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Publication Office: 2642 University Ave.,
St. Paul, Minnesota 55114. Northwest Architect is published bi-monthly, with one
additional issue in the month of January. Second class postage paid at St. Paul,
Minnesota. Subscription: one year, $3.00, two years $5.00. Foreign rate $4.50.

Advertising in Northwest Architect is subject to the approval of the Minnesota Society
of Architects' Publication Committee.

Northwest Architect and its publishers
disclaim any and all liability for state-
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ticles.
Group Strength in 70’s Depends on Individuals

By Donald Hassenstab
Executive Director, Minnesota Society of Architects

The multitude of “trend indicators” and the experts’ opinions based on them which make up the forecasts of what lies ahead of us in the fateful ’70s clearly shows that the decade now opening will be one of pressures to the right and pressures to the left, of flow and ebb in the economy and of many changes with great and minor effects on us. Without doubt each of the years which will make up the decade will have its shares of all the changes.

Throughout the coming years each of us will have several personal and professional courses to steer. All of us who make up the Minnesota Society of Architects and so are part of the American Institute of Architects are concerned with what is to be achieved by these professional groups and how achievement of progress can best be carried out for and by the groups.

Achievement of progress depends completely on individuals, on individuals of many varied talents whose personal efforts can produce what is needed but even more so on individuals who can unite with others to achieve the greater results of team efforts. The Minnesota Society of Architects has among its members scores of these individuals who have proved in the past that they have both abilities. There are undoubtedly many others who have these abilities but who have not yet proved out in the co-operative effort which the 70’s will demand of us. On all of these the society must depend to get its job done through the coming years.

It follows that, given these kinds of members, the society can grow upward only when they are encouraged to and DO carry out the theme of our recent convention—Involvement. They must become involved in the working out of the society’s programs, give guidance in proportion to their abilities to these programs within the new framework of the society’s committees. It is interesting to note that the MSA is a “society” of special nature and that its members are members of that larger “society” into which the greater meaning of involvement must draw us during the years of this vital decade.

“Society,” “Involvement”—their scope is so great in meaning, so insistent that we all heed and help solve their problems. We hope the contributions through the Minnesota Society of Architects of its truly active members as individuals and as a group will do an important share of what must be done as month follows month. The society executive director’s office stands ready to do its utmost to aid such work.
SOME VIEWS ON THE PRESENT AND FUTURE

The Publications Committee considered that this issue of the Northwest Architect would be more useful if, in addition to the basic material, some words of wisdom from a few of the most thoughtful men among us were included. Accordingly a group, each of whom seemed to us to have special grasp of a particular area of work, was asked to write and all of them responded as we had hoped. We had suggested that each supply whatever data he could about the future of work in his field of particular interest; we also asked them to express freely their hopes, worries, ideals and visions. We are pleased that they did indeed do this, and you will find in what follows their reflections, which are varied in form and content but are clearly the words of concerned and involved men.

HOUSING

Never before has a housing problem been more acute. The demand for decent, single-family and multiple-family housing has risen in the past years along with interest rates, land costs, cost of labor and materials. The net effect is a crisis. The National Commission on Urban Problems estimates that this country, in order to break the back of minimum housing needs by 1980, should build 2 million to 2½ million new housing units each year. In only one year since World War II have we even approach the rate of 2 million units and that was in 1950.

The rate over the last six years averaged 1.45 million, not counting mobile homes. The construction pace is such that it is estimated it will require 125 years to replace the nation's housing inventory and many dwellings are already deteriorated. Some 20 percent or about 115 thousand dwelling units of housing in the metropolitan area were built before 1900. Another 12 percent were built between 1900 and 1920. This means that about one-third of the houses in the metropolitan area are more than 50 years old. In addition, many of the houses built directly after World War II were jerry-built and small, thus rendering them permanently obsolete.

There were 3,500 single-family unit starts for the first half of 1969. This is in contrast to 3,800 for the same period of 1968; a net decline of approximately 10 percent. The demand is so great for good housing in good neighborhoods, and there is really so little of it, that no end to the price spiral seems in sight—a situation that prompts some builders to predict that single-family homes may someday be a luxury.

Some used homes, which are apt to be found in the relatively unattractive and old inner city, are selling for under $15,500. While a few new houses are being built that sell for under $20,000, they are out in the suburban fringes and are of very minimum construction quality. This spiraling cost of single-family dwellings has influenced multiple home construction, as evidenced in the statistics that 8,000 multiple units were built in the first half of 1969 as contrasted to 6,000 units built for the same period in 1968, approximately a 33 percent increase. The anticipated housing starts for the year of 1970 show an increase of single-family units over 1969 but the greatest increase in housing starts will occur in the multiple housing construction.

