through world disaster, decline. The prospects in either event are appalling. Expert opinion, can

of course be wrong, and the meaning of figures can be misinterpreted, yet if these estimates of present low standards of life will not be improved, but will be reduced yet further.

How can such a population be sustained? Unless productivity is everywhere increased the present low standards of life will not be improved, but will be reduced yet further.

Time is against us. Time is against the consumer for as long as our capacity for exploitation and destruction exceeds that for construction; but the outlook is not wholly gloomy; great advances have been made in productivity. Vast areas of land which have hitherto been unattended are being brought into cultivation. Crop yields have been increased in quantity and improved in quality, and improvements in the size and quality of livestock has been remarkable in many parts of the world.

Whether or not these advances can keep pace with the population increase, quite apart from raising standards of living, ultimately depends upon the intelligent use of land areas which remain available, and that is the pressing concern of land users, planners, and their advisers. The increased production of food is indeed encouraging, but unfortunately the cultivation of fresh territories is heavily offset by advancing deserts. In many areas immense tracts of land are going out of cultivation, the most important causes being the decline in the supply of water, or the increase of salinity as a result of prolonged irrigation.

Now increasing population, of necessity, means increased urbanization. Urban sprawl and the universal suburbs have become major claimants for land coverage, and their claims have as yet never been met with effective refusal. Most planning authorities are well aware of this growing imbalance in land use which urban demands are forcing upon regional and national economies,

and the conflicting issues are being brought before the public with increasing frequency and emphasis. Enough is being done already to dispel despair, but complaisance is an ever-present danger.

Great credit is due to those major foundations, and to national and international organizations which are earnestly grappling with these problems, for the tasks are almost superhuman, and the sources of recruitment of experienced technical advisory staffs of sufficiently high calibre is still absurdly small compared to the worldwide requirements. The effectiveness of these organizations, and the confidence which is placed in them depends directly upon the quality of the individual agents who become available either from the professional bodies or from the senior scholastic institutions.

This is the vital issue with which this article is immediately concerned. Where is the technical leadership now required for large territorial development to come from? A great many professions are already involved, and, as technical specialization increases, more professional subdivisions may be expected to emerge. Specialization alone, however, will not provide a panacea, even for the current difficulties, still less will it be able to cope with the demands to come. Indeed overspecialization is a positive danger. It leads to a competitive attitude between experts resulting in a state where decisions have to be taken as between conflicting views by a layman who may have little exact knowledge of any of them. Advances in specialization must, therefore, be paralleled by producing an increasing number of individuals who, after the normal basic training in Landscape Design, Town Planning, Architecture or Estate Management can continue to absorb such geographical, economic, and ecological training as will enable them to act as co-ordinators and to exercise an informed and balanced

judgment and influence amid the conflicting claims now being made for every acre.

Economic planning on the broadest scale still requires shape and disposition, hence the matter of physical design is inescapable, and it is imperative that the necessary "master-minds" should possess a strong sense of design. It is probable then that the four professions just mentioned are most likely to provide personnel of special skill and team-potential capable of an integrated understanding of industrial, commercial, agricultural, and social forces which are at present so often in opposition.

The order in which these professions of Landscape Design, Town Planning, and Architecture are listed may cause some surprise since that of Landscape Design, only recently recognized, is still small and relatively uninfluential, notwithstanding a distinguished historical record.

It must surely be clear that under the pressures now in operation, physical planning cannot be tackled successfully on anything less than a landscape scale, whether that landscape is parochial, regional, national or sub-continental.

Landscape comprehension is therefore the prime requirement into which the relatively local specialization of town planning naturally fits. Architecture arises then as the characteristic detail of Landscape whether rural or urban. However important buildings may be, either collectively or individually, they remain the furnishings of our environment. However ordered and beautiful the country or the town may be, or become, decay will set in unless the economy is healthy, and well managed. The foundations of good health should be organized in the body politic, as in the human, in infancy.

This obvious relationship is not yet recognized by the educational establishments who are for the most part content with the inverted order where City Planning is a subject secondary to the de-

partment of Architecture, and where the study of Landscape and its significance is an additional specialized study indulged by those with leisure, or by those who lack the capacity to deal with the precise constructional and engineering aspects of building, and where the economics of land use are regarded as an irrational, or merely sordid, matter, unworthy of high academic status or expense.

