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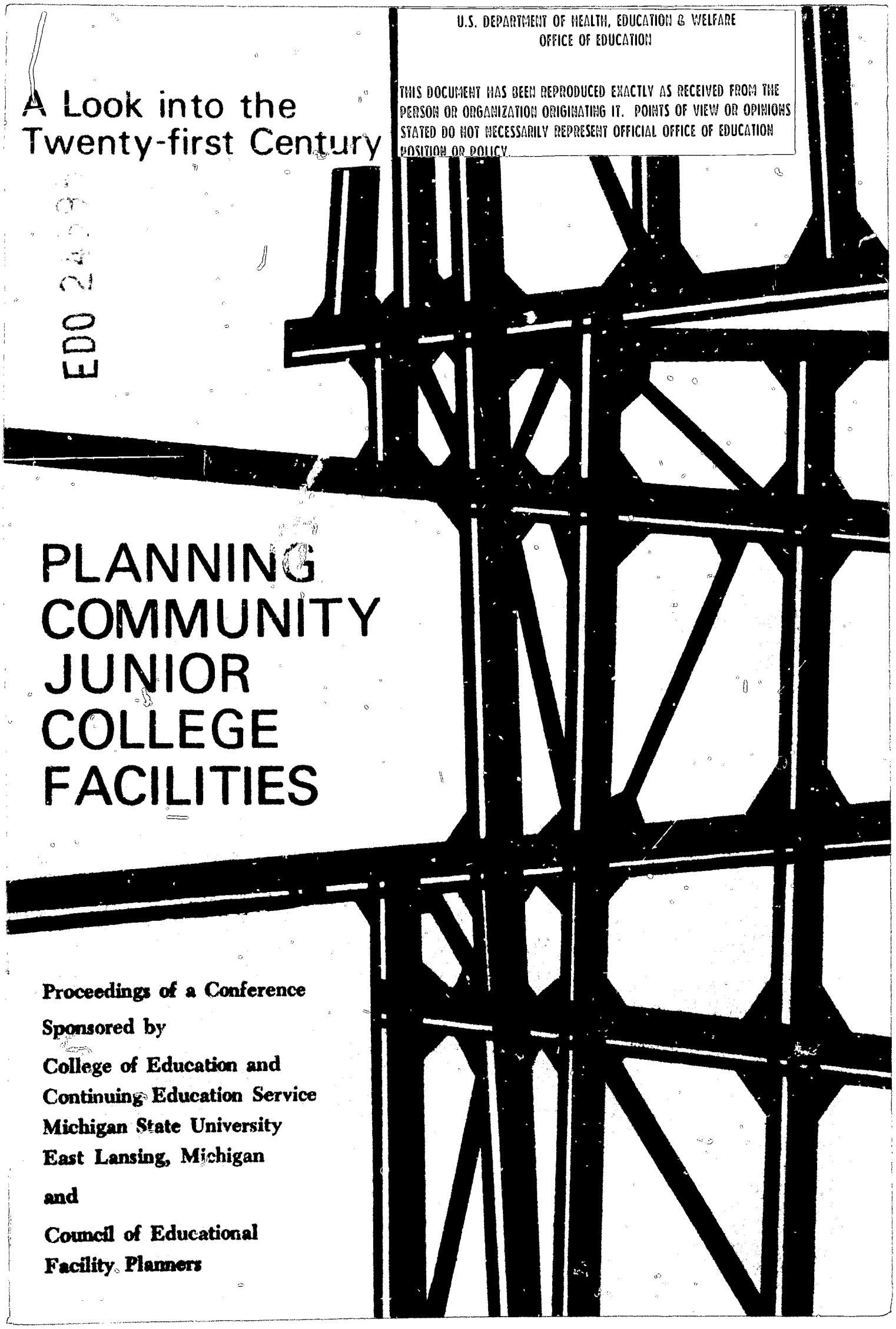
Conferees heard 16 papers dealing with the improvement of the planning process for community junior college facilities. The conference was organized around the theme: "A Look into the Twenty-First Century", and all contributors were concerned with planning facilities able to absorb the dynamic expansion and growth projected for the nation's community colleges. Topics included site selection, implication of educational innovation for facility planning, community involvement in the planning process, form generators in college design, remodeling vs. new building, vocational-technical facilities design, systems concepts in planning, and environmental planning. Several papers included progress reports on community colleges currently in the planning stage to illustrate some of the contemporary concepts in facility planning. (MC)

A Look into the Twenty-first Century

PLANNING COMMUNITY JUNIOR COLLEGE FACILITIES



Proceedings of a Conference

Sponsored by

College of Education and
Continuing Education Service
Michigan State University
East Lansing, Michigan

and

Council of Educational
Facility Planners

PLANNING COMMUNITY JUNIOR COLLEGE FACILITIES

A Look into the Twenty-first Century

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TABLE OF CONTENTS

	Page
Acknowledgements	v
Contributing Authors	vii
Foreword	ix
THE CRUCIAL YEARS ARE NOW, Harold B. Gores	1
PLANNING: THE TEAM AND THE PROCESSES, Bob H. Reed	9
SETTING YOUR SITES FOR CENTURY 21, Raymond C. Schneider	15
THE PLANNING OF EDUCATIONAL CHANGE, Donald J. Leu	29
COMMUNITY COLLEGE CAMPUS PLANNING IN ACTION:1 Charles E. Chapman	41
COMMUNITY COLLEGE CAMPUS PLANNING IN ACTION:2 Clifford E. Erickson	47
TRENDS AND INNOVATIONS, James D. MacConnell	53
COMMUNICATION: SOME MISTAKEN ASSUMPTIONS, Gerald Miller	57
THE PLANNING ENVIRONMENT AND THE COMMUNITY COLLEGE, Ray L. Birdwhistell	65
INTRODUCTION TO PANEL, John L. Cameron	75
NEW CONCEPTS IN CAMPUS DEVELOPMENT, John W. McLeod	79
THE FORM GENERATORS IN COLLEGE DESIGN, C. William Brubaker	89
TO REMODEL OR TO BUILD NEW, Richard Tonigan	103
WHAT'S NEW IN VOCATIONAL-TECHNICAL EDUCATION FACILITIES? Charles E. Trotter, Jr.	111
NEW CONCEPTS IN AREA VOCATIONAL-TECHNICAL SCHOOLS, Michael Russo	121
SIGNIFICANT ADVANCES IN EDUCATIONAL SYSTEM DEVELOPMENT, Norton F. Kristy	127
APPENDIX: List of Participants	135

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In November, 1967, the Council of Educational Facility Planners (formerly the National Council on Schoolhouse Construction) and the College of Education and Continuing Education Service of Michigan State University co-sponsored a four-day conference devoted to improving the planning process for community junior college facilities. Presentations were prepared and presented by 16 selected individuals.

This publication was the result of the generous assistance on the part of many individuals, organizations and institutions. We are indebted to the 15 authors, whose contributions made this publication possible. The 225 conference participants included professors, community junior college administrators and members of boards of trustees, architects, educational facility planners, U.S. Office of Education specialists, American Association of Junior College personnel and students of educational administration and higher education.

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FOREWORD

There are many obvious reasons why this Community Junior College Facilities Planning Conference was planned and initiated. These facts will become more impressive as the reader of this book reviews the presentations that have developed the theme: "A Look Into The Twenty-first Century."

Since 1952, the expansion and growth of community colleges have been most dynamic. More than 250 new community colleges have been established since that time, bringing the total by 1967 to well over 800 colleges. Between 1955 and the early 1960's, institutions were established at the rate of about 30 each year, and the years 1965 and 1966 saw the opening of 50 annually. During 1967, there were 63 new institutions established. This rate will continue, as communities and states seek to put two years of college within the commuting and financial reach of all the people.

Total enrollments are now over one and one-half million students. The numbers have increased by more than 100,000 each year during the past six-year period, and by 1970, the community colleges will be enrolling more than two million students.

More than 10 years ago, James B. Conant wrote that it would not be inconsistent with our ideal of equal educational opportunity if local two-year colleges were to enroll as many as half of the young people who wished to engage in formal studies beyond high school.[1] In 1967, California junior colleges are enrolling far more than half of all students who begin college; nationally, one in three are beginning in the two-year college.

Usually, community colleges have started in unused high school buildings or other temporary facilities. The lack of buildings and equipment especially designed for college work tended to inhibit the role of these institutions and hindered their proper development.

Today, many institutions, because of the urgency of educational needs, may start in temporary facilities; they do not stay long in such makeshift facilities. In many areas, two and three campuses are being built in the same district, as the colleges seek to put classrooms and the best teaching equipment within reach of the populations they serve.

Facilities are now being planned and built for new community colleges that are modern in design, with maximum utility built in. Most facilities now being constructed include modern teaching equipment at less cost than would be required to remodel an older structure.

The U. S. Office of Education estimated that between 1960 and 1965, community colleges would spend $500 million for new facilities. That was a conservative figure; more than $212 million was made available for Cali-

1. James B. Conant, *The Citadel of Learning*, Yale University Press, New Haven, Connecticut, 1956, p. 70.

fornia junior colleges, alone, during that period. From 1965 to 1970, experts estimate that $1.5 billion will be spent on construction.

Ten years from now, an increasing number of citizens in most of the cities throughout the country will have some contact with their local community colleges. Most states will have put a community college within commuting distance of a majority of their citizens. In fact, in many communities, the college will be the cultural center for citizen interests and activities.

Because of the accepted concept of the comprehensive community college and the great importance of adequate facilities to carry out the functions and purposes of this institution, this conference has been most timely. It is hoped that the contributions made by the outstanding participants in the conference will have a valuable and far-reaching effect on the total community college movement in the United States.

THE CRUCIAL YEARS ARE NOW

Harold B. Gores

As President of the Educational Facilities Laboratory since 1958, Dr. Gores has exerted major influence upon educators and architects in the area of educational facilities. The incentive for detailed planning, for creative thinking – planning and designing, and the plea for experimentation – the break from tradition has been voiced by Dr. Gores during the past decade. In this keynote address, the community junior college planner is reminded of the unique opportunities in this emerging and challenging area of education.

I am delighted to be in the presence of so many who care about the liveliest new art form in higher education – the community college. Indeed you have, for a time, the field of invention in education all to yourselves, challenged only by two emerging developments in lower education – the middle school, which is beginning to replace the junior high school in many communities, and schools for the very young, which are coming fast now that the nation has discovered that four-year-olds are educable.

But in higher education today the community college is where the action is. Arising at the rate of one a week, the American community college is bursting on the scene with an exciting variety of campuses. In appearance they range from sprawling, low-slung, campground complexes, sometimes indistinguishable from other factories in the fields, to suburban enclaves whose manicured lawns and leaf-strewn walks smack of the neighboring country club, to the downtown, high-rise, high-density, vertical campus – sometimes a converted department store to which the avid scholars of the inner city flock by bus or subway.

And that is the genius of a community college: it responds to life like it is, where it is. Lacking the arrogance which older institutions are permitted to display – the American university imported from Germany, the American college imported from England, the American elementary school first established in 1641 (and later organized along lines much admired by Horace Mann on his visit to Prussia), the American high school whose early ancestor was the Boston Latin School established in 1635 – the community college as a movement has seldom attempted to insert a foreign object into the culture it proposes to serve. By and large, community colleges have taken on the protective coloration of the places and the people they serve. Unlike many universities which of necessity are islands in their culture (any similarity between Harvard and the City of Cambridge, Massachusetts, or Yale and New Haven, living or dead, is purely coincidental), the community college has sought to be indigenous, local, and relevant to what people want; where they want it; and when they want it.

The community college, having not yet developed an institutional ego and clear image, still responds sensitively, quickly, and without a sense of academic guilt to what the people want — day or night.

Alas, this too will pass. Sometime within the next decade the community college will have arrived at a firm definition of itself. By 1977 they will know for sure what they are — and worse, the man in ths street will know what they are, and he won't vote for a bond issue which suggests a departure from the new norm.

So enjoy your dwindling freedom while you may. This is your last chance to invent, to dream, to create the kind of institution which is unique, contemporary, and connects with its milieu. Ten years from now everyone will know what the community college is and, worst of all, you will know what it is. And forever after, until a new institution arises to obsolete it, the American economy will manufacture hundreds of community colleges identical in form and spirit. This is called The American Way.

But that is not the problem for tonight. Tonight's problem is how to get relevant institutions onto the drawing boards right now. Here are some suggestions:

1. Realize that everything is going up — wealth, the Gross National Product, population, speed of transportation, knowledge, the thirst for knowledge, the devices for conveying knowledge, everything except land. Therefore, get land. If the setting is rural, there is, of course, no great problem. If the setting is suburban, stake out now what you can against the tide of population which will increasingly engulf you as it comes swelling out of the central city. By the year 2000, when the buildings you build today will be only at half life, your suburban college is likely to be but an oasis in a ribbon city — the megalopolis.

If you are in the central city, and have no place to go but up, build in a fashion which will enable your successors someday to recoved the original equity as they move, nomad-like around the city, following the currents of population wherever they may flow. The central city, as every demographer will testify, is a changing thing. Don't build as though the central city, especially the inner city, were a finished thing. It may be finished but it certainly is not completed. So when you plan in the city, stay loose.

2. Realize that education is changing. With apologies to C. P. Snow, we are faced with two cultures and the educational revolution. Regardless of how we resolve the confrontation of the two cultures — black and white — there is an educational revolution to be dealt with.

The classroom box is busted. The ancient habit of teaching everything to a class in something called a classroom is fading away. Group-contact hours per week are declining as the individual student, freed from the indenture of the group, is found more often nowadays in the library or other locations for independent study. The ancient tools of teaching —

bell, book, and chalk – are fast giving way to ingenious devices for self-teaching. After a false start when the private sector rushed in with hardware – with machines which could talk but had nothing to say – the private sector now is bringing to education both the hardware and the programing which self-teaching requires. Ingenious devices providing vivid instruction will come upon us in an ever-mounting torrent. Within a year your students can have access to the sounds of their heritage on inexpensive tapes, smaller than a deck of cards, playable on a machine smaller than a camera, and, the librarian will be happy to know, copyable with the same ease with which Xerox copies a sheet of paper. Within two years the student may have an individual, sound, motion-picture machine, smaller than a breadbox, lighter than a toaster, cheaper than a microscope. And within five years, I am told, color film with sound will be easily and cheaply copyable on a device no larger than the coke machine yet, hopefully, not much more expensive.

When these and other devices arrive – and they will – most students will be able to get most of their information from inanimate sources – from books and the new media. When they do, the professor, freed from the burden of dispensing facts, will have more time to devote to values, and he can return to his ancient calling – philosophy – to the meaning of it all.

As the new technology becomes available in all its wondrous forms, I caution you in one respect. There is the danger that because most information-gathering can be done by machine, educators will assume that education has taken place. It will be so easy to strap the astronaut student to his electrified carrel where he absorbs information precocious to his years. We may forget that the essence of his education must still come from the stimulation of his fellows. Indeed, every now and then we hear someone say that the combined capabilities of American Tel and Tel, COMSAT, RCA, Eastman Kodak, and Xerox will obsolete the need for school and college campuses. Just connect the student wherever he is with information wherever it is banked, and he can educate himself. I suggest that he still better come to school, there to meet his fellows and professors to talk things over, for it is in the talking over that he learns to be wise rather than just smart.

And those of you who are responsible for designing the space could help if you would cease designing classrooms like kitchens and made them more like living rooms.

3. Realize the importance of environment. Because a college is three things – people, ideas, and a place, and in that order – the "place" of education tends to be depreciated. Because it isn't first, there is a reluctance even to rank it third, especially by the intellectuals. Yet there is mounting evidence that the environment of learning is an important determinant of how much gets learned. Dr. Harry Johnson, Director of Life Extension Institute, says that the environment of office workers can make a 15% difference in their productivity. I think we can safely generalize that the

same would be true for the environment of professors and students – and 15% is good interest on your money.

Moreover, many people – faculties and trustees especially – believe that capital outlay is a major consumer of the educational dollar. But consider this: the million-dollar building you build today will require a total operating budget of about $1 million every three or four years (the ratio in hospitals is two to one). If we impute a life of 60 years for the building, the cost of the building itself amounts to about 6% of the total cost of rendering the services for which the building was built in the first place. Education is mostly people, and it's people which cost money – not the bricks.

4. Look for partners. In the future it will be a rare college that can go it alone, adequately being all things to all students all the time. Even if it were possible it is wasteful to duplicate resources where they could be shared.

Especially is this true of the library, the fastest growing sector on the American campus. The simple matter of acquiring a book offers a vivid lesson in inflation. A few years ago those colleges which practiced cost accounting at a level more sophisticated than the counting of heads and seats, reported the cost of acquiring and processing a library book to be about $14. More recently there is a consensus that the cost is around $25. And one university librarian tells me that the true cost of establishing a university library from scratch is on the order of $40 a book if all costs are covered. The economics of the library, standing alone, can sink the college budget. The library's competition with the professor for money drawn from the same pot leads inevitably to some kind of sharing through the creation of networks. When such well-heeled institutions as the Harvard, Yale, and Columbia medical libraries find it necessary to connect with each other, the lesson should be clear to the rest of us.