In the years to come manufactured housing will play a greater role in the housing market. This manufactured modular unit is a box, complete with walls, floor and roof and manufactured by industrial workers on an assembly line basis, rather than by craft workers. These units are delivered at nearby sites on flatbed trucks and cost somewhere around $7.70 a square foot. These units can be used as permanent housing or as interim housing until something else is built. They can be used individually or in two's or three's to make homes of various sizes and shapes. They can be stacked like so many drawers in a file cabinet or, in a high rise framework, as multi-story apartments. Carl Koch's Techcrete System, which involves an on-site fabrication of structural components, precast, prestressed concrete floor planks and bearing walls, could effect great savings and provide for construction costs substantially under that now experienced in conventional construction.

The architect could once again find himself in the position of leadership in housing if he would utilize more manufacturing techniques in the aesthetic design of his project rather than the archaic methods employed for years. A graphic portrayal of the present state of the arts in the construction industry was depicted in a recent issue of Progressive Architecture Magazine—"An Eighteenth Century carpenter could rise from his grave, pick up a hammer and some nails and start working on a contemporary construction job without attracting much attention." It was observed that this is a unique situation without parallel in other industries.

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EDUCATION AND ARCHITECTURE

An education is that process which so enriches the mind of the student that he develops “useful” qualities, qualities which are marketable in the society and, therefore, assure the rewards of food, clothing and shelter to the possessor—or is an education rather that training and those experiences which provide the individual with insights to know the possibilities of his own humanity? Are new standards and new definitions for “success” required? Shall we throw away the report card and instead encourage the student to make his own self-evaluation, to ask “Who am I?”

Our country is now showing its strength in its ability to change and to discuss change and also its strength in its ability to evaluate and resist change. The old society disappears, a new society emerges. The schools as the repositories of culture and thus the cause of change are themselves changing. They are embarking on an earnest quest to provide enlightenment and strength for the individual which is causing rethinking of the whole architecture of education and fundamental changes in its housing.

Change is particularly evident at the elementary levels of education and there in the years between 8 and 12—the years of the third, fourth, fifth and sixth grades when there were grades. It is reflected in new schools with “free” interiors, in which the normal activities of as many as 400 or 500 children and conducted in one open space with the isolation of only a few activities, such as organized play and athletics, drama and instrumental music. Only selected, motivated teachers are successful in this environment at first and they organize into teams, indeed as architects and engineers do, to formulate learning plans for their charges. Much greater reliance is placed on the child who is free to visit other areas in his large environment and to take responsibility for himself to a great extent. The school becomes “ungraded,” the student is not placed in a “grade” but rather his abilities and needs determine his relationship to the school.

Another trend in the elementary school is the increasing diversity and depth of the educational experience. Opportunities are provided, for example, for much more sophisticated music and science programs than formerly and specialists in various disciplines are brought into the schools as needed, for work in speech and reading development. Thus the new elementary school has special rooms or areas for these activities. In many districts existing elementary schools are being remodeled or enlarged to provide science rooms, crafts’ areas, instrumental and choral rooms and special areas for new types of staff. Other districts are considering new schools, “middle” schools, combining the children from the last two years of elementary school grades “7” and “8,” with those from the first two years of high school and providing special facilities for all four grades—in effect permitting students to accelerate their development by two years.

The secondary school is being involved in dramatic changes. Most significant of these is the abandonment of the classic teacher-class confrontations. No longer in these schools is a teacher assigned say, ninth grade English and five classes of thirty students whom she sees for 55 minutes each day, five times a week. Instead, the teacher becomes a partner in an instructional team established within this department and is given various tasks to fulfill. He may spend part of his day as a leader in the English resource center (a room specially equipped for independent study) working with individual students, another time with a small group of 15 students in a 40-minute seminar class discussing the material which he may have helped a staff group present in a previous 20-minute period to a group of 450 students. Greater variety for the instructors, a chance to know a number of students well and opportunity to work creatively with other staff members are some of the advantages of this method. A differentiated staff becomes possible, not all staff will be teachers, not all teachers will have the same levels of education, ability or experience.

The students are also freed by these new techniques. They may spend as much as 50 percent of their time on their own in independent study or activities. The sixty-minute bell—the drummer to which they marched—is stilled. Rather the day is broken into much smaller units (14 or 20 minutes usually) which are called “mods” (from modules, of course) which are used singly or in larger units of up to several hours, the latter being a desirable length of time for a laboratory experiment requiring long set-up, running and clean-up time. The shorter unit is desirable for intense large group presentations.

The new secondary school requires a whole new group of spaces not generally available in existing buildings. These include staff planning centers related to departmental resource centers, seminar rooms for 15 to 20 students, laboratories where specially trained instructors can handle all lab work separately from lectures and in groups of as many as 100 and an auditorium for 125 to as many as 450 specially equipped for visual (TV, motion picture, overhead projector, slides, charts and demonstrations) and verbal presentations. Libraries have become material resource centers by the integration of print (books) and non-print materials combined with the availability of machines to recall or display stored data of various kinds (as micro-film).

At the elementary school level changes are most apparent and generally easiest to achieve. They

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SYSTEMS/COMPUTER/DESIGN

There are three areas which reflect my beliefs regarding the potential of the computer to the design professions.