A fresh attack is required by those concerned with planning education to adjust courses to the changing circumstances of our time, and to ensure the production of individuals capable of undertaking, at an early age, the kind of planning commissions which will arise through the U. N. or the Colombo Plan, or other major development organizations.

Any planner, whatever his basic discipline, tampering with the earth's surface (as tamper he must if he is to act at all), without humility and a determination to attempt to understand the immediate and the long-term consequences of his actions is little less than criminal.

Adjustments of curricula and of emphasis are therefore recommended for those educational establishments which are at present providing courses in these basic subjects, in order that the growing demand for Landscape Designers may be met. There is, however, a greater need. It is no less urgent that "master-minds" should be selected and developed (training is scarcely the right term) so that they may accept with the least possible delay the larger responsibilities of balancing and coordinating the increasing numbers of specialists and their conflicting opinions. If we agree so far, a more detailed examination of the location and raising of the master-planning mind may be worth while. The rapid rise in world population, improved communications and increasing mechanization requires fore-

thoughtful territorial planning of a far broader basis than is possible at present. This is vital for civilized survival. For the extent of the unintended destruction which societies—"enlightened" as well as ignorant—can inflict upon themselves brings a degree of urgency to the problems of planning and planning training which is only surpassed by the devastations of war.

Moreover, the scale upon which planning operations must now be tackled is so much greater in geographical area and in technical understandings, that the highly qualified specialist all too rarely has the width of vision required to comprehend the planning problems as they now arise. Hence, at this time of increasing specialization it is imperative that attention be given to the training of minds who can grasp the wider implications of territorial development, redevelopment, or multi-development, and to individuals who can co-ordinate the work of specialists and who can, above all, maintain some balance between opposing demands.

What is required, it seems, is nothing less than a planning super-intellect. Such individuals undoubtedly do exist, and have found expression for their talents in pioneer colonization, in the expansion of great industrial and business concerns, in social welfare, and even in politics. The impossible is not therefore being asked for. These individuals have, in many cases in the past, risen to eminence by the accident of birth or a natural brilliance which marks them as exceptional, but the complex requirements of our rapidly changing technico-civilization have increasingly brought into positions of dominance men whose talents owe their development, if not their existence, to educational establishments. Hence, universities cannot escape the direct responsibility for preparing students and postgraduates for these super-planning duties as urgently as for

positions at the head of industry, nationalized or otherwise.

The creation of such planning controllers will be a major undertaking in itself. It will require a campaign to illustrate how vital such persons have already become. A new descriptive name and supporting vocabulary will be needed, for none of the current words such as planner, or architect, really conveys the full meaning nor covers the responsibilities involved.

It is suggested that the required individual, (and it is individuals who are needed, for an independence of mind is the first requisite in such a person) might be described as an OMNITECT, responsible for environment, OMNITECTURE, and for OMNITECTURAL design and control in every detail.

No individual can be expected to cultivate any omnitectural perception without having undertaken some conventional course of design. The potential students will therefore be drawn mostly from the departments of Landscape, Town Planning, Architecture, and in consequence Omnitectural studies must necessarily form a post-graduate course.

Environmental control implies a sensitivity in matters of design, but to this prerequisite must be added some practical experience, and proof of a basic understanding of some branches of political science, economics, geophysics or kindred subjects.

It will be appreciated that the applicant for such a course will be no ordinary student. The selection of students cannot therefore be made upon conventional lines, but will depend solely on individual merit, on background and upon intention. The average age of the applicants will also be higher than is usual for postgraduate courses, but this is inevitable if the student is to have time to gain practical experience in some

particular field. Government departments, the Armed Services and big business might well encourage members of their staff to contribute to and gain from such courses, at both instructor and student levels, even though such members were not intended themselves to become Omnitects.

The resulting degree or stamp of approval should be MASTER OF OMNITECTURE. This could not be achieved by any system of routine exams, but on the merit of personal activities and written theses appearing in published form, perhaps in a series of annual magazine-like reports. Because of the care which must be taken in the selection of students, it is to be expected that all will qualify for Mastership, though qualification must be on independent and not on competitive terms. In the circumstances described the numbers qualifying would be very limited, but the cachet will be so much the greater, the degree would no doubt carry the name of the university by which it was granted and the recipient be identifiable as a London, Delhi, or Toronto Master of Omnitecture.