5. Design great zones of space rather than little boxes of space. Such is the speed of change these days that the most we can do is to make sure we get out of the way of our successors. To design precisely around today's state of the art, leaving no alternative to our successors but to demolish our work and build anew, is to exhibit a selfishness and arrogance even the richest nation cannot afford. Maintain a sense of trusteeship as you design. Keep in mind that the new building is not to be regarded as the capstone of progress to date, but, instead, the framework in which, through the years, our successors will construct and reconstruct what they want while wishing we had had the wit to provide it in the first place.

6. Observe that the space which will be heavily used should be of high quality. We hear a great deal these days of the need for higher space utilization, and admittedly there are numerous colleges where conspicuous consumption of space is a continuous drain on their resources. But if you are planning to run a tight ship in which space utilization approaches, say, 80%, I would offer this caution. Make sure the space is good space,

especially if students have to wait to get in or hurry to get out of the space; otherwise, like the molecules of air in a bottle, the institution will heat up from the collision of bodies – not actual collision, of course, but the irritating overlapping of one's territory. One of the best cooling agents for hot institutions is carpeting. Combine carpeting with air conditioning, with furniture that yields, with a decor which nourishes the spirit and delights the eye, with a minimum of partitions providing a sense of interior vista and expanse of territory, and your college can run both cool and full.

7. Create consortiums to build the volume of purchase. Traditionally, schools and colleges are build one at a time, a one-shot deal presided over by a President who may never have built a college, an architect whose last commission was for the administrative building of the local waterworks, a contractor who finds the specifications quite unlike the supermarket he just built (so he adds a walloping contingency fund to cover the cost of his on-the-job-training), all leading to approval for occupancy by local officials who view all buildings including colleges as places of storage. An occasional fire marshal, for example, may take a dim view of any substance more inflammable than glazed tile. To suggest that ease of egress is the key to life safety is, as Amy Lowell said, "to spit against the wind."

Yet it has been our experience at EFL that the punitive effect of building codes results mostly from lack of communication. Institutions are in the habit of planning alone, presenting public officials with the fait accompli – take it or leave it.

If you are planning buildings which depart from the conventional ceramic vault, get the public officials into the planning at its early stages. Let them see why you want to build amenity and comfort and grace into the surroundings, why tone and spirit and feelings are as important to education as is subject matter. Get them on the team where they can help. Leave them off and they can hinder.

Just as you should enlarge the circle of local planners, enlarge your purchasing volume by joining neighboring institutions which are building similar structures at the same time. Take advantage of the recent developments in modular design and industrialized components. Keep your eye on modular systems being developed in Florida, Georgia, Montreal, Toronto, the University of California, the University of Indiana, the Pittsburgh schools, and others. Both IBM and Sears Roebuck are giving serious consideration to a systems approach to building. Western Europe is well on the way toward the industrialization of the building industry. How shameful it would be if education were the last to discover and use the modular systems developed by education.

I should like now in conclusion to scatter a few shots around the infield.

1. If you are in, or contiguous to, the inner city, consider the building of a new college from the ground up as a solution of the last resort.

Move in, if possible, to existing structures, rebuilding the neighborhood as you go.

2. Again, if you are in the city, forget the ancient maxim that that site is best which is most compact. The compact site provides the least perimeter — it touches the city least. Seek the reverse by extending arms and tentacles into the neighborhoods, thus to increase your perimeter. Cities need not only good neighborhoods but good neighbors. By extending the urban site amoeba-fashion, you increase the opportunity of people to live "next to the college." This approach, carried to its logical conclusion as it will someday, will make it impossible to tell where the city stops and the college begins. And the urban college will have become what it must become — a fragment of the city. In sum, get into the neighborhood-making business.

3. Plan to provide for physical education indoors. The notion that physical education, recreation, and sports are best if conducted in the mud, the rain, the smog, or in the heat of the noonday sun derives from our agrarian past. From the standpoint of both economy and function, most any game or activity can now be better played on artificial fields indoors. Indiana State University at Terre Haute is playing football this year on a nylon field, and, because the field never has to be rested, it is being shared with four high schools. Soccer, lacrosse, field hockey are accommodated as well. The local school board had plans for building two 6,000-seat stadiums, now made unnecessary by one all-weather field. Unless a college is located in the most benign of climates you should be planning to build for tennis and other lifetime sports indoors. But I warn you that the competition of the faculty and students for night use will exceed the fervor now expressed about parking.

4. Keep your eye on the computer. Just as it can track satellites, it can track students. And no longer is there reason to cluster students in groups for most of the day because that is the cheapest way of keeping track of them. Joe Cosand, at St. Louis, master-planned three colleges by computer; MIT and Purdue are heavily committed to scheduling by computer; Duke is master-planning by computer; Evanston Township High School addition was run on computer before design. Indeed, between the computer and the new media, both student and professor will be set free to act and interact on a higher plane of relationship than was ever possible in the old institutions run by hand.

5. And last, I would say something about the anatomy of change. It is axiomatic that institutions resist change, that institutions aren't capable of changing themselves by taking thought, that change occurs only in response to outside pressures. I don't know whether this is so, but if it is it does not have to be. In dealing with your faculties — and one college president told me that if a new proposal passes the faculty the first time, it is probably 10 years overdue — ask them what they want. But before they reply, provide them with all the known options. As long as they have all the options — everything they could have, including things they may

never have heard about – you can trust their answer. Indeed, from my experience, if enough concerned people know all the options their answer in the end is likely to be more valid than the administrator's. And thus democracy can be made to work (though in some instances just barely). But it works, and it gives us the key for managing the change and making orderly the revolution into which we are swept.

And so I return to where I began: the crucial years are now! Seize upon this brief moment in time to design and construct community colleges which are neither king-size high schools nor junior editions of four-year colleges; that are, instead, new and unique art forms serving a society which itself is groping for ways to educate not only all of the children of all the people, but all of the people all of the time. For those who challenge the concept that a new institution located between the American high school and the American college is required, and suggest that the ancient arrangements will serve as well, cite the words of the German philosopher, Lichtenberg, who said a century ago, "I do not know whether if things change they will get better, but I do know that if they are to get better they must change."

PLANNING:
The Team and the Processes

Bob H. Reed

As Director of Facilities Information Service for the American Association of Junior Colleges, Mr. Reed is uniquely involved in the nation's community junior college movement. The Planning Process, as it relates to the 21st century, is approached with vivid predictions.

We are all familiar with some of the "phrases of the day" such as "NEW MEDIA" and "PROGRAMMED INSTRUCTION." If we assume that these will be the basis of education for the future, then we might make the following predictions for the 21st century.

All instruction will be pre-programmed and the ultimate medium will be by "subconscious induction" while the student sleeps. Just think how productive a person could be if he could spend all of his waking hours working instead of studying, and simply dream his education. This system of subconscious induction may not be feasible any time soon, but it is in fact being proven scientifically possible.

And since all learning resources would naturally be stored in central computers with instant remote access, a student would have only to dial up his lessons, put on his electronic night cap and go to bed to awaken the following morning with the desired knowledge forever implanted in his brain.

The obvious conclusion is that if this should come to pass, there would be no need for college facilities at all. The computerized resources centers would be the only space requirement. And who can predict what an infinitesimal space requirement that might be by the 21st century.

Too far out even for a cloudy crystal ball? Okay, let's back off a bit and assume that the subconscious induction method will never be.

Still there is upon today's horizon the available technology to permit all manner of instant multi-media reproduction for individual retrieval for re-use at one's own command. It is simply a matter of time, certainly before the 21st century, until continued subminiturization of equipment and remote access put any desired high quality information of any medium at virtually anyone's fingertips anywhere, anytime; at rest or in motion.

The conclusion, once again, is that there would be no need for college facilities except for whatever kind of a memory bank that would be required to store the desired information.

Now, let me hasten to say that I don't really believe in these predictions. They are, in fact, possible but, in my more sincere opinion, not

probable. I think the falacy is obvious. Education is, and hopefully will remain, more than just the implanting of factual subject matter.

By the very nature of the human animal, as endowed by his creator, social interaction, disciplinary intermix, intellectual stimulus and other by-products of personal contact are by far the more important part of the learning process. Therefore, I feel safe in saying that the computer will not replace the teacher and the electronic night cap will not replace the college campus. Make no mistake, however, that the emerging technologies which prompted these playful predictions will continue to have a profound effect upon future college facilities as the 21st century approaches.

In a recent address to the American Management Association, Dr. John Tirrell, President of the Oakland, Michigan Community College System, made the following four predictions:

1. "Although there will be base facilities — for data processing, media preparation, transmission and receiving, and personal consultation — education will actually move out of the schoolhouse and college and into the home and place of employment.

2. College-age students will spend more of their time in home study than they will in the traditional campus environments. A greater portion of education will be accomplished through the home consoles and through self-study utilizing carefully and professionally developed sequences of lesson material.

3. There will be specialized facilities for occupationally related training in most major business institutions and service agencies.

4. In other methods to "take education to the people," there will be mobile methods of teaching and store-front facilities spotted strategically around the community."

If even part of these predictions come true, the college campus facility is in for a significant change indeed.

Now, let's get back to 1967 for a moment. What is happening today? You are probably aware of some of the statistics — new colleges — at the rate of one a week. Some have predicted 1,000 colleges by 1975; 2,000 by the year 2000; five billion dollars in facilities in the next decade; etc.

Many of the larger metropolitan areas are just beginning to plan long range for community colleges in the central city. Almost every conceivable type of existing building is being converted to an interim college facility in the big rush to action . . . a dairy farm in Illinois, a ghost town in Florida, department stores in Dallas and Philadelphia, a coffin factory in Brooklyn, a machinery tool factory in Providence and army and air bases everywhere.

Harold Gores said we should design our colleges to someday become something else. The evidence says that maybe everything else should be designed to become a college.

This rapid growth of community junior colleges is creating something of a crisis. District board officials and administrators are hard put to know where to turn for qualified people to staff the new institutions. And the current need for good facilities is phenomenal. And, of course, the associated problem of planning the facilities is the toughest one of all.

New college presidents, deans and others who may have never worked with architects and planners before may find themselves suddenly bewildered by the demands put upon them for information required in programming.

Architects who may have never designed a community college before will be called upon to create something many of them don't even understand. It behooves the educators to drive home the essence and the uniqueness of the community college to the architects. And it behooves the architects to make the educators aware of the essential elements of practice in architecture and planning.

In other words, the two professions must communicate. But communication is not always easy. Education and architecture, in many ways, present two different languages. Both parties to this situation must become, in a sense, bilingual. They should read each others journals, visit as often as possible, write as much as possible, and take every opportunity to exchange philosophies and experiences. Conferences such as this one are an excellent way to break the language barrier and overcome some of the other obstacles.

Now, what is this new breed called the community college which we are trying to plan? For one thing, it is a two-year institution, but that does not mean we're talking peanuts. All across the country multi-million dollar campuses are springing up from scratch. In some instances, facilities for five or six thousand students or more are being constructed in a single phase at costs of 20 to 30 million dollars.

Another significant characteristic of the community college, which affects planning, is its inherent diversity. There is no such thing as a typical college. By definition, the college is tailored to its own community, to the particular people and geographic area it is intended to serve. No two colleges are the same, at least in theory they shouldn't be, if they are truly community oriented. Therefore, blueprints for one cannot be used for another.

The community college is becoming increasingly innovative in its educational concepts and methodology, unbound as it is by tradition. This is one of its most outstanding characteristics.

This rapid growth, diversity, and innovative spirit of the community college movement is creating a demand for action from the design professions. But, at the same time, the planning and programming processes must become increasingly sophisticated to cope with this diversity. Accordingly, we as educator-architect teams must become more sophisticated in the sense of learning to communicate with maximum efficiency in order to get on with the job to be done.

Sometimes semantics problems get in our way. What do the terms planning and programming really mean? The most publicized PROGRAMMER at the moment is the man who communicates with the computer. To most college administrators, a PROGRAM is a CURRICULUM. To many architects, a PROGRAM is simply a LISTING OF SPACES.

PLANNING probably has more meanings than any word. Everyone has a MASTER PLAN. Increasing numbers of the 50 states are writing MASTER PLANS for education. These relate mostly to enabling legislation and "governing systems." More and more college districts are writing MASTER PLANS for development. These are primarily related to financing, curriculum planning and tables of organization. A MASTER PLAN to some architects is likely to mean a single drawing pinned to the wall. To others it means a voluminous printed document.

In architectural circles there is a defacto distinction between PLANNING and DESIGN, although, the gray area of overlap is considerable. "Planning" usually means the comprehensive, broad stroke, study of a project from a "high altitude" which stops short of the actual "design" of individual buildings. However, both the formulation of a broad stroke campus plan and the plans for an individual building require a large measure of "design" talent and team effort among professions.

ARCHITECTS usually look upon the total process of creating college facilities in three basic phases . . . SITE SELECTION, CAMPUS PLANNING, and ARCHITECTURE. The relative importance of these phases follows this order, each is a prerequisite to the next, and this sequence cannot be altered without suffering some ill effects.

Campus planning is usually divided into three phases . . . PROGRAMMING, DESIGN and REPORTING. Architecture is usually divided into three phases . . . PROGRAMMING, DESIGN and CONSTRUCTION. And the key to success lies in that repetitive word PROGRAMMING.

The prelude to any good campus plan or building design is creative, effective, and thorough programming. Creative programming is certainly not a simple listing of spaces. This may be the expedient way to look upon programming, but it hardly offers a planner or designer any measure of inspiration.

In order to instill the necessary inspiration to create individual colleges rather than build repetitive monuments, the educator-architect team must keep the focus on institutional goals, methods and problems. Knowing the problem is half the solution. The final solution should then evolve slowly and logically from a thorough analysis of the total results of programming.

But it must be remembered that educational programs change, institutional goals and methods change, technologies expand and contract or even come and go altogether. The characteristics of entire communities, therefore, may change, and the college must be prepared to roll with the punches.

The facilities must provide sufficient flexibility to accommodate these inevitable changes. And this too must be spelled out in programming, or the educators will likely face the unpleasant alternative of bending their methods to fit the facilities.

Yes, there is a crisis and a demand for action. Educators are faced with quick decisions in order to start the planning wheels rolling. Architects are faced with the challenge to streamline their antiquated methods in order to work more efficiently. But let us all remember that, beyond a point, haste makes waste. We cannot afford to sacrifice the quality which our planning efforts seek to accomplish just for the sake of time.

In the process of establishing the Facilities Information Service at the American Association of Junior Colleges during the last year and a half, one of the project activities undertaken was the writing of a series of coordinated articles regarding various phases of facilities planning. The first of these articles appeared in the November, 1966 issue of the *Junior College Journal.* Eight other related articles have since been published in subsequent issues of the *Junior College Journal.*

The A.A.J.C. is now in the process of reprinting these articles to be bound into a separate document. In the meantime, a list of these articles is available to any of you who may wish to look them up and pursue the subject in greater depth than we have time for here today.

I will conclude my presentation with a few serious considerations of what may follow as we move toward the 21st century.

1. Facilities planning will continue to move away from the more traditional image of the land consuming "green pasture" type of campus and even greater diversity will result as college planners learn to cope with and accept the potential of new media and innovative educational methods.

2. Continued and accelerated development and use of multi-media programmed instruction methods may not cause a great revolution to the "subconscious induction" process to which I alluded earlier, but it will exert an increasingly profound influence on the design of college facilities.

3. The imagination and ingenuity of the design professions will be further taxed by the resulting demands for hardware and services thus created.

4. To solve this dilemma, the search for simple, effective, fast and flexible systems development in building construction will continue at an increasing rate.

5. The creation and improvement of inner city community college systems in the large metropolitan areas will move ahead and make their mark as one of the most significant social, as well as educational tools in the revitalization of our great cities. The community college commitment to this goal was sounded loud and clear at an AAJC-EFL conference held a year ago in Dallas.

A report resulting from this conference entitled "The Community College Commitment to the Inner City — Facilities Implications" has been published and is available from AAJC. I might add that the participants at this conference agreed with Harold Gores that the community colleges must get into the neighborhood business.

6. As pointed out by Dr. Dorothy Knoell, a special consultant at the Dallas conference, "the need for student services will rival the need for in-class instruction in the inner city college." The traditional college student center is already giving way to the "Student centered college" with the implication that student services may decentralize to engulf the entire campus and may indeed disperse to permeate the entire community in order to provide the outreach needed to tap the vast and untouched student potential in the deprived neighborhoods. This message was further reinforced by another AAJC-EFL conference six months ago.

A report from this conference is also available from A.A.I.C. Its title is "Premises: Planning Student Personnel Facilities."

Now let me close with one more quote by Dr. Harold Gores, "The Community College represents the 'lively sector' of education for experimentation but this 'hay day' may come to an end within 10 years." By that time, they will have decided exactly what they are and where they are going and at that point, they will stagnate just as other types of institutions did some time ago.