One, a professional belief that the computer is an essential design tool which must be incorporated into the design professions in order for the design solutions the professions are involved with to be fully responsive to the problem.

Two, a practical belief that the use of the computer will involve the sharing of software through co-operative service organizations. The Minnesota Society of Architects is attempting to do this by establishing a non-profit foundation that will act as a Regional Service Bureau to coordinate all computer programs and time-sharing activities for the design professions in this area.

Three, a personal belief that the computer is dependent upon a design process that utilizes systems analysis as a design approach and the multi-disciplinary team as the creative group.

All of the above are interactive and dependent upon each other. A partial response to any of them will lead to a lesser result.

I believe that the computer can become most effective as a design tool during the design process by analyzing and preparing "model solutions" of alternative design proposals. These solutions can allow the designer to study the effects of the alternatives which will lead to a rational decision. The design process which utilizes the computer will result in a maximum response to the requirements of the problem.

The traditional design approach which stresses the intuitive response on the part of the designer is no longer effective for the kinds of complex environmental problems which the design professions are going to be faced with. The agonizing search for an appropriate form for a building project will have to give way to a new form of problem solving. This does not mean that a good design is not going to require a lot of hard work—it means that the uncertainty of understanding the problem will be eliminated and the designer can concentrate on that part of the problem which is most meaningful—the aesthetic.

The traditional building project, a single building with a clearly defined use) will still remain. For those organizations that want to chart a new direction, however, there is a tremendous design opportunity in the gigantic social and physical design projects in the coming years. The movement toward systems building/building systems as a means of controlling the building process is indicative of the potential involvement in complex building problems.

In order for a design organization to prepare itself to incorporate the computer into its problem solving procedures it is necessary to recognize several aspects.

First of all it is necessary to develop a proper attitude toward the computer. This attitude is not dependent upon a correspondence course in computer programming from Harvard but it does require a great deal of continuous research about the computer and the variety of its uses. Some of its potential applications are specifications, estimating, accounting, networking, building information systems and the newest development—interactive digital graphics by which the designer communicates with the computer through a light pen. This attitude is focused toward the desire to become involved in problem analysis as well as design solutions and implementation.

Second, the recognition that the types of environmental problems are so complex and of such a nature that no single professional discipline (even the so called "super" discipline—environmentalism) is capable of grasping all of the ramifications of the problem. This recognition must lead to the formation of interdisciplinary teams through which the various disciplines operate as equals. This is in sharp contrast to the pyramidal organization of large architectural, planning and engineering firms in which the team members play subservient roles to the architect.

Third, and perhaps most important, is the development of a new design process within the organization and the expansion of what has been traditionally called the "designer."

This new design process is becoming increasingly known and talked about as the systems approach. Basically, the systems approach is the application of rational planning procedures with alternative solutions to provide the basis for a preferred solution to a determined problem. This procedure utilizes the principles of feedback during the design process and involves the potential "users" of the project at the beginning rather than waiting until a building is completed to see if the inhabitants are satisfied.

The systems approach to the design process will not sound like anything new to the architects who have been managing large organizations over the years. These managers, however, have been attempting to incorporate rational procedures in a sequential process, thereby forcing the "designers" to be involved only during the traditional design phase. The systems approach, on the other hand, opens up the design process to simultaneous involvement of all facets of the problem (including implementation). With the systems approach the "designer" becomes an interdisciplinary team responsible for the entire project from beginning to end.

I believe that the 1970's can be one of the most exciting and important periods in the entire history of the architectural profession for those architects

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COMMERCIAL & INDUSTRIAL ARCHITECTURE

In a recently published report by the F. W. Dodge Company a tabulation was made of the actual 1967 costs of non-residential building construction and an estimate was made for 1975 and 1980. It is interesting to note that for each of these periods approximately 50% of all the money spent on non-residential buildings was in the commercial and industrial building types. The estimates for construction in these two areas for 1975 and 1980 were 20.4 billion dollars and 28 billion dollars, respectively.

This massive annual investment by industry has one primary, fundamental objective—to improve or maintain a competitive position to make a profit.

The investment figures quoted above are for construction. It would, we think, be reasonable to assume that an equal or greater expenditure will also be made to provide manufacturing and material handling equipment for these facilities.

If this competitive position is to be maintained and a profit made, a myriad of questions should be asked and, hopefully, answered before significant investments are committed.

Regarding Building Site:
Where should we locate?
What is the labor market?
What is the tax structure of the community?
What are the soil conditions?
What are the availability and sizes of utilities?
How much can we afford to spend for the site and site development?

Regarding Financing:
Should we lease or own?
What type of financing is best and available?
What is the economic feasibility—dollars invested vs. return?
Will the building design or location influence the financing commitment?
How should we arrange for interim financing?
Can the facility ownership be structured to provide the greatest return and take advantage of available tax shelters?