Because of the very scope and character of Omnitectural problems, it would be important that the conduct of the course should not be confined to universities alone, but should afford opportunities for site work over as much of the free world as possible. The co-operation of the larger mineral and industrial organizations could be of the greatest value in providing opportunities for the study of special conditions in general terms. It would obviously be advantageous to ensure from the start that the courses should be in two parts, consisting of base work at the appropriate universities, and field work which is directly related to some major development project.

Financial backing on a substantial scale must

of course be forthcoming before any proposition of this kind can be undertaken. For the sake of convenience, it is suggested that such a course should spring from existing universities, but this may in fact be difficult, finances apart, for lack of accommodation and because the methods of procedure natural to such institutions may not be able to respond speedily enough, or may not be sufficiently adaptable to meet the urgent requirements. In consequence, some alternative locations might have to be sought. Support and accommodation might be provided by some of the greater Foundations and Trusts, either independently or in collaboration with appropriate universities. By its very nature, no such post-graduate course could generate sufficient finances of itself, nor, because of the limited number of students, could a university do more than contribute a proportion of the costs involved. Moreover, it would be difficult to prove in advance the need for such a course, or to predict with confidence a cordial response from the planning fraternity towards such proposals.

There is an understandable element of risk in the establishment of any new course, depending largely upon the type of people selected to organize the program and to carry out the negotiations. It is suggested therefore that the following possibilities might be explored by any person or body convinced of the need and determined to supply it.

1. That several of the internationally renowned foundations which have already demonstrated their concern with territorial development by approached, and asked to contribute a set sum for a limited period, so that an organization can be established, to declare its intentions, and to recruit staff and students for an experimental period.

2. That an appropriate university or univer-

sities with fully developed departments of landscape planning, civic design and architecture be asked to co-operate for the same period, and to provide accommodation and services.

3. At the end of the period, the whole program should be reviewed. If the initial proposals appear to be justified, the prospects good, and the response effective, the organization could then become officially recognized and accepted and established as a regular university department.

4. At this time, also, the financing foundation of the supporting organizations would have the opportunity of withdrawing from or contributing for a further period.

5. It would seem appropriate to invite the co-operation of the major industrial concerns which develop natural resources, such as the oil companies, aluminium and other mineral-working corporations, so that they might contribute staff on a temporary basis, as well as sending their own personnel to take the course.

It is great organizations such as these that most affect the modern environment, whether it be at the place of mineral extraction, or where the materials are processed, or where the final products are sold. If the major producing concerns can be influenced at source, then and probably on then is environmental improvement really likely.

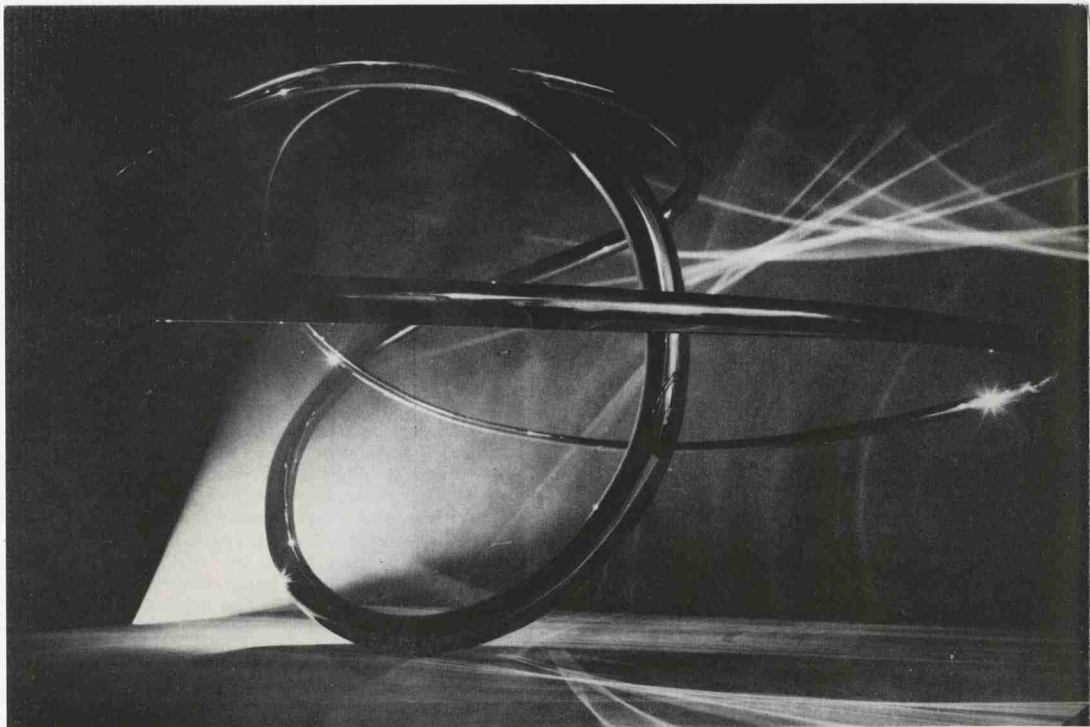
The recruitment of the initial staff will be especially difficult since there are not many men of the calibre and energy sufficient for such an enterprise. Those that have such capacity are likely to be fully occupied already, and will have to be persuaded to relinquish their current activities for the larger end.