I am sure Dr. Gores would be delighted if the community colleges could stay alert and prove his prediction inaccurate. Let's try to stay alive until at least the 21st century.

SETTING YOUR SITES FOR CENTURY 21

Raymond C. Schneider

A case study approach to the solution of the community junior college site – a challenge to the board of trustees and the administrator for the 21st century.

Shortly after World War I there were only about 50 of these two-year colleges. Today, there are nearly 900. I don't know what percentage increase that is, but look at it this way – if the number of districts had not increased, each of them would have had to establish 16 additional campuses during these past 50 years. And in the next 50 years, using this same base, each of those districts would have to start 32 new schools just to keep pace with growth and change.

If the present trend continues, it has been estimated there will be 1,000 community colleges in the United States by 1970, enrolling nearly two million students. Assuming a constant but more conservative annual increase between 1970 and 1975 (at which time the Census Bureau predicts a plateau in enrollments), then projecting at a slightly reduced rate until the year 2,000, there could be as many as six million students enrolled in the community colleges of this nation. On top of the estimated total of 1,000 campuses by 1970, we will need another 2,000 to serve a 300 million total population by the beginning of the 21st century.

Let's take a closer look at some of the characteristics of our newest public-supported junior colleges. Of those responding to the annual *AAJC Directory* questionnaire, 44 identified themselves as being established in 1965 and 40 in 1966.

I am always interested in where these new colleges are located, how big they are their first year, and how fast they are growing. The 1965 colleges had an average entering enrollment of 651. This increased to 1,117 by the beginning of their second year. Colleges opening in 1966 were only slightly larger at 717. (I had to cast out our own Seattle Community College with its starting enrollment of 12,688 to get a comparable figure – it was a real curve skewer.)

A rank ordering of these schools into groups of 500 enrollment, from zero to 2,500 students and over, showed that slightly more than one-half of our new public supported community colleges opened with fewer than 1,000 students at each campus. (The median was 420 in 1965 and 448 in 1966.) Nearly 80 per cent of this group enrolled less than 3,000 students each.

While there is much visibility being given to the problems of the dense and decaying urban centers, it was interesting to note that the

urban fringes of our growing metropolitan centers still seem to be the place where the people want to live. And this is where they are establishing their new campuses.

For this reason, I believe attention should be given to the problem of selecting sites in those areas. We should look to the time when effective community leadership acquires the vision to create whole new cities which are planned to meet the needs of all its citizens, including the provision of well-situated, functional, and attractive urban community facilities. The largest of these facilities – and the activity node around which these cities should be planned – is the community college.

I believe factors affecting the selection of community college sites in transitional areas possess certain characteristics which must be examined in detail prior to acquisition and development. Most of the factors affecting the selection of the two-year college site apply equally to common schools and to some four and five-year institutions. Local conditions always prevail which shade the objectivity with which one would ideally desire to approach a site study. These characteristics must be identified before the search begins. Therefore, I see certain things which those charged with the selection of a site, or sites, for a community junior college campus, or its campuses, must know a priori.

For example, selection criteria are based on the assumption that a district with definable limits exists. It would also be helpful if that district had a governing board and a chief administrative officer. Administrative staff and faculty should be available, or in the process of being hired. A statement of philosophy, aims, objectives, and purposes of the institution would be most helpful. Detailed educational programming should be in progress. Educational specifications would be a real bonus. All of these things would aid the site selection team in developing a thorough understanding of the characteristics of the region, the community and its resources, and the people and their needs.

Professor Fred Giles, now Dean of the College of Education at the University of Washington, asked me to assist him in a study where none of these were present. We were to conduct a study culminating in a recommendation of the best possible site for a newly established community college district. There are times when one, literally, must start from scratch – and "scratch" is something you can't buy over the counter. I must echo Harold Gores' admonition, "The crucial years are now." Thousands of acres must be identified, evaluated, acquired and developed in the next few decades and added to our present inventory.

In 1964, land in use by the 500 existing community colleges totalled approximately 15,000 acres. The average size of these sites ranged from 30 acres for public colleges to 36 for private colleges.

With the trend toward larger campuses, and their growing numbers, I believe, although I'm guessing, we might add to that figure the 350 campuses established since 1954 at 75 acres per campus, for a total of

nearly 50,000 acres in use today. If we project this forward to the year 2,000, the total land in use by our two-year colleges would approximate 125,000 acres. This assumes present guidelines will prevail, which they probably won't.

For comparison purposes, this is less than the area of forest resources burned off in the five northwestern states during the hot spell last August. It is also less than was destroyed by fire in the Los Angeles area two weeks ago. We will use more than 125,000 acres of land for new freeways and urban renewal projects during the coming year.

Part 2 of the 1960 *College and University Facilities Survey,* a report of the study conducted by the U.S. Office of Education, addressed its attention to the 1970 task. Their analysts reported there appeared to be, "in most instances, sufficient acreage for growth . . . within the boundaries of presently held land area for the contemplated expansion of facilities." They also stated, " . . . that land should be acquired well in advance of its immediate need." They advised as follows, "a space concept of the campus of the year 2,000 and beyond should be achieved so that advantage may be taken of any favorable opportunity to acquire suitable space. Neither the year 2,000 nor any other selected year is likely to see the end of growth."

Land, air, and water are our most vital natural resources. We seem to be bent on fouling all of them. In the competition with all agencies for land acquisition and development, that which will be forever held in reserve for urban community facilities must be selected with a notion of the permanence of its use. The community college site, as a separate entity in the urban scene, touches and affects the entire community and reaches beyond into the total region.

One might classify community colleges as rural, suburban, or urban centers for recreational, cultural, and educational activities. Some might be a combination of these. In any event, whether these are (in another sense), move-in, ride-in, or walk-in centers, each must be designed to meet general as well as specific needs of the students, staff, and citizens of its service area.

If between now and the early decades of the twenty-first century we must indeed establish another 2,000 campuses, I am sure many of them will be for the new districts, involving for the first time educators, board members, architects, planners, landscape architects, engineers, and a host of specialists in the academic and occupational fields to be represented by the new college. These people are some of the members of the team which Bob Reed described in his talk. He has frequently referred to the major phases in the process of creating community college facilities as site selection, campus planning and architecture.

Site selection is a very important part of the process. It may be the most important. It, too, presents us with a problem-solving situation, as does the total planning process. I would like to present an approach to the

solution of a site selection problem (using Buhl's suggested *Steps in Problem Solving*). These steps may be summarized as follows:[1]

1. **Recognition** of the problem and decision to do something about it.

2. **Definition** of the problem specifically, in familiar terms and symbols; dissection of the problem into sub-problems and goals, placement of the necessary limitations and restrictions.

3. **Preparation** by compilation of all past experience in the form of data, ideas, opinions, assumptions, and the like.

4. **Analysis** of all the preparatory material in view of the defined problems, interrelation, comparison, evaluation of all information which may have bearing upon a solution.

5: **Synthesis** of a solution from analyzed information. Assemblage of the various items analyzed to produce possible solutions.

6. **Evaluation** of possible solutions, and selection. Verification and checking of various facets of the solution and coordination of all sub-problem solutions into an integrated whole.

7. **Presentation** of necessary information to others in order to execute the solution. Activation of the solution to satisfy the need recognized.

These steps indicate phases to be covered and in their approximate order. It is possible the nature of the problem may require your starting at some intermediate point. Feedback loops enable repetition of many of the steps in an isolation-elimination exercise — the sifting and sorting — which tends to superimpose itself on the process.

Now I don't plan to let the problem-solving process get in the way of solving the problem, but for convenience I will try to present my comments within this framework. My mission here is not to go into the process at great length. Bob Reed has done that. But irrespective of how a problem may be solved, when one arises it must be solved in order to get things back on course and moving in a desirable direction.

If the problem happens to be the need for a new campus; determining its general location and then its specific location, put us in the action mode of the problem-solving process.

In other words, the problem has been recognized and a decision has been made to do something about it. Dr. Giles and I were retained at this point to assist a planning committee in the location of its community college and their newly formed district. The governing board of the district had not yet been appointed; neither had the president, the architect, nor any staff. Our first step was to conduct an investigation of the general characteristics of the district.

Our definition of the specific problems grew out of immediate discussions with the planning committee and culminated in five stated purposes of the new college:

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1. Harold R. Buhl, *Creative Engineering Design,* Ames: Iowa State University Press, 1960.

1. The campus will be organized to provide post-high school educational opportunity in the area comprising the district.

2. It will offer a comprehensive curriculum including the first two years of university level transfer courses, sub-professional courses and/or occupational skills courses, continuing education, and cultural and recreational activities.

3. It will be an institution characterized by a permanent two-year, comprehensive, post-high school educational program.

4. It will acknowledge the existence of other specialized post-high school programs in the area which may influence the curriculum, but that their locations may not be the primary determinant of its general location.

5. It will be primarily a "commuter college."

These became the basic assumptions for a general site location study. Using them as a foundation, the project plan and an outline of tasks to be accomplished was prepared. It contained the results of the initial meetings of the committee, including the stated need, extent, and type of study to be undertaken. After presentation and approval of the plan, it was agreed we would communicate with the interested parties in the district and its sub-centers. Because of the large geographical area encompassed by the district, stress was placed on the importance of communication. After communicating individually with representative segments of the community, well-publicized open hearings were conducted throughout the area on the problems and issues surrounding the establishment of the new college. Sure, it took time, but that time was probably our best investment in the whole study. The need for community unity was emphasized, and this process ensured a logical division of the problem into its appropriate sub-problems and goals, and helped us reappraise the basic assumptions, limitations, and restrictions of the study.

Steps 3 through 6 — preparation, analysis, synthesis, and evaluation — were those in which interaction with the community reached its greatest magnitude. Everybody got into the act.

During preparation, wherever possible, the study group drew from reports of past experiences those factors which were relevant to the ongoing study. This procedure aided in the identification of the factors affecting the general location of the college. Data, ideas, opinions, and related information was gathered from cooperating school districts, interest groups, professional organizations, and public agencies who were concerned about its location.

Decisions concerning the selection of factors to be utilized in the collection of data for the study and the subsequent analysis of these data were constantly examined in light of one over-riding general consideration basic to the entire study. That consideration was: Where is it possible to locate a community college for the best post-high school educational opportunity for the greatest number of people in the area? Guided by a basic principle of centrality as the major criterion against which such fac-

tors could be compared, five general site location factors were identified and utilized in the study:

1. **Geography** – Maps of the area were obtained which showed the boundaries of the cooperating school districts, other political subdivisions and tax levying units. Climatic data for the area were also collected.

2. **General Population** – Reports were reviewed for demographic data for the previous five to ten years. Official census reports and other demographic data indicating population distribution by age groups, occupational status, and educational attainment were analyzed.

3. **School Population** – Reports were obtained showing previous and projected school population by grade, for each school district for the period. Reports of projected school facilities and curricular developments in the area were also furnished to the study group.

4. **Transportation** and **Communication** – Maps were produced showing the highway and road system and their projected development. Information was collected concerning existing and proposed public transportation systems in the area. Locations of utilities and other public facilities were noted.

5. **Economy** – Information on present and projected land use was provided. City and regional planning activities and reports concerning manpower needs and economic conditions of the area were also reviewed for significance.

Your own investigation may reveal some general factors more indigenous to your region. They may vary somewhat from this case study, but by implication at least, most will be similar.

I'll call the district in which our study was conducted – CASCADE – and continue with some background information.

The Cascade Community College District is large and linear. It covers an area approximately 200 miles long and averages 30 miles in width. A 100-mile long lake is situated along the north-south axis of the district. The main highway enters the district at its southern border and is situated on the west side up to the mid-point of the lake where it crosses a floating bridge and proceeds north. A new road extension is planned for the west side in about five to 15 years. It is routed through some very rough terrain, but with its low priority, it will take time.

The climate is somewhat less severe than is normally experienced here in the North Central states. Its economy is based largely on horticulture. Some lumbering, mining, light manufacturing, and food processing plants indicated a diversity of the stable economic activity. A significant source of income is derived from the growing seasonal tourist enterprises and the accommodations provided for them. The scenic splendor was a constant source of pleasurable distraction. It was most difficult to conduct a truly objective study in such a powerful setting. Each community was quick to point out its scenic advantages.

The linear character of the Cascade District provided a basis for rejecting those factor which might have been associated with an east-west description of the area. This prompted us to utilize a scheme for making comparisons of the general site location factors using the main highway where it entered the southern boundary of the district, as a reference point. This technique essentially involved an analysis of the various data based on the road-mile distances of school centers from the reference point. In this way, all significant data were related to the study in a consistent manner.

An analysis of each of the identified general site location factors resulted in a map showing the geographic center of each; namely, the actual geographic center, as well as the geographical centers of the population, transportation routes, the general economy (assessed valuation), school population for grades one through twelve, and the potential grade thirteen and fourteen population. Five-year shifts were calculated and plotted to ascertain the degree to which they might affect the ultimate location of a site.

Finally a composite geographic center was established by placing all of the previous centers on one map and determining the median of the centers as they aligned themselves along the north-south axis of the district.

Several conclusions were reached in the synthesis of Phase I:

1. The area needed the college and had the population, resources, and potential enrollment to support an outstanding program.

2. The people of the area showed high interest and willingness to work toward and cooperate in the establishment of the college.

3. The concept of a separate governing board to guide the college in its development was deemed the best way to organize and operate the district.

4. The 1,150 potential enrollment projected for the 1965-1970 period did not warrant or justify the establishment of more than one college at this time.

5. Due to the physical characteristics of the district it was decided that one campus would not give equal accessibility to all potential students on a commuting basis.

6. Arrangements should be made for providing adult-education, cultural, and other community activities in temporary facilities at selected population centers other than the one in which the college is situated.

7. Provisions should be made for equalizing adult-education for those having to commute long distances or reside on campus.

8. Provisions may have to be made for equalizing financial support for operating the college, within legal limitations, on a basis of proximity of the various public school centers to the college.

9. Provisions for on-campus housing will have to be made for students living beyond reasonable commuting range.

10. Anticipated population increases and the students generated by these increases indicate that at some time in the future one campus may not best serve the needs of the total area and additional centers in the north and/or south may be needed.

11. The relationship of the college to other institutions, public or private, offering similar programs will need to be considered for their long-term operational and jurisdictional implications.

Phase I of this study ended in the description of the composite geographical center. It was established as a specific place by the use of geographic reference points.

Phase II began with a detailed evaluation of aerial photographs, topographical survey maps, land use and zoning, maps and long-range plans for the region. This evaluation was followed by an on-site inspection. It resulted in a delineation of a 10-mile radius secondary search area, which was circumscribed about the composite center.

By eliminating those areas deemed undesirable due to elevation, topography, and accessibility, a primary search area was identified. This area included potential sites on both sides of the lake. Situated at the hub of the search area is the principal city in the district. It is an attractive, growing community of approximately 16,000 people, supplemented by another 20,000 or so residing in the urban fringes. The population of the district (ten communities) was about 100,500 in 1963. Its assessed valuation was approximately $176,000,000.00. The projected enrollment of the college in 1970 was 1,200. A 75 to 150 acre site to accommodate this number with an ultimate capacity of 2,500 was the objective.

Powerful natural forces nearly transcend the existence of the principal city, as they do any mere works of man in the region. The impact of the lake on the area is equalled only by the surrounding mountainous terrain, which appears to keep the outlook in perfect balance.

The mild weather and the friendly, industrious people of the district complement nature in many and interesting ways. Open lands abound in each direction affording an overwhelmingly atypical opportunity for finding the single most appropriate setting for a college.

Seldom has such a wealth of choices been available. A classic example of being there at the right time. A fertile valley to the east lies snugly between the mountains and the lake and the higher west bank is covered to the foot of the mountains with vineyards and orchards, creating a superlative setting for its growing populace within a region characterized by its colossal scale.

One's first reaction is, imagine not finding a site situated to exploit such a setting, and then – not making it an integral part of each student's educational experience.

The toughest part of the job was the task of compiling the data submitted by others, while at the same time, undertaking our own investigation. The college committee requested that we encourage citizens to assist

us in the early identification of adequate sites. Interest was high. In order to ensure each an equal opportunity, a check list of possible resource material was compiled. It included the statement of purpose, the need for the study, factors to be analyzed, and the procedure to follow. This package was furnished to those expressing an interest in preparing a submittal.

A cut-off date was established, after which no additional information would be accepted. Some guidelines were also set with respect to content and cost in order to keep the flow of information uniformly consistent and within tolerable limits. We weren't particularly interested in the PR approach — we just wanted the facts.

The purpose of this second phase of the study was to gather and analyze data regarding potential sites and to make a recommendation concerning the best site (or sites) available for the college in the primary search area. Many factors were considered. The following were identified in the study:

1. **Location** in relation to students and area to be served.

2. **Size**, 3. **Shape** and 4. **Topography** of the site and its potential to serve its ultimate anticipated enrollment. These are important physical characteristics of the site.