Regarding the Facility:
Is image important and if so, how important?
Should we design to avoid maintenance at greater initial cost or accept high maintenance to decrease capital investment?
How do insurance rates on buildings and contents vary with construction systems?
Should we install sprinklers?
How important is security to avoid internal and external theft?
Should eventual sale or lease of the facility be considered in design?
Should we build for expansion or contraction of the facility?
What time schedule will allow us to most easily phase into the new facility?

Regarding Control:

Before designing a new facility should we analyze our control systems since they will have a direct effect on the kind of facility built, such as administrative control, inventory control, production control, warehousing control, material handling control, cost control, and merchandising control.

The average industrialist ready to embark on a construction program is for the most part incapable of providing reasonable answers to most, if any, of the above and yet these answers are essential to a successful design. The assemblage of this kind of technical information normally requires:

A banker
A real estate agent and/or appraiser
A market analyst
A soil engineer
An accountant
A mortgage broker
An insurance agent or consultant
A material handling consultant
The company's control heads
And, the architect

Isn't it interesting to note that to this stage the contractor has not entered into the analysis and yet, as a practical matter, he is very often the first to be consulted? The only reason for this can be that perhaps he has made himself aware of and/or allied himself with the above experts.

Normally the industrialist who is faced with this dilemma is going to seek someone who can solve most, if not all, of these problems for him. If the architect is to be a leader and a strong force in this business, making the contribution that only he can, he must weave these essentials into the fabric of his service. This may be through staff, or by association with various disciplines. At the very least the architect should be aware of the essentials of each area.

If total service is a worthwhile objective (we believe it is) then total responsibility is the obligation we must assume. This is the vehicle that can elevate the architectural profession into the same high regard, level of achievement and respect that it attained when the architect was the master builder.

Gerald H. Buetow, AIA
PROJECTIONS FOR LANDSCAPE DESIGN

1. Work Projections for work in landscape design must be extremely optimistic at a time when a serious awareness, if not real concern, for urban and natural environment, is beginning to have widespread acceptance.

Quantity: Although competitors do not generally share the specifics of their workload and backlog, it is easy to accept the impression that the landscape design firms in this part of the country have a backlog larger than they have ever had, perhaps as much as a year's work on the average.

Quality: The scope of the individual projects and involvement of landscape design in comprehensive development projects will increase even more dramatically than has been the case in the past.

2. Trends in this day and age are probably the most reliable indicators of what won't happen. Just as the future, in general, is no simple extrapolation of the past, application and utilization of landscape design in the future will bear little resemblance to current trends. I see no straight line projection of existing conditions but rather a "shotgun" pattern of application of landscape design services to many areas and projects heretofore devoid of this design competence. Some factors:

Social innovations will have much more effect on design than technology has.

Environment must be designed to accommodate constant change rather than some utopian ideal.

Professionalization (professional acceptance) will be common.

3. Aesthetics in landscape design in the Upper Midwest really defies description. For many reasons too involved to point out here, it is extremely difficult to say that there is any serious "form" to landscape design in this part of the country. Some observations:

Concern for environment and aesthetics will probably lead to a more "natural" landscape design approach.

Public involvement in both public and private development processes may create more ugliness and visual pollution than the profit-motivated, technologically-based developments of the past 50 years.

If the designer is going to influence this "partici-

patory ecology" he is going to have to be much more effective in his relationships with people than he has ever been.

4. The Profession—what should it be doing? Commitment, unification, upgrading and innovation sum it up.

Commitment: Professional societies must stand somewhere, for something. Professional disassociation from the issues of the day will not only be unpopular in the future, it will be untenable.

Unification: None of the individual design professions will survive to seriously influence environmental development on its own today, and even more so in the future.

Upgrading: Upgrade competence of each of the design professions through better education apprenticeship, serious and earnest one-to-one relationships with practicing designers and an overt commitment to meaningful service to society rather than to the institutions of society and its economic base.

Innovation: Support and create serious research beyond the product-oriented research of the material suppliers. Innovation requires research.

5. Problems are part of the justification for our existence as suppliers of professional services. No one can imagine all the problems that the future holds but it is possible that they can be summarized under two broad, but closely related, classifications.

First Role. What does the profession, what do we as individual professionals want to be? There must be some kind of consensuses within the profession and hopefully a fantastic diversification among the professionals.

Second, an understanding of, and a workable approach to, interpersonal relationships. Solving the first problem is perhaps the most effective step toward solving the second.

SUMMARY

Future generations will hold us responsible for what we do or don't do to their environment. I believe that they will be much more inclined to forgive us for the errors we make in trying than they will to accept the fact that we really didn't try at all.

Donald G. Brauer, P.E.
INSTITUTIONS FOR HEALTH CARE

The United States has actually never provided adequate facilities in any category of our health care requirements. Because of these total accumulated deficiencies, and the now burgeoning population, the present and future needs for physical plant for health care requirements are astronomical. They are specific and overwhelming. Whether or when they are ever met will definitely depend upon the attitude of the federal government in providing adequate financing.