The length of successive courses would naturally vary according to the particular program, and the amount of travelling involved and the pro-

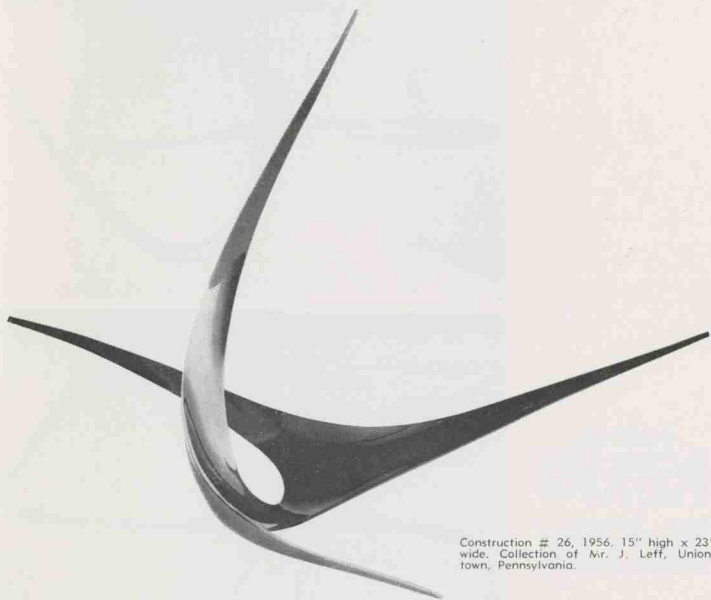
gram would be different with each course, since it could then be related to some particular field-work either contemplated or in progress, thus giving reality to each course as an alternative to instruction work being based on a series of hypothetical problems. The number and variety of subjects to be covered would also vary according to the principal task in hand, and the instructors available, but in general they would include those subjects directly related to Landscape comprehension, such as geology, ecology, meteorology, water and soil conservation, as well as geophysical and other surveys, sociology and local histories.

A program of such a kind for the development of Omnitecture, as an insurance against wastage and as an investment for improved environmental control, might seem worthy of every country facing economic changes or expansion of population and natural resources. An Omnitectural department is not only required for national purposes, but is hardly less vital for the larger industries and the many international assistance organizations. The first university to develop such a program, embracing environmental design in the broadest possible way, would at once establish its pre-eminence in the field of planning and assume the leadership in the professional subdivisions of Landscape, Town Planning, and Architecture in the most effective terms.