5. **Land use/zoning:** present use and zoning, as well as anticipated future determinants affecting the comprehensive general plan of the region, were noted.

6. **Availability**, and 7. **Ownership:** because they affect procedures, these factors were included.

8. **Utilities**, and 9. **Services:** present as well as future status of these were investigated. Costs for connections and/or the provision of on-site installations were determined. Service agencies were contacted.

10. **Accessibility** to students and public, and services by major thoroughfares and other means of transportation were also noted.

11. **Site Preparation:** feasibility and cost analyses were undertaken, especially where trade-offs had to be made for the final choice.

12. **Soil and Sub-surface Conditions** were ascertained by professional firms. Costs for these services were borne by the district. On the final one, two, or three choices, preliminary sketches of overall development plans dictated a more precise location of test sites. Drainage problems were also identified in this step.

13. **Cost of land** was correlated with method of acquisition and availability. Appraisals were obtained on the final choices to verify earlier estimates.

14. **Climate**, and 15. **Environment**, and 16. **Utilization:** many variables affect the environment. For example: weather, including sun, wind, and temperature variation; air and water pollution problems; origin of surface and air-borne noises and their characteristics were identified.

Aesthetic attributes, such as view, landscaping, outstanding natural features, and potential grouping of the proposed structures to enhance the total learning environment, were identified as being significant to the location and development of the site.

17. **Community Use:** stated simply, the location of the site, in addition to meeting day-students' needs was evaluated with respect to its potential as an urban community facility.

18. **Commutability** and 19. **Road Classification Impact:** these factors were judged to be of sufficient importance to this particular study to warrant visibility in the analysis. (Site selection is an open-ended process. All factors identified in previous studies throughout the country may not apply in any given situation. Local option must be afforded each case based upon conditions common to its problem, as well as those considered peculiar to it.)

In this instance, the geographical characteristics of the district and its long-range potential required that particular acknowledgment be made of the potential commutability of students residing at the extreme ends of the district, and measured against new highway development programs. In addition, the increased traffic load on existing thoroughfares within the local community was considered essential to the ultimate location of a college in the area.

It has been my contention that college-generated traffic should not be imposed on peak hours of business and commercial traffic; nor should it disrupt the flow of through traffic. College sites, where possible, should be located so that arriving and departing students are going against peak volumes of traffic generated by dense urban centers.

These were the nineteen factors or site characteristics which were considered important to the location of this college. All data submitted were carefully reviewed. The sites under consideration were divided into two categories; those with immediate or short-range potential, and those with long-range potential. Twenty-one sites were identified in the process and assigned alphabetical designations in their order of receipt or identification before the final evaluation began.

Within this framework each site was described by location, size, and ownership. Its advantages and disadvantages were measured against the factors first listed. If, in the opinion of the study group, a site warranted rejection from further serious consideration, it was eliminated and the reasons for doing so were clearly stated. This was a demanding task, especially so when you found yourself casting out sites which districts in other parts of the country would have given much to get.

Many of the sites identified, lacked certain information needed to form a basis for a good decision. Deficiencies were noted and they were sent back to the drawing boards.

A rating sheet was prepared to assist in the analysis. The factors were arrayed across the top of the matrix and down the side. Because of the

difficult problems encountered in weighing each factor, it was decided to use a +/— designation (or in the popular mode, PASS-FAIL). Where we didn't know, a question mark (?) was inserted to show it needed study. The tally then showed the number of plusses, minuses, and question marks.

Rating devices, at their best, can only assist a study group and its client in achieving an understanding of the relative standing of the sites under consideration. This chart shows only those retained for the final evaluation.

In Phases I and II of the study, it was determined Sites B, G, and S met all the requirements of educational adequacy. Remaining to be determined more specifically in Phase III, were certain other primary factors: economic, engineering, architectural, planning, and political. These primary factors encompassed certain secondary factors, including: detailed costs, timing, procedural questions on methods of acquisition, accessibility, utilities, soil and sub-surface tests, and the general development capabilities possessed and/or to be determined for each of these three "semi-finalists."

Some information obtained in earlier phases needed systematic synthesis and an evaluation on both objective and subjective grounds in order to establish a rationale for final selection of the best single site. In this case, detailed cost estimates and engineering data were the more objectively derived data. Architects and planners were asked to assess the feasibility of development as a college site, environment, general characteristics of site, and the natural features which could be exploited in terms of long-range development.

A prime consideration in the planning factor was the impact of the college on the community and region. This related specifically to an estimate of the ability to control the development of areas contiguous to the site in order to enhance the setting of the college.

Politically, it seems as if the larger the institution, the more politics are involved, and I mean this in the real sense. (As the general's aide from South Vietnam said, "If you're going to mess around in this business, you'd better mind your Kys and Thieus.") This is especially true when the socio-economic and political dimensions of the problem reach the urban design scale. Therefore, even though an assessment of the political climate was a factor which should not be overlooked, the degree to which it was critical was not ascertained by the study group. We left it to the discretion of the board to assess this factor and deal with it accordingly.

It was unanimously concluded that Site B possessed the greatest potential from the economic, architectural, engineering, and planning standpoints. It had the total potential for the establishment of a high quality educational institution in an appropriate setting.

The college site is of immeasurable value to the total educative process, and where imaginatively exploited by a competent, creative architect, it

can serve to enhance learning by contributing to all of the senses in many and delightful ways.

From a purely educational standpoint, any one of the three sites could have been developed into an adequate campus. But, as you will see, it had to B – and for the following reasons, which were presented to the board and the community in this seventh and final step of the problem-solving process:

1. It is the best single location for the development of a first-class institution to meet the needs of the youth and adults of the region.

2. There is sufficient usable acreage (150+) to afford maximum latitude in the long-range planning and utilization of a community college.

3. Within the boundaries of the described site, no serious problems exist with respect to its shape which would inhibit its ultimate development.

4. Its terrain lends itself well to a development which will enhance and protect its users and affords a pleasant outlook in all directions.

5. Assurance was given that plans being formulated for the development of the adjacent areas will evolve around the site, exploiting the terrain to the best advantage of all concerned with respect to ultimate land-use and zoning.

6. The site is eminently available on a reasonable and equitable basis.

7. Utilities and services can be provided as needed to satisfy present and future requirements at a reasonable cost.

8. Accessibility from all directions is excellent now, and future highway developments can only improve this.

9. It can be prepared and developed in various imaginative ways and at minimal on-site development costs.

10. The characteristics of the soil and sub-surface structure appear to present minimal problems.

11. The cost of the land is reasonable enough to discourage the payment of exhorbitant and inflated costs of sites elsewhere in the region which are within reach of utilities and services.

12. The total environment seems unexcelled for the region.

13. It is within easy commuting distance of the extremities of the region.

14. The site is well located with respect to present and proposed use by the community at large.

This concludes the case study portion of my presentation.

Both the process and the product are those with which we operate and in which we live today. We are using these techniques to select and plan sites for facilities which must accommodate changes beyond our

imagination. Our tools for conducting these investigations need sharpening or replacing. Hardware exists today which will accommodate millions of bits of information. I suspect that before the next few years are past, someone will have devised a site or land data bank from which all factors may be retrieved and assessed in future—and faster—site selection studies. They must also devise ways of up-dating these data.

Computer graphics will enable us to simulate site development before purchase. Architects, planners, landscape architects, and engineers, together with the educators and board members, will be able to "see" their dreams "develop," and "play" with different variables applied to several prospective choices from among available sites and/or needed locations. I enjoy site selection because of opportunities it presents for getting one totally immersed in a community—getting to know the people; where they have been, where they are, and where they would like to go. And finally, to be a part of that process which may help them get there.

What frightens me is the way in which one of our greatest natural resources—land—is being gobbled up so rapidly and so indiscriminently by reckless speculators who tend to consider neither the best interests of the students nor those of the community in their mad rush for the fast buck.

One of my colleagues, Professor Richard Alden, shares this concern—but in a different way. His studies have focused on the architectural aspects of the visual path—through the city, its parks, or a college campus —wherever the driver can drive, or the pedestrian may walk.

It is our contention that if the pace which marks our progress toward Century 21 continues to increase, we may be hard-pressed to justify the "view from the road" of our schools and colleges as having any real impact on the passersby. Are we moving so fast we are not seeing them for what they can be to us? Is there no place where one can stop to reflect—to discover or to learn?

What will your city be like in the year 2017, a mere 50 years from now?

More importantly, what will it be like just ten years from now? A clear picture of the twenty-first century is nearly impossible. Even a ten-year look is pretty fuzzy. The best way to make it happen as you would like it to happen, is to take a harder look around you today, and then ask yourselves some serious questions about the shape of tomorrow.

I would like to leave you with this thought. If "progress" continues at today's rate, where are we going to find another 2,000 community college sites? If the crucial years are now—the time for decision is now. I would suggest you start by setting your sites for Century 21. And the best way to get started? I'll say to you what the real estate salesman said to his son, "Get lots while you're young!"

THE PLANNING OF EDUCATIONAL CHANGE

Donald J. Leu

A provocative and stimulating challenge to the architect and the educational planner for sensible and realistic teamwork in the planning of community junior colleges — a look at the "Change Agent."

It is not my purpose to seek consensus with this group (which is impossible), or even to win friends, but rather to ask you to think along with me about the process of change. I would like to attempt the following:

1. To look at the change agent — that's you. I've tried it a few times, and it can be a horrible experience.

2. To examine briefly the world of change. The external world that our educational systems are designed to serve.

3. To examine some alternative methods or strategies of learning.

4. To take a brief look at some curriculum changes that have implications for educational facilities.

5. To look at our primary client, the student, — whom many of us forget about when planning these educational "monuments."

6. I would like to conclude with a brief look at the space — the place where education and internal change is supposed to maximize.

The significant point of this approach is that the space, or the building, is the last thing we look at when planning the future community colleges. Please notice the sequence of events. I become disturbed when I observe planners who start with the planning of a science room, or a total community college without going through the important sequence of events outlined above.

The Change Agent

Let us move to part one — The Change Agent, or YOU, (an unpleasant task which we all like to avoid). It seems to me that the way you perceive your role is going to have a major impact on the future facility. For example, do you see yourself as a leader or a manager? In other words, some people can be thought of as big L's (leaders) and little m's (managers). Other people are big M's and little l's. Another small group are neither. I believe that the way you perceive your role: as a management man who carries out the decisions of your Board and other policy makers, puts you in one kind of role. On the other hand, if

you perceive yourself as a change agent, or leader, you behave and perform in quite different ways.

I like to define leadership – assuming that you desire to be leaders – in the following manner: When you look at the entire group of people involved in planning, and they're facing in one direction, and you're going in a different direction – that's leadership. Seriously, "leadership" means causing people to end up in different positions from where they originally started or intended to go.

A second way of looking at your role as a change agent is to borrow, steal, or adapt models from other disciplines. For example, Dr. Everett Rogers (from Communication Sciences) and I are engaged in several research projects concerned with the diffusion of educational change. Perhaps some of you are aware of his "innovation model." Simply stated it is a bell-shaped curve. The first two and one-half percent of the bell curve are what we call the "innovators in education" – roughly two and one-half percent of the total group of educational planners. His second group are classified "early adopters of change." Next are "the early majority," followed by "the late majority," and lastly, "the laggards." The question that you need to ask yourself: On that bell curve of innovator, early adopter, early majority, late majority, or laggard, where do I place myself? Most of you see your colleagues as the laggard and yourself as the innovator. It really isn't that simple. You should realize that the innovators of educational change are the pioneers in education; and many of the pioneers were shot by Indians. You should recognize that if you are an innovator, you're making frequent mistakes, causing social unrest, alienating the general public, frequently being shot. Innovators are important and necessary in the planning of change. Those of you who are early adopters, or early majority, need to support (psychologically and in other ways) these innovators. We need a larger body of innovators.

The third way of looking at a change agent, yourself, is: To what degree are you a "parochial" or a "cosmopolitan?" Most of you are cosmopolitans, as evidenced by the fact that you're here, rather than back on the job, doing the work that you're paid to do in the first place. You can classify people quite easily as cosmopolitan or parochial. The parochial is the man who can't leave the job for a single day because the whole shop would come apart. In fact, he has his system designed so that's exactly what does happen whenever he leaves.

The cosmopolitan is the individual who's never home doing his work. He's always out sifting and monitoring the total system to discover new knowledge and ideas. People back on the job (by the way, my colleagues classify me as a cosmopolitan) tend to resent and punish the cosmopolitan. The cosmopolitan tends to be more innovative, to be more aware of innovations.

The fourth classification is the degree in which you are ignorant or informed. There are a number of relatively ignorant people planning educational facilities. I'm not being facetious. The current rate of change is

so rapid that all of us quickly become obsolete. We need to devise and develop a system of communication and information where we're always sifting and monitoring the latest ideas, concepts, changes, etc. This is a tremendous task and there are efficient ways of monitoring educational change. For example, attendance at this conference is one way. Whether you are ignorant or informed conditions your ability to serve as an effective change agent.

Coercive-normative – by this I mean: in the old days (last year), change was made operational because we said "do it." It has been a traumatic shock for college leaders to find out that this is no longer true – that our old system is now moving from a coercive organization to a normative organization. This means we can lead, we can suggest, we can implore, but no longer do we have coercive powers to dictate curriculum change. We're rapidly losing the coercive powers. And in my judgment this change is good. But coercive individuals are having great difficulty adjusting to a normative society. Faculty negotiations are an example of this change.

A sixth point I'd like to mention is this new animal entitled "self-concept." Many researchers are developing, exploring, and exploiting this concept. Presently we are focusing our research efforts, in this domain, on the low-income Negro. Self-concept has all kinds of implications for the change agent – the educational leader. For example, I'm convinced, in working with a large number of change agents, that in order to be effective you need a very high self-concept. Unfortunately high self-concept is frequently confused with egotism; they are difficult to differentiate. If you don't believe strongly in yourself, in your ability, you should retire early. Your role and position is rapidly becoming complex, demanding and changing. It is not enough to have a high self-concept without also having a high concept towards the potentialities and abilities of others. My point is that we need to be confident in ourselves, with a concurrent deep belief in the capacity of others.

A seventh point is whether you're an individual performer or a member of a team. For example, two or three weeks ago I was working in Central America. While there my wife and I were out with a successful professional gold hunter. We went on a "dig" for Mayan artifacts. My wife and I were digging in the mud and rain. I was down in a hole, my hair was down over my face (what little I have) and my wife was drenched. The mud was up to our knees. I looked at the leader of our expedition – there he was under a banana tree, smoking a cigar, and having a cup of coffee. That's what I call leadership. He was a real change agent: with a minimal amount of energy on his part, because he had deep belief in my capacity to dig. By the way, during his expeditions to Peru and Ecuador, he never digs. He causes people to dig. There's a message there if you can dig it out: if you really have a belief in the capacity of other people, much digging can take place. I learned the lesson the hard way. You might be able to short-cut the learning process.

The last point, in terms of looking at yourself, is that we all have a considerable compulsion for power — power over people, economic power, political power, etc. In the planning of educational change, the only real power you're going to have, in the years ahead, is the power of ideas. If you accept the normative "ballpark," then your only real power is the power of ideas. It doesn't follow that you need to have all of the ideas. This concept of the power of ideas needs to be diffused through an "open system," a system in which considerable trust and belief in the team is engendered.

The World of Change

Permit me to move on to the second area of educational change: the social setting, or the world of change. Time doesn't permit us to spend sufficient time on the "world of change." Harold Gores and others have done a much better job. I wish to hit a few of the points that I think are going to impact planners of community colleges.

One concept is the recognition that there is going to be a new leisure class. If we retrace history, the king and his court were the leisure class of long ago. They were the leisure class because of their economic and military power. Our emerging technological society is creating a new leisure class. The new leisure class is the un-skilled, under-employed, and un-employed. We may witness 50% of our society placed in this new leisure class. This idea goes against our strongly ingrained "Protestant Ethic." It is difficult to think of a large group of people, unskilled, untrained, unemployable, not working, and being supported by the working sector. For years, in the community college movement, we have been saying: "No problem. We're going to utilize the community college and we're going to train road builders, construction skills, etc." I have talked with planners in the road building industry. They explain, quite clearly, that this new leisure class are not going to be the road builders of the future. Even road design now can be simulated and computerized. The road building machines can be computerized and driven electronically. I believe, like it or not, we're going to end up with a new leisure class. I think we need to recognize it; and we must invent productive activity for the leisure class.

A second social issue that needs consideration is the concept of "polarization" or "linkage" between diverse economic groups. We're on a collision path of polarization between the low income and the high income, between the Negro and the white; and we must develop a linkage system to bring both of these groups into successful and continuous interaction with each other. At present, we're on an absolute collision course. The resolution of this crucial social issue may very well be one of the major roles of the American community college in the immediate years ahead.