With a similar critical need now for low-cost housing, greatly expanded educational plant, center city reconstruction and all types of pollution control, to state a few demands for federal money, it is obvious that our government will have to set up some intelligent priorities if the job is ever going to be accomplished, even partially, and soon enough. There are not unlimited dollars, so providing the desperately needed health care facilities will, in my opinion, require a drastic reduction in such categories as military spending, ABM, space exploration, SST, etc. If these priorities are not rearranged, I predict ever-increasing social chaos.

There are several important trends taking place in health care facilities. Most of them are dictated by economics. The fantastic rate of increase in the cost of health care results in the requirement for utmost efficiency in planning, so that all the economies of our technical know-how can be taken advantage of.

One of the important trends is separate provision for long-term and ambulatory care patients who are now overloading acute hospitals and who do not need expensive acute care facilities.

Another current trend is the desire to build these facilities of flexible construction so that modification can be made to take care of the rapidly changing procedures in various types of care. Most, if not all, of the provisions for flexibility, i.e., long span, deep suspended ceilings, complex mechanical systems, etc., add to the cost of construction. It is doubtful whether these costs are justified in any of the areas except the ancillary services.

Another trend is that, because of the increasing shortage and high cost of doctors, out-patient departments and clinics are expanding very rapidly. These, plus the government mortgages on private clinics, can provide a great stimulus to what Ellerbe considers a very efficient and economical diagnostic medical procedure for all our citizens.

Design fads should be avoided because these are invariably expensive and, with the crying needs for money in all the other areas, the additional costs for this purpose are not justified. The current trend in the use of bold concrete structures, because of the cost, inflexibility and fortress like appearance, are inappropriate.

Rather than spend money on architectural frills, or even embellishments, for the sake of aesthetics it is, in Ellerbe's opinion, more advisable to spend these funds on improved mechanical systems. Mechanical installations are operating units, get out of adjustment and wear out, thus causing untold inconvenience, annoyance and expense for the client. Here the best installations are none too good. The same reasoning can, of course, be applied to many materials and appurtenances subject to wear.

Many types of health care facilities are domiciliary. The patient, if affected by environment and aesthetics, is logically influenced most by the interior treatment. Therefore, occupied spaces should require major architectural attention. Pleasant community environment is, of course, highly desirable but is secondary to the atmosphere for the patient within the structure.

Planning should be organic—efficient planning for functional proficiency. Buildings play an important, but secondary role, in health problems. Nurses, doctors, technicians, attendants and scientific equipment play the key roles in all types of diagnosis and patient care. The Ellerbe philosophy is, therefore, to plan these buildings so that each of the types of attendants can execute his duties with a minimum amount of effort, time and so dollars, which in most instances means walking distances.

As an example, if a bed in a private room is one foot farther from the door than necessary, the extra cost of travel required would be calculated somewhat as follows:

In and out, two times the additional distance per trip, times the number of trips for all classes of personnel, times the number of patients per floor, times the number of floors, times the days per year, times the average pay rate. Extra length of corridors is more critical because the number of people making trips is greater. The figures add up to a substantial number of dollars!

Many individual health oriented facilities are expanding rapidly. Planning, therefore, for expansion is paramount. The easiest and most logical method of expanding bed or diagnostic facilities is stacking them vertically, once having acquired the most efficient plan. Vertical conveyance of people and practically every type of supply can be transported mechanically and automatically more effectively than by horizontal conveyance. In addition, because of the shortage of land and its increasing costs, vertical rather than horizontal planning is indicated.

Architects desiring to engage in planning health facilities should study in great depth the various types of requirements, which are quite detailed and complicated. Experience helps. There are no easy answers.

Thos. F. Ellerbe, FAIA
NORTHWEST ARCHITECT
INTERIOR DESIGN: THE NEW PROFESSION

Nearly 50,000 office projects, valued at 19 billion dollars, now exist due to the phenomenal growth in the contract furniture industry. Because of the volume, together with the sheer complexity of creating large scale interior environments, the interior designer, by having accepted this challenge, is beginning to be transformed from a quasi-merchant into a full-fledged designer. Unfortunately in the past both architects and the public, with good cause, have regarded the image of the interior designer to be that of a decorator dealing in high-priced clutter. Consequently interior designers are not, as a profession, accorded the same respect as architects. The prospects for change seem encouraging with a new generation of interior designers practicing today but a total professional transformation will largely depend on the future endeavors made in interior design education and professional research.

In the realm of interior design education serious steps are being taken by the Interior Design Educators' Council to achieve professionalism. The council has already produced a formal report entitled "A Critical Study of Interior Design Education." Included is a description of the skills and qualifications that should be the background of newcomers to the profession. The definition is as follows:

"A professional interior designer must be trained in basic design, in communication skills, in architectural construction with emphasis on interior detailing, in planning, in related phases of environmental design, in history and general knowledge and in interior design of all interior spaces. The designer must understand the techniques of programming, analysis of spaces and must be trained to solve problems in a functional and aesthetic way.