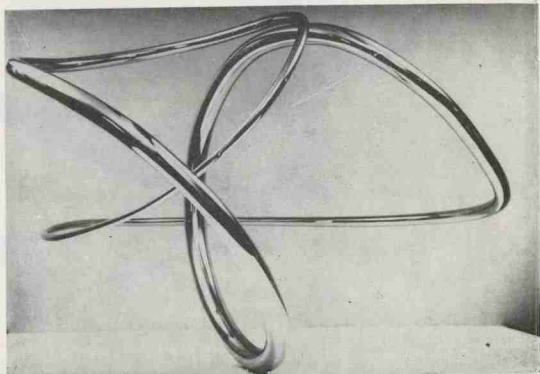
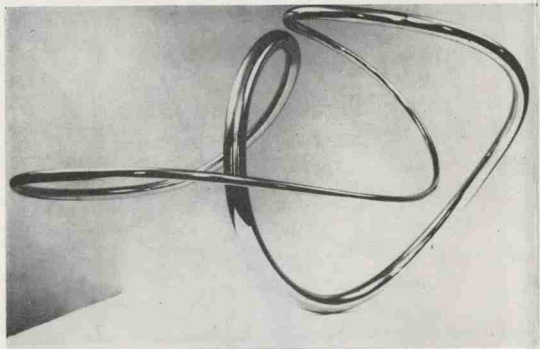
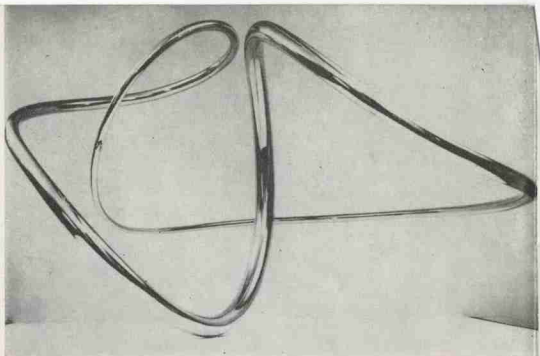
Omnitecture depends, however, firstly upon the recognition of the fact of land scarcity and the consequent impoverishments which now confront us, and secondly, the recognition by Authority at every level that Landscape comprehension and design demands today a prime position in our educational fabric by obvious right. Given such recognition, Omnitecture, the science and art of environment control will become possible. The need is urgent.



Construction # 50, stainless steel, 1958 4' high x 7' x 6'. Currently exhibited at the United States Pavilion, the Brussels Universal and International Exhibition.



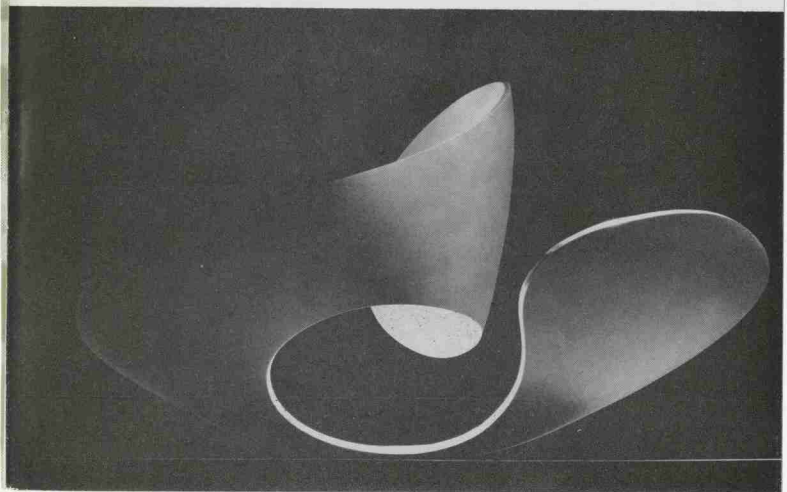
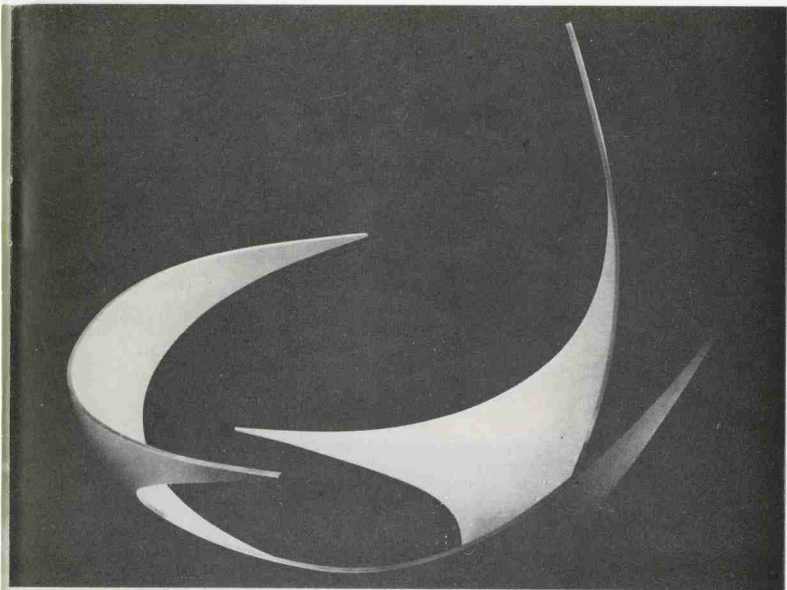
Construction # 26, 1956. 15" high x 23" wide. Collection of Mr. J. Leff, Uniontown, Pennsylvania.