A third concept of social change is concerned with the re-cycling of our cities. Dr. Gores did a beautiful job of defining the issue yesterday evening. I'd just like to add a footnote. Until we adopt a total "systems"

approach to re-cycling our cities, we're in serious difficulty with little likelihood of resolution. We have some classic examples of the beginning of this re-cycling. Cleveland now is beginning to re-cycle. In Chicago we are planning not just the community college, but rather the community college in relationship to the transit system, the community college in relation to the university, in relationship to the public and parochial schools, in relationship to the medical school, in relationship to cultural centers and in relationship to total "metro" goals. We utilize a systems approach to planning with a major goal to create a new city where now exist old stagnant ghettos. This is the planning of social change that has tremendous implication for our total society. By the way, those of you who are sitting comfortably in the suburbs — don't be comfortable. In the first place, the future slums are going to be out there; and in the second place, the whole constitutionality of existing organizational structure of our cities and suburbs is under challenge.

A fourth point is the increase in gross national product. Those of you who have studied educational economics realize that this means not only more money, but also means the concept of "income elasticity"; as our country becomes wealthier, there is a higher percentage of this increased wealth available for social services, including education. We have difficulty in thinking big; there are going to be much larger income resources available for education.

The fifth concept is the demand for continuous retraining. We used to pontificate, with pride, our ability to teach certain skills in a community college. Now we're recognizing that skills become obsolete at an ever-increasing rate. We need to keep re-cycling and re-training in new types of skills. This has direct implications for avoiding the building of permanency into future educational facilities.

A sixth point is the apparent development lag between the sciences and the human arts. There is a great push in the community colleges now in science and in technology. I think this is wonderful. There is, however, a serious lag in the area of human relations and human skills and the ability to live and to produce cooperatively. There must be major changes in the development of hu n skills in our curriculum.

Learning to live with conflict. This is an issue that you and I are just beginning to recognize. It's frightening to think that conflict is a continuous part of our way of life. This recent social phenomena is going to have all kinds of unanticipated consequences. We need to learn to live with conflict.

We are going to have new forms of government and super-governments such as "metros" and metro-systems. These metros have implications for the community college. Conversely, we must learn how to successfully decentralize decision-making and to increase the "options" available to each individual.

Another social change, which I think is coming, is the impending legal attack on the fiscal support programs of higher education. I'm not

seeking consensus; but my reasoning goes something like this: At the present time the taxpayers who are enjoying the major benefits of higher education are in fact the "economic elite." Our high academic standards provide disproportionate tax resources for the highly academic – the highly motivated student who happens to be the child of the high income parent. This issue is going to come under legal attack, and I believe the constitutionality of state fiscal support largely restricted to those who meet higher academic standards is going to be challenged. That means that we're going to have to design programs for all Americans, regardless of the economic status of their parents. This is a hard issue to face, yet it is not idle talk.

Permit me to move quickly on to other changes coming out of our scientific-technological society. These changes illustrate the rapidity of change facing our society. Transportation, for example: planetary landings; colonizing planets; earth probes (probes within the planet). All of these activities are going to happen during the period that your building is in existence and use. In communication, we are going to witness translating machines, global libraries, logical language, new languages. In manufacturing: efficient electric storage, sea mining; space mining – all done by the year 2020. Under biology and chemistry: control of heredity, bioengineering; intelligent animals (my wife calls me that now) and even artificial life. And then in physics, of course, the most exciting concept is space-time distortion. My point is that your buildings will be here when these activities and discoveries are in existence.

Alternative Strategies of Learning

Let me move on to a discussion of alternative methods of learning available to educational systems. The space must recognize differing needs for differing learning methods. Most community colleges and universities are primarily designed for programmed learning. I would guess that 90 per cent of the present curriculum is programmed learning. Recognize that programmed learning includes a lecture by a faculty member. Teachers and educational systems select alternative methods of instruction. The building needs to be designated to accommodate these differing methods. To date, most students spend most of their time reading books and listening to – or ignoring – lectures. If we look into the years ahead, into some of the existing experimental programs, we're increasing the use of the discovery or inquiry method of learning. The primary task of inquiry is to cause people to think rather than to memorize. Programmed learning does a beautiful job on the memorization of facts and information. It is important. It is necessary. It needs to be improved. But if you visit most classrooms, other than some science labs and vocational areas you will find the lecture of a professor or instructor to be the most common form of instruction. It requires one type of space. As we move toward the inquiry method of learning, where we cause people to identify problems and issues and to be able to solve new problems – which the world of tomorrow is – different kinds of space are needed. Incidentally, one "by-

product" of increased use of inquiry is an increased rate of social-scientific change and increased social unrest.

Curriculum Change

The concept of decentralization of the school or the college is upon us. Here at Michigan State we have created a number of small colleges within the University. Their primary purpose is to combine the advantages and resources of the large university with the advantages of the small personalized college. The community college is facing the same problem: Large masses brought together and the resultant need to internally decentralize. The question is: How do we centralize, what do we centralize; how do we decentralize and what do we decentralize? That issue needs to be faced in your educational planning.

An additional instructional concept is "large group instruction." We have been moving dramatically towards increased use of large group instruction. Incidentally, large group instruction is not cheap. It's done in order to free people for other productive purposes and to bring unique technological resources into use. Few emerging curriculum concepts save money. For example, we built our College of Education a decade ago; we included one "large group" instructional space. Critics said we were wrong in including such a large space. In retrospect, we didn't build enough large group spaces. Our building has been made obsolete by changes in instructional methods.

Team teaching, utilizing para-professionals, is another concept that is impacting planning and design of future community colleges.

Small group seminars. I was amused – several years ago we made a study of some 300 educational systems which were most innovative. During the study we visited one school in the New England States where they were utilizing small group seminars. The concept was to move away from the standard lecture to the small group seminar. Students were to develop contracted projects, conduct research and defend their findings and conclusions. We visited these small group seminars. The administrator had planned and implemented the concept. In reality, there was the teacher lecturing. My point is that we don't really bring about significant curriculum change by edicting that we're going to have small group seminars.

Independent study. Many of these changes have been tried, failed, and then correctly reinitated. For example, independent study used to consist of turning a student loose and telling him to return when he was finished. Now we have discovered that the most expensive instructional method is independent study. But isn't one major purpose of the community college to assist people in becoming self-actualizing? Therefore, isn't independent study an important prerequisite to continuous learning? Actually, the concept means guided independent study; it means the development of contracts; it means consultation; it means a new role for the teacher, a new role for the learner; and it means a considerable investment of time and money. It also means different space.

We are moving away from traditional grading systems. Ironically, many community colleges originally rejected traditional grading systems. Now that other education systems are inventing new methods of evaluation the community college is returning to traditional grades. In place of a grading system, we are moving towards developing measurable objectives, with different rates of time permitted for the completion of these objectives. No longer will there be a need to identify first-year or second-year programs. When the student has completed certain measurable objectives he will then move on.

Time allocations for teacher planning and team planning is another change. This planning time is linked with the increased utilization of para-professionals, secretarial, and media support staff for teachers.

Tomorrow's educational facility planners need to link directly with curriculum planners. The future college should serve as the "triggering" device for curriculum improvement with the building physically expressing planned curriculum changes. Some of the major emerging educational concepts are:

1. Large Group Instruction
2. Small Group Seminars
3. Independent Study
4. Team Teaching
5. Individualized Programs
6. Ungraded Instruction
7. Variable Time Blocks
8. Professional, Para-professional, Technical Teams
9. Electronic Learning Aids
10. Instructional Materials Centers
11. Linguistic Laboratories
12. Programmed Learning
13. Schools-within-a-School
14. Informal Learning and Counseling Areas
15. Teacher Planning Areas
16. Expanded and Changing Vocational-Technical Programs
17. Total "Linked" Systems of Education
18. Continuous Curriculum Change

Permit me to speak briefly about students, the one individual who is largely ignored in the planning of most community colleges. Many adults are disturbed, dismayed, and upset by recent student riots and demonstrations. In my humble opinion these protests are overdue. The end product

of student unrest – there will be some problems, there will be some heartaches, there will be some cruel things happen – will be a better educational system. For example, we have lectured students for years: You should be concerned about your system of government, about the major issues of our time, etc. Yet, the first time they go down to Washington, D.C. to voice their protest against present governmental policies, we say: Oops! Stop! We didn't mean that. Actually, if we really believe in the capacity of students to improve our society, we must believe in their active participation. Community colleges, both in space and program, have to recognize this fact. I'm not making a plea for anarchy; I'm not making a plea that all students are correct, but I would like to analyze the student in terms of current activities. A stream that historically, over the last twenty years (when you and I went to school), was relatively constant. A stream largely concurrent with existing goals of society, as developed by our parents. You and I were not highly interested in the social issues of our times. Few students played active roles in attempting to correct social inequities. Most of us went to school to get job skills, to get jobs, to get married, and to live in our little white houses out in the suburbs. Today's students aren't accepting that passive role. Lord, bless them. It's long overdue. I'm not overly frightened by the threat of communism taking over our campus and our government. That either assumes that communism is a superior form of government, or today's students are very stupid. Obviously, both assumptions are incorrect.

What is happening is that many adults are confused. Some of the hippies who are turning away from society are really not making any constructive contribution to society, yet they are basically a peace-seeking group. Many hippies have turned out of the main stream of society. They are not doing harm to others; nor are they doing anything to improve society. In fact, they are parasites upon society, without making constructive participation in its needed improvement.

On the other hand, we have another group who not only have turned out of society, but are attempting to destroy the present society. This group represents a small minority on most college and university campuses. They are certain the existing system is wrong and they wish to destroy it. Their primary reason for wanting to destroy the system is because they desire to replace the present leadership with their leadership. They desire power and control. This group should be listened to, carefully, but we should not and we must not allow this power-hungry group to grab control. The group that we need to be primarily concerned about is the 90 per cent of our students that are pushing against society and who wish to improve it. Let me be specific. They are saying to us: "We don't like your morality, we don't accept your goals, and we don't like your set of values – because they are wrong." And, to a considerable degree, they are right. If you look at our generation, our morality, our goals and our ethics are, at best, inadequate. These students are saying to us: "Don't try to impose your values, goals and ethics on us. We're building our own morality. We're building our own ethics." Now, if we could objectively

analyze the situation we might draw the following conclusions. In the first place, there are more younger individuals than there are older people – look at the birth rate figures and other demographic data. In the second place, each year we are getting older and tired; and in the third place – they are going to prevail. Period. Accept it. Recognize it, and attempt to work with them. We can suggest, we can advise, and we can counsel – and once they perceive us as not in an adversary role they may listen to us. We are not going to create their morality and their ethics – they are. We have been overly disturbed by the small per cent that are turning out, and the small per cent who are trying to destroy. Let's get concerned with the 90 per cent who will improve and build our nation. If my assumptions are correct it will require changes in the place and the space. For example, large central congregating areas should be avoided like the plague.

The Space

The type of change and the rate of change is going to accelerate. We made a study some years ago. It wasn't a very good study, but we found that between 1900 and 1950 academic spaces in universities changed once every 25 years; science labs, for example, were replaced about once every 25 years. There wasn't any real need for the space to change, as the science program only changed about once every 50 years. Between 1955 and 1965, our best guess is that building space in colleges and universities changed, on the average, once every 12 years. From 1970 to 1980, it appears that the space will change in use in less than seven years. Go ahead and build a science lab, build an art center, build a counseling center; but recognize that in all probability it will change in about seven years.

About beauty. It seems to me that one thing that has been missing in most of our new community colleges is a design commitment to the good life, expressed aesthetically and artistically. Few colleges have taken a serious position in terms of beauty as a major goal. Most colleges seem to express masculine, massive, monumental symbols. If we look at the extreme tension that today's students are under, if we look at the rapid rate of change, if we look at the increase in mental illness – we simply must build space that reduces tensions and causes people to come together psychologically. Aesthetic surprises and tension-reducing areas are of vital importance today. This factor presents a real challenge to the community college planner.

Obviously, we're going to have to move to larger community colleges. Huge community colleges. But the challenge is to decompress and decentralize within large centralized groupings. It is being done in a few colleges; it can be done. We can decentralize aesthetically, humanly – and we must move away from compression which creates psychological explosions.

Communication. We need to plan to build spaces in which multiple directional communication of various types is increased. Most of us have learned that the most inefficient way of communicating is by lecture – one person trying to lecture to 250 different individuals. For example, this

speech is obviously meeting my needs, but it isn't doing much to change your values, goals, and behavior. Future educational facilities need multiple ways and places for meaningful small group inter-action to take place.

Human values. Educational facilities committed to the increased worth and the dignity of each individual is becoming of primary importance for the American community college planner. This commitment to human values is being expressed in a variety of spaces, some large and some small. Each of these spaces, however, expresses a basic belief in people through the use of scale, form, texture, color, sound and beauty.

One final point: You should recognize that your college is going to lose its capacity every year. Many community colleges are amazed that they always need additions and new spaces, and yet they have not expanded enrollments. Actually, a building loses capacity each time you improve its program. We need to recognize this diminishing capacity concept in our planning.

Summary

I would like to classify my architect friends (I only hurt the ones I love) into about three or four bins: One is the creative individualist. This architect has more ideas than a hound dog has fleas, but he is incapable of sharing these ideas or having each idea evaluated by other members of the planning team. One of the greatest irritants to the "creative individualist" is the desired program and correct facility relationships needed to permit the college to efficiently and effectively function. I believe these architects belong in the zoo or university.

A second classification of architects is the plumber. I have worked with plumbers. The plumbers went to school (once) and learned to design colleges in one way. They are grinding out a single solution over and over and over and over again. It was good in 1930, and therefore it's good today. We must avoid plumbers. Planning and programs are changing so rapidly that plumbers create educational "outhouses."

The third group (I'm sorry about this, friends) are the King Arthurs. The King Arthurs are still building castles. We can visit some recent castles. They even have parapet walls. I keep looking for the knights standing behind the walls looking down on the moat and drawbridge. King Arthur's over-design. Incidentally, these castles are exceedingly expensive.

What we need is creative architects to join with educational planning teams in planning space for the future. It seems to me that these kinds of architects are priceless, and the ones that we educational planners so desperately need.

Today and tomorrow are exciting periods in the evolution of the American community college. Throughout our nation space designers, curriculum planners, and administrative leaders are planning new spaces designed to serve our rapidly changing world. A world in which the human element of design is at long last beginning to prevail.

COMMUNITY COLLEGE CAMPUS PLANNING IN ACTION: 1

Charles E. Chapman

The conception and birth of an inner city, urban renewal area community college, with its central campus in downtown Cleveland.

One morning five and one-half years ago, seven residents of Cuyahoga County, Ohio, arose, looked at their morning newspapers, and learned to their great surprise that they had been appointed as members of the newly created Community College district board, Ohio's first. Only two of the seven knew any of the others. Only one had had any previous formal connection with a college or university, and his was a private, highly selective university.

Inexperienced and with no funds of any kind and none assured, but with a determination to accept the responsibility they had assumed and to develop an outstanding college, their first acts were to seek professional assistance and to secure planning money from private sources. A $75,000 planning grant was made to them by a private foundation, office space was rented and a secretary was employed. A professional consultant, an authority on community colleges, was employed for a few weeks to give direction to the Board during its early planning period. Six weeks later I was asked to come to Cleveland as Director of Planning; I assumed my duties in July, 1962.

From the inception of the district we have been convinced that the College (its services, facilities, image and all of its other component parts) would be meaningful to the extent that our plans and the execution thereof were effected within the circumstances that characterize the community that the College was to serve. Circumstance, as we used the word, coincides with the dictionary definition which reads in part as "the sum of essential environmental characteristics."

What were the environmental characteristics of Cuyahoga County? Who were its citizens? What were its economic characteristics? What were its cultural outlets? What were the existing post-high school educational opportunities within the county? What was the population of the county — its trends? What was the educational level of adults? What were the educational opportunities for adults within the county? What was the college-going pattern of high school graduates within the county?

Was a community-junior college needed? How many and what types of students should it expect? What were the educational needs of business, industry, and the governmental and health agencies in the community? To

get the answers to these questions we conducted, in the summer of 1962, a socio-economic survey of the county. We discovered the following:

1. Cuyahoga County had a population of 1,800,000 people, approximately 22% of the State's total. As a county, the population was growing, but its principal city, Cleveland, was losing population.

2. The citizenry of the county was heterogeneous. The population of Cleveland consisted of approximately 30% Negro and large ethnic groups of Italians, Hungarians, Slovenians, Greeks, in polls extended throughout the county. The educational level of adults was a little below 12 years. Economic levels of families ranged from the subsistence level to the multi-million dollar class.

3. The economic strength of the county was considerable. Its components varied a great deal. Its assessed valuation of six billion dollars contained 70% of all the industries listed by the United States census bureau.

4. The county was rich in cultural outlets – art, music, recreation, and the theater.

At the same time, it had a deteriorating inner city. Its ugliness and deprivation of its residents was deplorable.

5. Post-high school educational opportunities within the county were restricted to five well-established private colleges and universities and several small church-related colleges. The number of high school graduates in the spring of 1962 numbered 19,000. Local colleges enrolled only 1200 of these as full-time freshmen.