"The professional interior designer must be expected to reach the level of conceptual and technical proficiency that is the expected norm in related design professions, such as architecture, landscape architecture and industrial design. He must be trained and encouraged to develop breadth and depth of design solutions both for today and tomorrow. He must develop an awareness and analytical understanding of the needs of man which can be fulfilled. He must develop design sensitivity and creative abilities which are the basic tenets of the profession."

The report concludes with three proposals:

1. The formation of a National Commission on Accrediting to establish procedures for accrediting institutions giving courses in interior design.

2. The establishment of nationally agreed-upon examinations for new members of professional design associations.

3. A permanent federation of all major professional organizations in the field of interior design.

The interior design profession is almost devoid of scholarly investigation. It is only beginning to analyze its educational processes and it is not yet collaborating in an interdisciplinary research.

The profession, and especially the instructors of interior design, must develop a body of knowledge which is rationally organized but not rigid. It must have the freedom of review or enlargement or refinement.

It is also time that more interior designers assume key roles in the environmental team concept. Specialists in the design and behavioral disciplines must work as an integrated team in planning man's total environment.

This collaboration will be helped by a new generation of interior designers who are better equipped to reach the same level of proficiency that is expected in related design professions.

The new generation of interior designers is less timid about new ideas and readily accepts change. The idealism of the new generation has the practical basis of self-interest. They are willing to change the environment of the world because they have to live in it. That is why the young designers, as a rule, will concern themselves with the total environmental problems without regard to boundaries between separate disciplines of interior design, architectural design, regional planning and industrial design.

It would appear that the boundaries between the various design disciplines will probably dissolve in the near future and the professional labels give way to the environmental design team, consisting of specialists.

Del Westburg, Environmental Designer
PROSPECTS IN THE ARCHITECTURE OF RELIGION

The construction of Houses of Worship is doubtless declining from the crests of the fifties and early sixties when the nationwide total was more than a billion dollars annually—and the decline is sure to continue. Recent statistics are unavailable.

There are good reasons. The most immediate is the tight money situation. Congregations are faced with high interest rates, which swell the problems of mortgage payments, and with reluctant lending agencies. One institution which a few years ago had a great many church loans at 4½ or 5 or 6% now gets 9% plus fringe returns from other investments, and will now lend to churches only under difficult terms.

Another reason is that religious institutions are examining their affairs in the light of some other urgent pressures. One is the pressure of concern for racial and economic injustice and other illnesses of society. Changes in attitudes toward the cultic institution, ongoing changes in forms of worship and of religious education, a re-examination of the relationship between "sacred" and "secular", "holy" and "profane"—all these matters find religious institutions in flux and are occupying the attention of leadership so intensely that the will and even the ability to focus on architectural matters is relatively weak.

This is not necessarily bad; the ability of the institutions to accomplish charitable objectives is only partly dependent on the provision of special shelters called churches and temples. Furthermore, the character of the religious buildings which are being built is moving in the direction of humane and charitable buildings because of these pressures and away from what is called "triumphalism." Triumphalism in architecture is the self-assertion of an institution, an attempt to overpower, mystify or otherwise manipulate persons by impact rather than love. It is no worse in a church than in a commercial building or a political structure perhaps, but it is not appropriate to religious people. (Triumphalism has not yet disappeared, however.)

Two or three valuable trends are apparent. One is the move toward renewal of existing buildings. Not restoration, but renewal. There are numerous churches which are structurally sound and are susceptible to changes which honor their ancient reality and at the same time accommodate them to changing and flexible forms of the celebration and expression of faith. This is not always possible but architects will find the problem demanding and rewarding.

Another trend reflects ecumenical interest and finds erstwhile separated congregations either merging or discovering ways of sharing spaces. Just as important are the possibilities now being explored in scattered places through which some of the so-called "secular" enterprises of our communities can find themselves accommodated in the same structures that house the activities, cultic or otherwise, of the religious institutions. These multipurpose spaces or buildings only function well when they omit all or most of the ecclesiastical devices which have accrued in history; they tend to demonstrate that the architecture of religion does not really depend on superficial patterns and devices but on the qualities of integrity, humaneness, vitality and beauty which are the virtues of good architecture generally.

Multi-purpose spaces within parish structures are appearing more and more as a result of budgetary necessity and as an echo of what is happening in public schools. Most building committees consider that cooling as well as heating is appropriate even in our climate.

Pipe organ companies are busy despite the fact that guitars and other instruments are more and more used in the cultic room. Pews are giving way to chairs for the sake of flexibility and this assumes flat floors. Distinctions between sanctuary or chancel and nave are disappearing with the recognition that worship is a participatory and common event. Railroad train seating arrangements, because they fail to support the sense of community, are passing; as is axial symmetry itself, with its implications of formality and rigid ceremonialism. Pulpits, as lofty citadels from which Authority can harangue the general body, are also vanishing; we trust less and less the Authority of institution, of formal education, of official position and respond instead to personal charisma. Communion rails are being omitted as a response to an emphasis on worship as celebration rather than a subjective piety. Design embellishments which partake of whimsy or triviality have always been the bane of the religious building; when congregations are alert and in pain because their integrity and viability is under general scrutiny, architecture must be immensely serious.