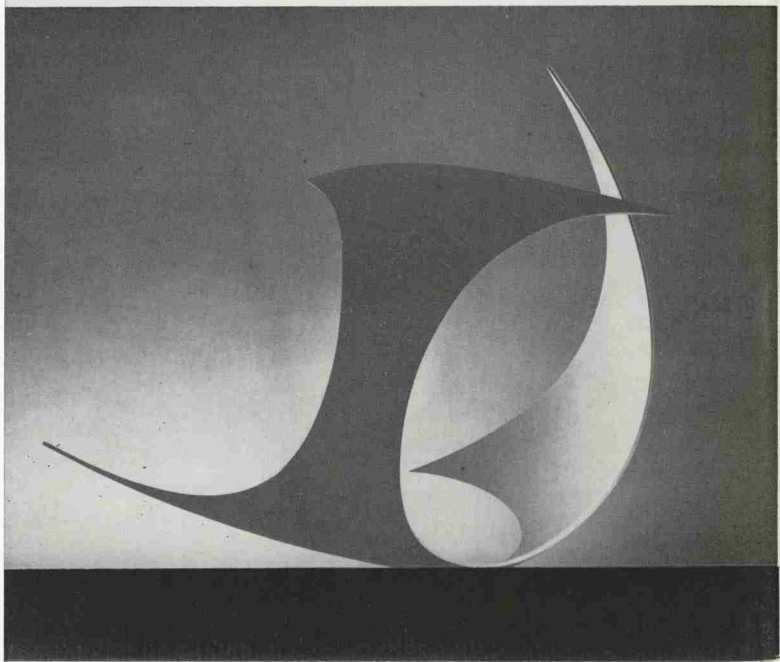
OPPOSITE PAGE

Top: Construction in Black & Yellow, pigment on aluminum, 1951. 34" high. On permanent loan to the Brooklyn Museum of Art.

Bottom: Construction in Black & Red, pigment on aluminum, 1950. 18" high. Collection of Mr. and Mrs. Joel Freedman, New York.



Construction Blue and Black 1949, 30 inches high.
Pigment on aluminum. In the collection of the Artist.

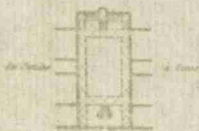


Mr. Rivera was born in 1904 in Louisiana. He spent eight years working in industry—tool, die, machine tool, experimental design, construction and operation, foundry and machine shop practice. He studied with John W. Norton, painter, in Chicago and has travelled widely in Spain, Italy, Sicily, Greece, Egypt, and North Africa. This is what he has to say about his artistic approach: "Art for me is a creative process of individual plastic production without immediate goal or finality. The prime function is the total experience of the conception and the production; the social function, the communication of that total experience. In the attempt to find plastic harmony in my work, I am conscious always of the necessity for a prime, visual plastic experience. Free from any figurative representation or symbolism, the beauty, content and source of excitement in the work is the interdependence and relationships inherent in the structure. Space, material and light in equilibrium is the total plastic structure." Mr. Rivera's agent is the Grace Borgenicht Gallery, 1018 Madison Ave., New York City.

**Jose
de
Rivera**



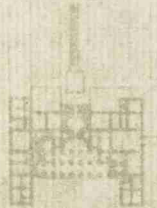
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