6. The college going pattern of high school graduates in the county could be classified as very very poor to excellent by national standards.

We concluded that an open door, low tuition, comprehensive community-junior college was badly needed and that it should be started as soon as possible. This decision was confirmed simultaneously by results of a questionnaire completed by several thousand graduating high school seniors and the results of two public hearings. These public hearings were attended by leaders of business and industry, health agencies throughout the county, educational leaders, and office holders from throughout the county.

On the basis of these findings, which were formulated into an official plan, the State of Ohio awarded a charter to the Board of Trustees in December, 1962. It was the first public college to be chartered in Ohio since 1910.

Classes were started in a 70 year old elementary school in September, 1963, with funds derived from private sources. Annual tuition of $300 per full-time student was charged and is still in effect today. Three thousand students enrolled. Several hundred others were turned away because of lack of space, funds, and personnel. (Footnote: Since the initiation of the College, State support has risen to $335 per FTE and substantial capital

support has been received. The county has also furnished both operating and capital money.)

Need for the College has been reconfirmed each fall since that time. In the fall of 1964 the initial enrollment (1963) of 3,000 more than doubled. In 1965 it reached 9,600. In the fall of 1966 it approximated 11,000. This fall 12,600 were enrolled and approximately 500 more were turned away due to lack of space.

Due to the need for the College and the decision on the part of the Board of Trustees to initiate instructional services as soon as possible, temporary facilities were used initially and have been added to each year. To date, all of our programs have been conducted in temporary facilities located in six different locations in the county.

A great deal of talk has taken place regarding the question of whether a community college that is responsible for serving an urban population should locate its campus in the suburbs or downtown. And if downtown, whether in a new facility – provided a site can be obtained – or if it should be located in an existing, centrally located office building renovated for college use.

Our decision was to establish a multi-campus program with its largest and most comprehensive facility situated in the heart of Cleveland. Fortunately, we were able to acquire 40 acres of urban renewal land within one mile of the center of Cleveland. We also enjoyed, because it was urban renewal land, substantial reduction in its cost. The estimated market value of the land was $80,000 an acre; our cost was $16,000.

While there may be some advantages in acquiring and renovating an existing office building, we felt that the disadvantages outweighed the advantages. The disadvantages to us appeared to be:

1. The built-in structural inflexibility of such a building. While considerable modification can be effected, bearing walls and other unmodifiable features preclude the kinds of spacial relationships necessary for a comprehensive program.

2. There is generally a lack of space irrespective of how extensive renovation may be. (Example: Gymnasium, library, lounges, cafeteria, theater.)

3. Elevators are usually too small and too few. Stairwells are too narrow. Evacuation in the case of emergencies is at best a time-consuming process.

4. Parking is a problem. It is aggravated in a central urban setting.

On the basis of our early analysis and brief history to date Cuyahoga Community College has developed a comprehensive program. I shall not go into details since all of us here I am sure are familiar with essential elements of such a community college – its university parallel program, its technical occupational or career programs, community service programs, adult education programs, general education offerings and so forth.

We currently have a multi-campus operation, a metropolitan campus located in temporary facilities in downtown Cleveland and a suburban campus in the southwestern portion of the county. As I mentioned earlier, we have a total of six locations where classes are taught.

In planning our permanent facilities we have taken into account the data gathered in 1962, our experiences as a functioning college, additional data that we have gathered along the way, and changing social conditions. We have attempted to be guided by our initial belief that as a comprehensive community college we keep in mind the characteristics of the county to be served and the types of students to be served. Perhaps the basic characteristic of an open door urban community college is the nature of its student body. Cuyahoga Community College has been and will continue to be a composite of Cuyahoga County. In respect to academic ability, every level of academic preparation and native ability are present. The same is true of student social, emotional and psychological maturity. The same is true of economic backgrounds. Our responsibility we feel is to structure a pattern of educational services that will give reasonable assurance of success to all who elect to attend the College.

On the basis of accumulating facts and experiences, three basic planning decisions were made:

1. The College would continue to emphasize and expand upon its comprehensiveness.

2. To meet the needs of the County, three strategically located campuses would be built with sufficient open endedness to allow for both physical and educational expansion. The eventual need for a multi-campus operation that could eventually require more than three campuses was clear cut. In 1967, 23,000 high school seniors were graduated within the county. In 1975, 35,000 will be graduated. (This dramatic increase is a reflection of what is happening in Ohio. In 1965, 265,000 youth were attending college in the State. The Board of Regents has anticipated that by 1975 enrollments will increase to 545,000. The Board has also anticipated that 50% of the increase will have to be absorbed by colleges and universities in northeastern Ohio.)

Because of the centrality of Cleveland proper, its accessibility, and the Board's earlier conviction that priority should be given to an urban campus, the first permanent campus of the district is being built in downtown Cleveland.

3. A permanent in-house planning and development staff would be employed to master plan the facilities needed by the College.

The planning department was established and staffed two years ago. It consists of a Dean of Planning and Development, a Director of Institutional Research, and a Coordinator of Projects and Proposals. Our decision to establish a permanent planning department instead of relying on consultants was based on the long range plans and needs of the College that would extend over a minimum of ten years. We felt that the money need-

ed for effective planning under our circumstances could best be spent this way. The basic charge and responsibility of the planning office at Cuyahoga Community College is simple. It is charged with the responsibility of preparing the data necessary for the architect to plan and design facilities requisite to the educational services of the College. This entailed the following:

a. A study of the student body: who and what they were.

b. A study and description of the curriculum – past, present and future.

c. A projection of enrollments.

d. The total amount of capital needed.

e. Keeping abreast of socio-economic changes within the community and elsewhere and changes in teaching techniques through new media and methodology.

f. The preparation of educational specifications and continuing liaison with the faculty and architects.

The development of educational specifications and, in a large measure, the space requirements as they pertain to the instructional process has involved faculty, staff, and administration throughout all phases of the planning.

At this time, Phase I of the Metropolitan Campus which consists of approximately ⅓ of the total campus is 60% complete. This campus has been designed to accommodate 7,000 FTE day students (30 semester units per year) and will cost a total of $33,000,000. We expect to occupy a portion of the campus next fall and the remainder in the fall of 1969.

We are pleased with the shape of things at this campus. In addition to receiving a national award given by Educational Facilities Laboratories, Inc., the American Institute of Architects, and the Department of Health, Education, and Welfare, it is going to be an exciting and functional facility in which to learn and teach.

Our next formal step will be to update our plans to include the construction of two additional campuses that will be needed by the early 1970's.

Our plan of action involved the services of an architect when the College was chartered, and from the outset we have been fortunate to have one who possesses the attributes requisite to sound planning and design. It is our conviction that architects who assume the responsibility of designing a community college facility must possess, in addition to a basic professional competence, additional characteristics. They must know the kind of college a community college is; its student body; the nature of and reasons for its constantly changing services – both formal and informal; how it differs from the high school on one hand and from four-year colleges on the other; how it has evolved as an institution of higher learning in our culture; and the requirement that it reflect and meet the peculiar needs of the students and community it serves.

Design must be based on these understandings. Imitation may be the highest form of flattery, but it certainly is not the highest form of architectural design.

The necessary architectural insights and understandings cannot be gained by reading education specifications or on past experience in the designing of commercial, public schools, or university facilities. They can only be acquired through a careful study and understanding of the community college as a particular kind of college, visits to existing facilities that are worth looking at, and participation in conferences such as this.

I do not think I have to tell this group the importance of the role of the architect. The design and usefulness of a facility is due, in the final analysis, to the quality of architectural services rendered. It is so easy to employ the wrong one.

Conclusion. In planning and developing Cuyahoga Community College, we have attempted to keep in mind what we consider to be the primary characteristics of an open-door, comprehensive community-junior college, the nature of its student body and the kind of community it serves.

We have looked upon our facilities as a means to an end — an end that is meaningful to and which results in a more productive and enjoyable life on the part of its students.

We have attempted to design buildings that assist in the development of an environment which facilitates effective learning and teaching.

We have attempted to design a facility that is both flexible and functional — one that lends itself to changes in teaching media, techniques, and methodology as student and faculty readiness increases.

And finally, we have attempted to design a facility that is also beautiful — one that elicits pride and pleasure from all who see it.

COMMUNITY COLLEGE CAMPUS PLANNING IN ACTION 2

Clifford E. Erickson

An "instant" campus, utilizing modernized farm and rural buildings as an interim solution for an Illinois Community College.

Illinois — An Unprecedented Opportunity for Community College Planning

It will be my purpose to touch on aspects of planning derived from our experience at Rock Valley College and from unique experiences which we are having in rapid development of the state system of community colleges in the State of Illinois.

Three years ago Illinois had 25 community colleges, but only one of them had its own district, taxing base, board, and administration. In June, 1965, just a little over two years ago, the legislature passed unanimously in both houses the Public Junior College Act; and it was enthusiastically signed into law by Governor Otto Kerner. Since that time, a State Junior College Board has begun its work and 33 free-standing community college districts have been established by reorganization of old colleges through separation from the lower schools or by creation of new districts. Over two-thirds of the land of Illinois and over 80% of the population now fall within the 33 community college districts. A good share of the balance can be annexed into existing districts. Every citizen of Illinois has the privilege of attending one of the existing community colleges without personal expense greater than that of persons in that district.

Since none of these existing or emerging community colleges has a campus built for community college purposes, we now face the prospect of building 40 or more community college campuses (five or more for Chicago) at a cost-figure approaching three-quarters of a billion dollars.

To face this great challenge, Illinois — through the Board of Higher Education and the State Junior College Board — is sharing the cost of these new campuses in the amount of 75% of basic construction costs. State and federal funds in the amount of $160 million are already in sight and allocated to the local districts for the biennium ending June, 1969. Local bond issues with 25% matching funds are bringing this to over $214 million. Projections are being made now for construction needs in future biennia.

A First Challenge — The Interim Campus

Clearly, the first challenge faced by the boards and administrations of the newly-established community college districts has been the need to

meet the oncoming wave of student enrollments years before permanent campuses can be specified, designed, and built.

We at Rock Valley College opened our doors to 1,060 students in September, 1965, after several months of preparation. We had hoped to open on our beautiful 217-acre campus site in an articulated group of relocatable buildings which we had chosen to call an "instant campus." A local attorney with a conservative leaning filed a suit challenging the legal basis of the junior college district and its right to enter such contracts. In a matter of weeks we improvised a new solution to our problem by offering day classes in the Naval Reserve Training Center and evening classes in a high school six miles away. Physical education was offered at the National Guard Armory and at the YWCA. Library services were arranged on a cooperative basis with the local public library.

After the quo warranto suit was resolved in favor of the district, we were able to work out an even more creative solution to our interim campus needs for occupancy in the second year of operation. Immediately after the passing of a $4 million bond issue referendum on March 1, 1966, we authorized th architects (a) to prepare the long-range campus development plan; (b) to make drawings for the remodeling of the farm buildings on our campus into a student center, counseling offices, library, and administration center; (c) to design new low-cost buildings for the permanent maintenance building complex to serve temporarily as classrooms, laboratories, and faculty offices; (d) to design permanent parking lots to serve the interim campus; and (e) to design the interim buildings so that appearance and function would be consistent with the permanent campus to be built in the years ahead.

In September, 1966, 2400 students were moved onto the campus just five months after ground was broken. This fall our enrollment has moved beyond 3,000 students. We have begun to lease classroom space off-campus in the immediate neighborhood. Visitors to our campus are delighted with the truly college campus atmosphere that has been created already. On his recent national tour, B. Lamar Johnson of UCLA walked into my office with the enthusiastic remark, "You have created instant tradition with your interim campus buildings."

Our interim buildings are permanent buildings which will have new or revised functions in the years ahead. Every dollar invested in the interim campus is, therefore, a dollar invested in the long-range use.

Illinois Has A Variety of Interesting Solutions to the Interim Campus Problem

It is a pleasure to report that Illinois has other creative solutions to the interim campus problem. Sauk Valley College in Sterling-Dixon has an attractive and functional one-acre steel building with classrooms on the perimeter surrounding a loop corridor. Inside the corridor loop are faculty offices and two major areas for library and student center and dining.

Illinois Central College at Peoria has contracted with a builder to lease for five years a group of on-site constructed frame buildings, total-

ling 70,000 square feet. These buildings will later be removed to another location by the builder-owner.

Harper College in Palatine is using factory prefabricated relocatable buildings as an extension to a high school complex to provide faculty offices and other special services. The high school facilities are utilized for classes from 4 to 10 p.m.

Come to Illinois if you would like to study a variety of interesting solutions to the interim campus problem!

A Word About Site Selection and Enrollment Projection

Based upon a feasibility study, professional judgment and experience, a projection of enrollment was made showing an enrollment of 8000 students and 5300 equivalent full-time by 1975. A site was sought in early 1965 to accommodate this many community students.

Some twenty sites were proposed. An architect was engaged to evaluate the sites for college purposes. That site selection touches vested interests and sensitive nerve endings is well known.

We were able to purchase on contract a 217-acre farm site almost precisely at the geographic and population center of the district for $2300 per acre. Two and one-half years later — after extension of sewer and water and responding community development — we have had a portion appraised at $5700 per acre. The beauty of our site and the speed of development of our interim campus have given us what seems to be unanimous community support.

An Educational Philosophy and Program Plan is Basic

Before campus planning can begin and an architect selected, it is essential that an educational philosophy and preliminary outline of facilities program be set forth. In our interviewing of some twenty architectural firms and associations of firms, we found that the selection of architect finally rested upon choice of men whose philosophy of architecture seemed most promising to carry out our own educational philosophy and purpose.

In turn, we were surprised and challenged to learn that the architects would not place pencil on drawing board until we had expressed our educational philosophy in a written statement of principles approved by our board which could serve as a guide to architectural solutions of our facilities needs.

We approached this task with the view that our campus shall not be merely a package for people but a dynamic learning environment where the physical aspects of classrooms and places of assembly have a profound effect on the mood of the individual and the effectiveness of his learning.

The ensuing dialogue between educator and architect has been a

stimulating experience in refinement of subtle and obvious educational goals. Time will not permit an exposition of this topic here.

Our design architect, Ernest J. Kump, and I have written an article expanding this concept of educational philosophy in architectural design which will be published in the *Junior College Journal.* Topics of this article include technology and human values, aesthetics and costs, and the architectural factors of scale, order, material, and style.

Faculty Involvement in the Preparation of Educational Specifications

We at Rock Valley have prepared preliminary and detailed educational specifications without the use of a general facilities consultant. Though this has been a burden on the administration and faculty, it has involved us fully in the continuing dialogue with the architects. There has been full participation in the steady refinement of each learning space through the steps of preliminary specifications, detailed specifications, schematic drawings, preliminary plans, key plans, and working drawings.

Consultants are used on a special assignment basis to tap special areas of competence. Our architects have engaged a nationally-recognized landscape consulting firm. Dining layouts and equipment have been developed with the aid of a food service consultant. Our TV production center and campus closed-circuit network are being developed with the help of a television equipment consultant.

Four-Phase Construction Poses Unique Problems

A four-phase construction plan requires careful planning to assure that primary services are maintained and that the comprehensive program can expand as enrollment expands. Some spaces in Phase I will be converted to new uses in later phases. By advance planning these transitions can be made with minimum cost.

We are not driven to make a choice between vocational-technical buildings and academic buildings, because our philosophy leads us to place vocational-technical laboratories in the same buildings with classrooms and laboratories for transfer programs. Our philosophy also leads us to utilize the vast resource of the community for internship and work-study experiences for students in occupational programs. The billon-dollar laboratory in the community does not need to be duplicated on our own campus, except that individual pieces of equipment may be needed to demonstrate principles and processes. Our Career Advancement Program has already involved 33 principle industries in our community in a partnership with the college and providing work-study experience on a half-day basis in a number of our vocational-technical curricula.

We have placed in Phase I permanent construction, two classroom-laboratory buildings and the heating plant. In Phase II we have the library, student center, and physical education facility. In future phases we will complete the auditorium, administration building, stadium, classroom buildings and planetarium. Parking lots will be added as needed.

Campus Plan and Building Design — Give Final Expression to the Dialogue

By means of slides, now, it will be my purpose to indicate how some of our educational philosophy and program planning is expressed in the Master Plan of our campus and in the external and internal design of our buildings and facilities. The visual materials will include:

a. Projection of Enrollment
b. Views of Site
c. Statement of Educational Philosophy and Other Principles for Campus Development
d. Preliminary Educational Facilities Specifications
e. Interim Campus Plot Plan
f. Views of Interim Campus
g. Master Campus Plan
h. Detailed Specifications of a Building
i. Schematic Drawings
j. Key Plan Drawings
k. Preliminary Drawings

TRENDS AND INNOVATIONS

James D. MacConnell

Widely known for his work in integrating modern concepts of school construction with principles of child development, curriculum and methods of instruction, Dr. MacConnell aptly relates trends and innovations to the community junior college area.