It is clear that rule books and conventions can no longer be trusted at all. Anyone who ventures into the design of religious buildings needs to discipline himself to rigorous study and thought, because the old will no longer do at all and the perils of freedom are many.

E. A. Sovik, FAIA
A SUMMING-UP

Several weeks ago I spoke at The Robert Morris Associates' convention. This is an association composed of the credit officers from the commercial banking industry in the United States. Their research and the research projections of the construction industry anticipate an enormous demand for construction in the future. This demand is based upon population growth, upon the increasing sophistication of buildings and upon the demand for upgraded shelter, urban renewal, highway construction, etc.

The gross construction volume during 1969 will approximate $65 billion. The annual construction volume in 1980 will approximate $165 billion. In my language, this is 165 thousand million dollars. It is my opinion that the construction industry, in its present context, is incapable of expanding to meet that demand. The construction industry cannot continue in its present form, failing to serve the public demand. All future projections, therefore, must relate to this overriding incapability of the industry.

Will the industry change? How will the industry change? Will the building codes' restrictions on new techniques and modern methods destroy the industry in its present form? Will the unions respond creatively to the demands for new processes, new alignments of trade, greater industrialization of processes, etc.?

The economists guiding the federal government are aware of the bottleneck in the construction industry and their advice has committed the federal government to research in the areas of systems as an alternate construction process. If airplanes six stories high and covering almost a square block can be assembled on a systems basis, why can't the same approach solve the construction industry bottleneck? A multi-million dollar research grant has been made to the aeronautical industry and, for the first time in history, the construction industry will be confronted with a challenging alternative.

This does not suggest that the architects, contractors, subcontractors, etc., become obsolete. It does suggest, however, that the relationships will change and that growth and invention in the construction industry will be drawn magnetically toward the efficiency of the systems approach as developed by the highly innovative aeronautical industry.

The first conclusion is obviously that our profession should be aware and should understand the social and economic forces which are now demanding change. Secondly, the architectural profession must take a creative attitude toward the future and become a part of the innovative process, whether this be within the systems development area as a captive professional in an industrial plant or within his local community polarizing the components of the industry in workable systems methods which improve efficiency and mechanization to meet the demands of our system.

What does this mean to our profession in Minnesota in 1980? What kind of buildings will we be designing at that time? Public housing may leave the profession just as single-family dwellings have abdicated to large development corporations. There is always the temptation to play God and know exactly how it's going to be.

Mercifully, the human being remains relatively static in his demands for space, air, warmth, etc. We could build then upon his spatial requirements and project more flexibility, more comfort—moving toward a totally ideal physical environment. When the individual encloses himself in an automobile, he violates all historical space requirements—and here even the experts are baffled. New York City is essentially unworkable. If the automobile is to become an essential part of the human being, then the greatest change in the future will reflect society's capacity to store and provide space for the movement of the vehicle. Beyond that, the human being at play or rest or monitoring a lecture or enjoying a concert or a play will continue to act and require much the same format that has historically governed his capacity to see and hear. The framework of the spaces, however, may well seek out greater efficiency through modular processes, industrial efficiencies, etc.

The systems approach will be of little help in the structure and volumes of large public buildings with specific specialized functions; however, the systems approach may be of great value in organizing the mechanical and electrical equipment in a building. These services often cost more than the structural or general contract on a building.

Is it possible to organize both the mechanical and electrical raceways into unitized systems with plug-in connections rather than manually-made connections? Is it possible to unitize lighting and ventilation controls, reducing the handwork appreciably? This, it seems to me, is the area in which the greatest revolution will occur. It may not be evident to the consumer except in the speed of construction and lower costs. An industrywide revolution in standard components will save time and detailing and will eliminate special details and custom-made techniques. The effects of this revolution would apply uniformly to almost any construction in the future.

Robert G. Cerny, FAIA
Housing
(Continued from Page 5)

Recently HUD has shown a great interest in this type of construction by enacting Operation Breakthrough. This is geared to manufactured units as a plan for solving the housing crisis. I don’t believe the architect has to look upon this as any threat to his profession if he will take advantage of the opportunity, which opens many exciting possibilities to aesthetic design.

Architects today should accept the challenge put to them by developers, contractors and, in some cases, the government. He should accept that role of leadership which is so badly lacking in the field of housing and through his interests and talents and experience he should provide for a better environment and physical comfort for those Americans who desperately need them. He should become familiar with the programs for housing provided for by the federal government so he might direct other interested groups in the production of housing. Recently the Minneapolis Chapter of the AIA assumed that leadership and voted as a chapter to undertake the planning and construction of housing. This is the first venture of its kind in the nation.

Poor and inadequate housing leads to the deterioration of the human spirit, which result in anger and frustration that reaches out and touches the entire community and results in civil disorders and crime. The architect, through his efforts and interests, can be a major factor in the correction of this situation.