There is every indication that more thought and deep concern is being given to the planning process in the community college field than in most levels of education, by professional educators, architects and the lay public. Whether this is being brought about because these institutions are being developed at a time when we are engaged in reviewing our educational position on all levels, or for other reasons, is not clear.

The community college differs in that it is somewhat unique and a fairly new addition to our educational organizational creations. It is an institution of higher learning that has many local ties.

It's being a new creature it is usually on its way shortly after being organized and has few, if any, staff members on duty when its embryonic stages are being formulated.

Most lay members concerned have mixed ideas as to what it is, varying from an extended secondary school to a small liberal arts institution at home, to a miniature university — "None of which it should be."

Some of the major trends in community planning that are apparent today are:

1. The keen desire of professional and lay people involved is to devote more time to planning FOR these institutions than has been commonly thought of before.

2. A deep interest in proper timing of the steps being taken yet a keen desire to cut the red tape and get on with the project.

3. A better understanding of the roles of those involved, and the desire to make use of all available talent as well as to supplement additional skills when and where needed.

4. The willingness to break from tradition and to explore ways of doing things that appear to give promise for more learning in less time.

In 1965 there were 1.25 million students in junior colleges. The annual rate of increase in enrollments now is about 20% and is accelerating. There are 800 junior colleges in the nation and 500 are publicly supported junior colleges.

In California 1 out of 34 persons is a junior college student and Florida aims for a junior college within commuting distance of 99% of its population.

Plant Seeds that will Sprout Ideas

Everyone realizes that education costs money, but can we afford not to participate in the economic benefits of a sound educational system? Centuries ago Confucius said: "If your plan is for one year, plant rice; for ten years, plant trees; for a 100 years, educate men." M. J. Rathbone, chairman of the board and chief executive officer of Standard Oil Company (New Jersey), in a publication entitled *Human Talent — The Great Investment,* stated: "The most important capital that any economy possesses is the skills which people carry around in their heads."

Study the Population Movement Trends

At one time we in this nation were rural and quite equally poor, today we are urban and very unequally rich. We now have a 200,000,000 population and we find people concentrating around a limited number of centers. Some 80% of our population today is concentrated in 20 centers, and approximately three-fourths of us are occupying less than 2% of the land, and there is every indication that the next additional 100,000,000 will occupy only another 1% of the soil.

The 1965-66 statistics show that 30% of the building market was confined to 33 counties in the United States while 2124 counties had only 10% of it.

When we stop to realize that the migration to urban centers is probably creating one of the greatest social and economic problems in the history of our country, we must face the fact that the junior college officials are deeply involved or soon will be.

Master Planning

A Master Plan will aid you in achieving those needs and desires within a framework of resources already available, or those than can be reasonably anticipated from within the Community. The Master Plan, then, is seen as a guide. It is the drafting of a blueprint for total development that people can use to direct the resources and hopes for continual and improved development of school facilities. However, planning is more than just gathering information and facts about the past and present in order to predict the future. It is a process, and I think one that is sensitive to many changes. Planning is never complete. It is an ongoing process.

It is evident that master planning for the future is a must if we are to prove to those providing the funds that we are interested in obtaining maximum benefits for dollars spent. The savings of the future as in the past will be traced to the planning processes that were inaugurated earlier. It is inconceivable that anyone in a position of responsibility for the expenditure of public or private funds would not initiate a master plan or

insist that one be established in the community college in which he is employed.

It is predicted that 19 billion dollars will have to be spent on college construction and campus development prior to 1972.

In some instances it is as important to know that you aren't going to grow at all as it is to know that you are going to expand rapidly. The lack of professional staff and an inexperienced governing board in the beginning stages of a community college has imposed great hardship in a number of instances. State Departments of Education, College and University Service Bureaus, as well as educational consultant firms, have eased the strain in many newly formed districts.

Policy decisions must be made, facts and figures are paramount as governing boards make decisions that will influence the lives of many generations to come. Harold Gores states: "If you don't have a master plan for your institution, you aren't the pilot, you are just a passenger."

Educational Specifications — Acquaint yourselves with the Educational Program

Every community college administrator should have a speaking acquaintance with the educational program, current and planned. It is from this knowledge that you can make a substantial contribution in the area of educational specifications. The inability of most of us to become acquainted with the modern tools of teaching and learning is appalling.

Many facilities are planned throughout the world today without the benefit of educational specifications. We have recently been concerned with two colleges in other countries that were designed without adequate specifications. Both facilities had to be redesigned when it became apparent that continuing without adequate educational planning would have resulted in many inflexible and even unusable spaces.

Planning for the facility is as important as planning the facility. We as educators have been unfair to architects in that we have not been furnishing them with the problem. However, we are quick to criticize the solution as it appears much too late to change the form of bricks and mortar. Too many facilities are being awarded architectural prizes with little if any attention given to the functional aspects. This is no fault of the architect for he is seldom given adequate educational information with which to plan the building to accommodate the program.

The bond election today, the bulldozer tomorrow, is true in many cases. Yet it is an expensive and inexcusable one. It is not too difficult to secure funds for a facility, but it is a major fete to find resources to determine as to whether or not a specific building will answer the educational challenges expected of it when completed.

Innovations will play a Key Role in the Future

To innovate is to use the process by which an invention or idea is translated into a use. In many instances this is a new use and has been

discovered and brought to the attention of the benefactor by an alert third party. As educators we are innovators, and we all know many who are inventors. Very simply, the difference between the process of invention and innovation is the difference between the verbs "To conceive" and "To use."

Invention "to conceive" the idea.

Innovation "to use" the process by which an invention or idea is translated into the economy.

Economic effects of three technological industries:

1945 Television – Jet travel – Digital – computer industries were commercially non-existant.

1965 These industries contributed more than $13 billion gross national production.
An estimated 900,000 jobs also effected the quality of our lives.

There is a ferment in education in the United States, with students demanding more freedom and less rigid teaching methods. Already a move is on to decentralize various universities to put more emphasis on faculty contact with individual students. At the University of California at Irvine a computer is being used to assist instruction, freeing teachers for other tasks.

Much of the teaching is automated. Students who wish to use the computer use a typewriter keyboard at any of the available terminals around the campus and type out their request for instructions. After identifying the student, the computer begins lecturing and automatically at certain points submits the student to a multiple-choice quiz as a way of checking his progress.

When we realize that the poloroid camera, air conditioning, the vacuum tube and titanium were all invented by individuals we should soon recognize that we will not get far if we wait for the government or some large corporation to seek a solution to some of our problems.

The approach which has resulted in the construction of some 13 schools in California alone consists of analysis of building needs posed by new secondary school program and subsequent follow-up by inviting manufacturers to develop new products to meet the needs. In SCSD, the manufacturers provided systems of steel structural components, ceiling and lighting components, air conditioning units, interior partitions, cabinets and lockers. Local general contractors bid on each school, with the component manufacturers becoming sub-contractors deliverying and installing the components. Architects are not limited to layout and have a number of choices within the component range. Different systems that can be applied to high rise buildings are now under study under the same auspices and we are anticipating greater breakthrough.

COMMUNICATION: Some Mistaken Assumptions

Gerald Miller

"Unfortunately, when I look at the daily communication behaviors of educational leaders, I see less awareness of the notion that meanings are in people."

I knew I was going to have a tough act to precede. Although I'm not personally acquainted with Professor Birdwhistell, his word is akin to the Gospel among those of us in communication, particularly those interested in the area of non-verbal communication. So, having had at least indirect exposure to him and his ideas, I was petrified by the notion of speaking before him. Now after hearing Professor MacConnell precede me, I realize I have been placed in an impossible position here this morning.

This situation reminds me of a story about Jash Heifetz, the great violinist, who was faced with similar circumstances. Heifetz had two concerts scheduled: one in Detroit, and the other in Chicago. However, there was a free evening between the two concerts, and in order to obtain a little extra revenue, Heifetz scheduled a concert in East Lansing. Unfortunately it happened to be scheduled on the evening of the great snowfall of 1967. Consequently, when Heifetz arrived at the East Lansing High School auditorium to perform, there was a very sparse crowd — some six to eight, to be exact. Heifetz walked onto the stage, looked at the audience, threw up his hand in disgust, and said, "I'm very sorry, I cannot perform for a group of this size. I'm used to playing to a packed auditorium. There will be no concert tonight. You may go to the box office and get a refund."

Immediately, a fellow sitting in the back row leaped up and said, "Just a moment, Mr. Heifetz. My wife and I took our lives in our hands tonight; we drove 100 miles over ice and snow-covered roads just to hear you perform. Now, you tell us you are not going to give a concert. Couldn't you sing at least one song for us?"

Ever since hearing this story, I've thought the notion of throwing up one's hands and saying, "I'm sorry, I'm not performing today," is an appealing way to get out of ticklish situations. But you are such a large and such a receptive audience, I'm afraid I won't be able to use that line. Instead, I'll have to move ahead and consider some of the ideas I want to share with you in the next hour.

I have a real penchant for becoming involved in easily misunderstood intellectual interests. When I began my undergraduate work at the University of Iowa, I was a philosophy major. Inevitably, when I returned home, someone would ask, "You're at the University of Iowa, now, aren't

you?" And I'd say, "Yes." And then they'd say, "What are you majoring in?" And I'd say, "philosophy." And then they'd say, "Oh, what's your philosophy of life, anyway?" So, I was stuck there.

That wasn't too good, so I went into political science. You can predict the outcome. Whenever you say you're in political science, someone says, "Oh, you're studying to be a politician." Well, since political science didn't work very well, I went into speech. People now said, "Oh, I know. You're learning how to make speeches," which was partially correct, but certainly not entirely accurate. Finally, I developed a consuming interest in social psychology. Inevitably, whenever I told someone I was studying psychology, I'd get a remark like this: "Oh, you're a psychologist, huh? Let me tell you about the psychology I used on this cop the other day when he stopped to give me a ticket." And I'd listen to this long monologue about the way the person had handled the situation.

Well, I thought someday I'd solve this lack of identity by getting into an area for which everyone would have a similar meaning, so that when we talked about it, they'd say, "Oh yes, I know what you're doing." But again, I missed the boat, because I got interested in the area called communications. I'm certain that when I throw the term communications out to you this morning, most of you will have very different, disparate, kinds of meanings for it. Some of you may be thinking I probably know a good 'deal about this microphone apparatus that is hooked around my neck; others may be thinking that I'm probably upon things like computers and machine translation. While others may be thinking that I know how to teach freshman writing and speaking courses. In short, I imagine that the notion of communications is generating a tremendous variety of meanings for each of you.

As a result of this ambiguity, one of the most useful things I might be able to do in this short time period is to acquaint you with what we're talking about when we discuss this area of communications. More specifically, I want to relate the area of communication to the educational process: both in a very general way and in a more specific sense.

What distinguishes communications from more traditional disciplines, such as speech and English are some of the basic underlying assumptions that guide and direct the student of communications. This morning, I'd like to worry a bit about three of these assumptions. Specifically, I want to mention three mistaken assumptions that underlie the more traditional approaches to the study of human communication behavior, and contrast these assumptions with three more defensible ones that can serve to improve the kind of on-going human communication that occurs. Finally, I want to relate these assumptions to two broad questions in the field of education: First, to what extent has education, and the educational process in general, managed to make the transition from these older mistaken assumptions to the more defensible assumptions underlying the communications approach, and second, what do these more defensible assumptions imply for education as we move into the 21st Century.

Thus, I'll be talking at a very general level, talking about developments in a very broad field. But in addition, I also want to worry about the extent to which educational leaders like yourselves have grasped these new assumptions and replaced the old, less-defensible assumptions with them. Or, to put it another way, I'm concerned with the extent to which you, in your daily communication behavior, are cognitively aware of the kind of assumptions I'm going to be talking about.

One more preliminary remark seems appropriate. I want to suggest that the educational system can be viewed as a vast communication system. And when we talk about education, whether we talk about physical facilities, faculty, administration, staff, students, or grounds and maintenance, we're talking about a vast communication system that has both inputs and outputs. What I'll argue is that the assumptions which underlie these communication inputs and outputs have an effect on the daily workings of the system, and, more specifically, they have an effect on the efficiency and the effectiveness with which communication occurs within that system.

Mistaken assumption number one, an assumption that has probably done more to impede educational progress than any other assumption, has to do with the purpose of communication itself. I want to call this mistaken assumption the message instruction assumption. Moreover, I want to suggest that much traditional education in communication skills has proceeded from an emphasis which placed the primary importance on the construction of messages, with little concern about the individuals or the people for whom those messages were intended.

We don't have to look far into the background of the educational system to see this kind of emphasis. Think back to your own courses. If you are typical, you can probably recall a number of hours spent in the 5th, 6th and 7th grades on an horrendous exercise called "outlining sentences." You spent a tremendous amount of time putting in a subject and a verb, a participial phrase going one way, and a gerund going another. Throughout all of this fun and games, the notion was that there was a correct and a right way to construct a message. If you got that message constructed in the correct way, you were communicating.

By the same token, when you got beyond the sentence unit to longer units of discourse – the theme, the speech, the oral written communication you see all of the emphasis was again placed on that unit of analysis we call the message, with little concern shown for such questions as: Who are you trying to affect with that message? What are the kinds of behavioral objectives you're trying to achieve in communicating with some group of receivers?

By contrast, the communications approach emphasizes that the purpose of all communication is to affect behavior. It isn't to construct messages; messages are not the end product in this process. Rather, messages are but one means toward the end of behavioral effect. And, whenever we engage in a bit of human communication with another person, our

purpose is to try to bring about some kind of behavioral change on his part: to change his attitudes, to change his cognitions or knowledge, to change his behaviors, to get him to do something, to expect something or to believe something. In order to accomplish these behavioral ends, we use messages, but we also use a lot of other variables.

One of the most remarkable transitions that has occurred in education in general is the increasing realization of the fact that when we are communicating within the educational system our goal is to affect behavior: a learner's behavior, the behavior of other faculty members, the behavior of other administrative staff, the behavior of that clientele called the general public whom we are trying to serve. Within the context of the educational system, we do see an increased awareness of the importance of behavioral effect and an increased understanding that that's what this communication business is all about. And so we sit down and ask ourselves very carefully: What are the things we're trying to do with our students? What are the technological resources at our disposal? What kinds of messages are we presenting with out technology, our physical plant, and our faculty and staff? But the basic question we ask is: How can we bring about behavioral changes we are trying to foster in our students? And, it's a very refreshing thing to me — who worried through a couple of educational methods classes where we talked about objectives like educating the whole child, and providing for the needs, interests and abilities of all the students, and other nebulous, poorly defined notions which didn't mean much of anything behaviorally — to see this transition occurring. So I think the change in emphasis is here. I think it is a change that will go on into the 21st century, and if you want to play the child's game of "Let's Pretend," it's fantastic to conceive of the things that technology might enable us to do, in terms of this goal of affecting student behavior.

For instance, one can conceive of programmed systems of learning, computerized and beamed out to a hundred community colleges in Michigan, Indiana, Wisconsin, or even over the whole country. This opens up a Pandora's box of problems, but it also provides limitless opportunities. It's almost like going through the mirror into Alice's land. And, as you know, some people, such as Marshall McLuhan, Buckmister Fuller and others have done a lot of speculating about the changes that are on the horizon. But, no matter how much we speculate about this broad general trend, we have to come back to the notion that we're trying to work with individual students and to change individual student behavior. I think we have observed a real education transition in the last 10 years; a transition which has recognized the importance of these behavioral objectives and the importance of structuring communications that will achieve them.

But what about the day-to-day communication behavior of the leaders in that system? To what extent have they managed to throw off the old assumption that the purpose of communication is to construct messages and to replace it with the more defensible assumption that the purpose

of communication is to affect someone's behavior? I would argue that the results have not been as startling or as optimistic as one might imagine. It strikes me that much of the daily communication among leaders in the educational field is still skewed toward the old message construction assumption. There are several reasons for this. First, we are all creatures of our own educational environment. And when I say, we, I'm including myself. All of us were reared in an educational system that placed a tremendous emphasis upon the notion of constructing messages. Given this fact, it's not surprising that some of the effects of that learning have continued to persist over time.

Secondly, the features of the formal organization in which most of us find ourselves reinforce this message construction notion. One characteristic of formal organizations is that they place a tremendous emphasis upon cranking out messages: communication effectiveness is often measured by quantity of message output. There is a tendency to reason: "Well, I did a good job of communicating today. I put out 14 memoranda, wrote seven letters, got six pages done on a report, and besides that, I talked for five minutes to some student who is flunking out of school. While I didn't get any place with him, I did do well with all those other things, so I think I'm communicating pretty effectively."

On the other hand, when the individual goes to his office and spends an hour or two interpersonally communicating with one person, he often leaves the office feeling uncertain that much has been accomplished. For at a very personal level, we often forget that what we're trying to do when we communicate is to affect someone's behavior.