Donald E., Hustad, AIA

Education
(Continued from Page 6)

are easiest because the elementary school, choice is only one story and, therefore, adapts more easily than multi-story buildings. The fire marshal has had to rethink his ideas about fire safety and exits as room sizes have soared from the conventional 900-square-foot classroom to 25- to 30-thousand-square-foot areas as these spaces are formed of structural bays as large as economically possible, perhaps 40’ x 40’, a far cry from the 12’ x 24’ bay of the 1930’s or the 15’ x 30’ bay of recent years. The acoustical problems of open space are, of course, profound. An attempt is made to eliminate noise before it happens and carpet is particularly helpful here; it is certainly the most desired floor covering. “Soft” walls and ceilings are indicated. However, the murmur of many students’ voices combined with the bustle of their movements and activities provides a general background level that masks many noises and seems to provide an acceptable acoustical environment.

Control of the thermal environment is being accepted as desirable at all times. The first cost of air conditioning, perhaps three to four percent of the total building cost, is no longer considered reason to reject it, particularly when, as can be demonstrated, other savings are possible to offset it, such as reduced window area, more compact plans. Adequate humidity control still eludes us, not because of the cost of the control itself but rather the cost of dealing with the problems that adequate relative humidity levels give at places where condensation can occur—at windows, walls, doors and attics or similar presently unventilated spaces. Perhaps achievement of adequate relative humidity levels will become the new educational topic about the health problems that attend when they are not achieved may lead to adoption of adequate standards.

Equipment in schools is becoming increasingly sophisticated. Television systems, complete with booster and tall antennae, are being installed in most schools where a signal of quality can be obtained. Many will have their own television cameras, video-tape recorders and projectors, perhaps, at the secondary level, with their own studio and control rooms. Intercom systems include public address speakers, internal telephone systems and program consoles which can route signals, either video or audio, to any teaching or learning station.

The visual problems of the open space are proving difficult to handle. The new, large open room is defined by a sky of lights at the ceiling and a sea of carpet at the floor. Even where these elements have been given particular care, the environment within may be a chaos, perhaps of pink and pea-green plastic desk tops, gray double-pedestal instructors’ desks and “walnut” plastic laminate covered cases (the ultimate degradation, a vinyl painted to resemble the wood of your choice is now becoming popular), all as selected from the unrelated wares of the various low bidders. The room is unhappy. Equipment selection by specialists with careful coordination of color, shape and texture is required.

A more fundamental problem is the educational client’s wish for “flexible” space (he really means adaptable), which seems to be leading toward the anonymous architectural character of the commercial rental office building where one can buy a slice of space of any size, making far more difficult the creation of desirable environmental character in the building. Schools at the elementary and secondary level have rarely been successful in this regard, of course, and few schools are given awards for architectural merit (although the world is full of awards of other types). Although it is easy to seek reasons for this outside the architectural profession, surely one reason is the out-moded method of financing buildings for elementary and secondary education—the local bond referendum—during which the number of discussions of the cost per square foot of construction far exceed those which ask how well and for what purpose shelter is being provided for the children. Adequate financial support of the educational enterprise must await a vast change in our cultural values.

As our culture changes, and in spite of all repressions it is changing, we may cease to measure its value in terms of the Gross National Product and begin to measure it in terms of the quality of the life which its members enjoy. This change is being recommended most heartily by the most vital and concerned members of our society, the young men and women seeking to enter it. As their efforts gain success and their organizations to accept the challenge of environmental problems, we will become increasingly aware of the need for “education” and its continuance throughout life. This redirection of our national goals might possibly result in our becoming a nation which sees as its reason for existence the creation of an environment in which each member is encouraged, is able and wishes to know as much about himself and his relation to others as is possible. Education and enlightenment would be the nation’s business and its gross national product would be measured in human values. The years that follow will contribute to show the slow and hesitant unfolding of this idea.

Richard Hammel, AIA

Computers
(Continued from Page 7)

who are willing to prepare themselves and their organizations to accept the challenge of environmental problems.

I also believe that this willingness will result in a new kind of design office. I think that it will be very difficult for existing organizations to adjust internally to these new circumstances and thus the emergence of new offices will be necessary for implementation of the new ideas. This, of course, will be very exciting for the younger architects and students who will be entering the profession over the next ten years.

The criticism that the established architects received from the students at the Minnesota Society of Architects’ Awards Banquet is witness to the attitudes that are emerging. These problems which are willing to move in this direction will truly be rewarded for their efforts.

Duane Thorbeck, AIA
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110. Morgenstem, Stanius & Thorsen, Inc.
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114A. Northern States Power Co.
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117. Patch & Erickson, Inc.
2801 Wayzata Blvd. (374-3490)
Minneapolis 55405
118. J. Calder Pepps
2427 E. Lake of Isles Blvd. (377-3201)
Minneapolis 55405

January, 1970
160. Times Annex Architects
63 S. Fourth St. (339-6834)
Minneapolis 55401

161. Toltz, King, Duvall, Anderson &
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St. Paul 55101

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163. Troossen, Wright, Prokasky, Inc.
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