What problems are created by this message construction approach to communication? Adherence to the message construction assumption forces us to be source-oriented, rather than receiver-oriented communicators. There is a tendency to forget the importance of the people who are receivers of our communication. And if I wanted to emphasize any point this morning, it is this: Those of you who are interested in the Community College planning business are not primarily in the architectural business, nor in the materials business, not even in the educational business. Rather, you're in the people business. That's where your success or failure is going to be determined — in the extent to which you can affect and influence other people. Thus, a receiver orientation enables you to look at your receivers and analyze the world from their frame of reference. Success in this venture is certain to foster more effective communication.

Let me now turn to a second mistaken assumption that is a hangover from the traditional approach to the study of communication. That mistaken assumption is that meanings are a property of words — that meanings are in words, and that the process of communication essentially involves selecting the word that has the right meaning, beaming that word across the ozone in some way, and dumping the meaning in your receiver's skull.

Our ordinary language habits trap us into thinking this way, because we talk about words as though they had a property of meaning about them. How many times have you heard such questions or assertions as: "What does the word, education mean?" Or, "What is the correct meaning for the term, teacher?" Or, "If he doesn't know the correct meaning of that word, that's his fault." These kinds of language hang-ups cause us to assume that the words we're talking about have a property of meaning. Conversely, this new approach to communication assumes that meanings are not in words, but rather that meanings are in people. Words don't mean, people mean; and when we communicate, our task is not to transmit meanings. Meanings cannot be transmitted. Rather, our task is to select words for which we have particular meanings, and to attempt to predict the meanings a particular group of receivers will have for these words. There's a big difference between talking about what is the "correct" word to use as opposed to saying: "I wonder what meanings I have for the term, education, and I wonder what meanings my receivers have for that term."

I think we have come to realize that in the educational process, in general, this phenomenon of different meanings is quite prevalent. And, in a sense, what you're doing in planning your community college programs is an indirect recognition that the term education, doesn't mean the same thing to all students. Moreover, I think you realize that, to some extent, you've got to accommodate these different meanings. You can't communicate with the student on the basis of: "You don't know what education really means," because that doesn't involve him or bring about the kinds of behavioral changes you're seeking. Rather, you have to communicate with each student on the basis of: What does education mean to him — what are the meanings he has for the term, and how can we structure a meaningful environment that will enable him to achieve the objectives that are consistent with this meaning. Fortunately, I believe that educational leaders are increasingly aware of this fact. In the 21st Century, there will be an even greater awareness of it. We're going to see a greater concern with individual differences, and the ways in which these individual differences affect people's meanings for the term, education. Conversely, we're going to discard the pronouncement: "This is what education is in this system, and if you don't like it, fellow, you can get out, because you don't know what education really means." I think that's a tremendous advancement, and people like yourselves are spearheading it.

Unfortunately, when I look at the daily communication behaviors of educational leaders, I see less awareness of this notion that meanings are in people. Rather, I see a strong conception of what education is, what a faculty is, what a teacher is, what a physicial plant is: in short, a general notion that there are correct meanings for these concepts. Until this notion is discarded, I'm afraid there will be continued difficulties in day-to-day professional communication.

It should be obvious that this second assumption is inextricably bound up with the first. These are not discrete assumptions that I'm talking

about; rather, they are closely related. To the extent that one can analyze his receiver, and to the extent that one can perceive distinctions between a high school dropout, a professor of classics at Harvard University, a local businessman, a disciple of John Dewey, and a follower of Robert M. Hutchins; he will be able to ascertain that each of these people have somewhat different meanings for the concept, education, and he will try to structure his communication to conform with the kinds of meanings that they have. But, to the extent that one tends to lump all these people together by talking about the "correct" meaning of the word, education, he will be an ineffective communicator.

Let me now turn to my third, and last assumption. It can best be illustrated by a short anecdote from Milton Rokeach's book, *The Open and Closed Mind*. The anecdote has to do with two Polish gentlemen who meet on the street in Poland, and goes as follows:

> Two men greet each other on the street in a small town in Poland. "Why have you not returned the pot I loaned you," one says to the other. "I did not borrow your pot," the other replied. "Besides, it was broken when you loaned it to me, and besides I have already returned it to you, intact."

At first glance, this exchange may sound like little more than the amusing prattle of a negligent neighbor who forgot to return a borrowed item. But I would suggest to you that it illustrates a much more basic principle; namely that people tend to structure their own reality to make it consistent with their aititudes, beliefs and knowledge. The third mistaken assumption which I have chosen to call the objective reality assumption, is the notion that reality is the same for everyone, and that we all tend to look at the world through the same cognitive and emotional windows; a far more defensible antithesis is the subjective reality assumption: the notion that everyone structures his own reality to conform with his prior learning, his attitudes, his beliefs, his socio-economic position, and a host of other considerations.

Fortunately, we have seen a transition to a greater awareness of the importance of the subjective reality assumption to the educational process. This awareness is reflected in the emphasis on flexibility of planning that permeates this entire conference. Although I don't know much about architecture, I was impressed with the diagrams and plans that Professor MacConnell presented, because I could see flexibility that would allow many learners to come into the environment and to structure it a little differently. I think such flexibility is important.

Skinner has talked of this subjective reality notion very effectively. In his recent article in *Saturday Review*, he talks about the reality that we perceive — a reality which consists of "correcting" papers and helping the child to learn the "right" way to solve problems. He then transposes this to the reality of the child, and suggests that all the child is exposed to is massive aversive stimulation, negative reinforcement pounding down on him from all sides. Thus, the reality that the child is perceiving in

that educational system is not the reality that the teacher, or the principal, or the administrator, or the college president is perceiving. Skinner suggests that we should try to look at the child's reality and to restructure the environment in such a way as to accommodate that reality. Until we do, effective communication is difficult, if not impossible.

By the same token, I recommend to you very highly a series of essays in the January, 1968, issue of *Psychology Today*. These essays deal with education, and with changes in the educational process. One very intriguing essay discusses a number of assumptions about the reality of education that affect much of what is happening in education today, and the importance of replacing these assumptions with a new world view. Particularly, I was intrigued by the notion common among many of us that education should be good, hard, grubby, difficult, tiring work, and that if it isn't grubby, hard tiring, and difficult, it somehow isn't education. But with the development of new technology and new ways of approaching and communicating with students. The time has arrived when education can actually be fun, and perhaps even be easy. And that's a difficult view of reality for some of us to grasp, because it wasn't fun for us. So you see, two different views of reality are clashing on the contemporary educational scene, and I think most of the educational leadership is progressive enough to take hold of this new view of reality and to try to do something with it.

All three of these related assumptions that I've discussed this morning tie together. In addition, all three point to the importance of monitoring feedback. In order to assess whether or not we're affecting behavior with our communication, in order to assess what meanings people have for particular words that we're using, and in order to assess the various realities with which we're dealing, we have to have feedback channels available to us.

By the same token, if we're going to assess our own communication effectiveness with the various publics we seek to influence, we must be sensitive to feedback, and we must be willing to accommodate the possibility that we are not communicating very effectively. This is sometimes a hard possibility to accommodate.

This morning, I've given you an overview of the communication assumptions that ought to guide the educational system into the 21st Century.

I know that most of you have administrative responsibilities that occupy a good deal of your time and efforts, and that you are faced with many problems. But I also believe that as educational leaders, you have some real opportunities to improve the educational process. One of my friends used to say, "Any problem is nothing more than a poorly defined opportunity." Effective communication is the key to redefining these problems into opportunities.

THE PLANNING ENVIRONMENT AND THE COMMUNITY COLLEGE

Ray L. Birdwhistell

"Leaders from all of the associated human disciplines should be recruited into national and state commissions to engage in survey, research and planning for educational facilities ..... the school as a processing plant is going to pass."

Introduction

A few weeks ago I followed four men as they came out of the coffee shop and walked back to the hotel. They were engaged in the usual low message-content, pre-meeting chatter that men accuse women of: a series of overlapping monologues that preclude engagement. They broke stride in concert as they came to focus upon a young woman. As she strolled across the street, the wind pressed her dress against her free-moving-form. The first man said, "Damn, but that makes me young again!" The second said, with weary irony, "Sure, but can she cook?" The third was more economical. "Humph," he said. And the fourth: "You'd better look quick; I know her mother and she's the size of a barn."

I spent the morning with these and three other men as consultant to their planning session on the development of a regional education plan. As we attempted to focus down upon the question of either the need for, or the desirability of, a community college, my mind kept returning to the story of the blind men who were asked to describe the elephant. If we emphasize the word "heterogeneity" as the prime requisite for community or junior college planning groups, these men had been well chosen as decision makers. One man saw the institution as a way to keep the kids at home under the influence of the family until they grow up enough to go away. A second saw the community college as a way to stimulate local business and as a payroll. A third saw it as an assemblage of lawns and buildings; and the fourth opposed the idea completely as a tax waste, an unnecessary duplication of facilities already available less than fifty miles away. Two of the remaining seven committeemen were professional school people and were convinced of the need of a two-year college in the region to feed its better graduates to the state university and to absorb the incompetents before they could reach the university. The seventh man seemed to have been chosen as an integrating force; he nodded affirmatively to every statement he heard during his periods of wakefulness.

By lunch time, there was one central point of agreement: the college should not be in the next town, some fifteen miles away in an adjoining county. As this issue became clear, it was seized upon and the day was

spent in plans to thwart the unscrupulous and greedy competitor who might steal their school from them.

The next day was spent in selecting a site. One man wanted to clear out the slum back of the business district and make that into a common parking lot for the college and town. A second wanted the college beside the local high school. As I recall his words, "continuous and contiguous" was the way they should be. Another wanted the view from the bluff across the river. The school men wanted it on a side road, a few blocks from the interstate highway. "Traffic pattern and accessibility" provided the central themes in their argument. One man, the sleepy one, was silent and agreeable; only he and I knew (since he had told me) that the State Authority had already approached him about the availability of a tract he owned.

The next morning, the last of the two and a half day meeting, was spent in the discussion of the choice of the president: whether he should be selected before the college was built or after, whether he should be a local man or an import from out of state. The school men had a candidate from their department staff. The sleepy gentleman told me that the president was going to be the present assistant superintendent of the state school system, "a good, loyal man."

The final hour was spent discussing the president's mansion. The school men felt that it was "psychologically advisable" for the manse to be on campus. "Adjacent, separate but harmoniously integrated" was the opinion of the man who advocated the bluff site. The sleepy gentleman told me that they were going to renovate his mother's house on the site. He was selling that separately.

At the airport, I picked up the local paper. On the front page was the picture of the eight of us, posed and smiling vaguely in different directions. The headlines read:

EXPERTS AGREE CENTERVILLE
IDEAL FOR COMMUNITY COLLEGE

Today, John X. Bainbridge, (the sleepy man) told the *Clarion* reporter, local citizens, T. H. Adams, James Curon and Jas. T. Brouse had convinced a committee selected to search for community college sites that Centerville was the ideal place for the college which will open its doors for high school graduates in 1969. Bainbridge said that Centerville was chosen because of the beauty of the area, its enterprising civic attitude and its long history of academic achievement as measured by the record of Centerville High School graduates.

The committee, which included besides the civic leaders listed above, Profs. Carl Lawson and Donald H. Crabtree from the University, Mr. Lawrence T. Simmons from the well known architectural firm of Summers, Simmons and Traynor, and the nationally known educational consultant, Dr. Ray L. Birdwhistell,

became convinced, said Bainbridge, when it was revealed that the X Company, employing 1100 men, would probably come to Centerville next Fall.

The committee decided that a high level faculty would be hired and that the curriculum would prepare students to enter either advanced liberal arts or professional schools. Search has been instituted for an experienced president to lead the institution. Mr. Bainbridge says that several men have already been interviewed and have expressed interest in the new school.

Citizens of Centerville will be pleased to hear that the committee has directed its chairman to contact the State Authority to begin opening bids. The committee recommended that the architecture be consistent with the historical spirit of Centerville (it had been incoporated in the 1880's) but modern and functional. Local stone will be employed for most of the buildings. Specially welcome is the news that the college will feature a gymnasium with a capacity of five thousand. Mr. Bainbridge said that a stadium had not yet been decided upon.

Interview Analysis

This is a synthetic report. Obviously, it is unlikely that all of these incidents fell together in a single setting. I devised this fable as a tool to assist in interviewing about the development of community colleges. As an anthropologist, I am not very successful with (or confident of the results from) the use of formal schedules and questionnaires. For a number of years I have been using caricature stories such as this one to stimulate group response. The way in which people respond to such tales (while not finally reliable as an indicator as to how they will act in the future) is in itself behavior which help steer further inquiry. Do the audiences become angry? Do they argue with details of the story? Do they identify with it? That is, do they suggest that you are describing their community? If they laugh, how do they laugh? Do they respond as they would to impossible exaggeration or do they laugh as they might in bitter recognition of another underlying incongruity in life?

The school planning fable was presented to groups in seven different states extending from Oregon to New Hampshire, from Michigan to Texas. I used it with school professionals and with newspapermen and professional politicians, with my hosts at post-lecture meetings of parent-teacher associations, and in discussions at a regional conference of union leaders.

In developing the story, I had one central purpose: to what extent is the middle leadership of the American community equipped for, conversant with and interested in the development of beautiful and functional community college facilities? Bond issues are being passed, money is being allocated, land is being purchased and buildings are being built. It would seem useful to know something about the degree of sophistication,

the sense of responsibility and the power of people sympathetic with educational building programs. This is important. The responses to follow are not those of people who oppose school bond issues and seek rationalizations for that opposition.

The overall pattern of reaction to the fable came as a surprise to me. First (even among groups where I am known as provocative, if not mischievous) the story was accepted as essentially true, even though exaggerated. There seemed no differences in response pattern by region or locality or, more importantly, by local socio-political situation. That is, in communities where the school situation was embedded in the local and often unsavory political scene, informants gave responses which differed only in details from communities where every effort had been made to apoliticize the educational area and where men of unquestioned integrity lent their energies and reputations to school planning and organization.

I had expected a difference in attitude between these two sets of informants. However, doing my best to mask my surprise, I followed up the initial exercise by careful "neutral" questioning. I tried to break up general response into more specific (if still only tentative) generalizations about educational expectancies. The following are broad impressions of the responses I recorded. As suggestive anecdotal findings, I pass them on to you together with some of my own reflections about them.

1. Principals and junior college presidents are seen as honest, but are described as figureheads who mediate between their idealistic teachers and a sometimes venal, often narrow and self-serving but usually public-spirited board. (I tested and retested this confusing description of boards and repeatedly got this order of ambiguity. In response to direct questioning about the ambiguity, several men responded with statements about "enlightened self-interest" on the part of board members.)

2. Non-college educated informants see educational "leaders" (as represented in the persons of local or state boards and superintendents) as highly educated but handicapped by political interference. Educated respondents, and particularly those who were professional educationists, were less charitable. Terms like "political hacks," "ex-coaches," "the bureaucracy," "the establishment" and, "well meaning but weak (or cowardly)" were used. As in the case of the teachers, the appointing agency, rather than the appointee was seen to be at fault. Finally, the familiar "the public gets what it wants" (or "deserves") usually terminated this part of the discussion.

3. There was an almost universal belief that teachers, and professors, are honest and are doing their best. There are teachers in the system who are deficient (in certain instances) in personality and intelligence. This is seen as the result of inadequacies of teacher training institutions and of selecting agencies. In general, educators (teachers) are seen as "idealistic" and "naive."

4. While teachers, teaching and books are described as honest (but often naive and sometimes dangerous and subversive), book companies,

builders, land speculators (i.e. committees who chose sites), builders and suppliers were seen as profit-motivated and often less than scrupulous. Parenthetically, with very few exceptions, respondents did not criticize the profit orientation of the circum-educational industrial or supply concerns. Repeatedly, the local newspapers, the school board, the community leaders and the principal or college president were seen as responsible for any malfeasance. This was consistent with another set of responses. It was seen as the business of politicians to "make deals" but office-holders and professional educators were culpable. It would seem that profit and political motivations are in themselves understandable; however, publicly appointed professionals have the responsibility of protecting education from profiteers and politicians or, at least, for "doing the best they can" for the community.

5. No discussant, without prompting, referred to the portion of the story dealing with the architects. Feeling that I had erred in my construction of the fable I concentrated in the question period on this aspect of the survey.

The non-college educated group, while indicated respect for the architect's training and talent, saw the school architect and the architectural firm as an employee or sub-contractor attached finally to the contractor. One man said, "It's his job to take the plans and pretty them up."

The educated group of informants varied in response. Several, without promoting, divided architects into three groups: A) Private architects who render personal service to personal clients and who protect the buyer from the builder. B) "Great architects" such as "Frank Lloyd Wright, Louis Mumford (sic) and the Finn." C) The big firms who were seen as organizations which turned ideas (theirs or others') about buildings into models and drawings.

Group A, although almost every informant saw them as needing control because of their "wild" ideas, were seen as independent professionals and deserving of respect.

Group B were spoken of as great men, as standard setters and, in a number of cases, as artists. Worthy of note, perhaps, is the fact that these men were seen as exceptional not only in their talent but in their opportunity to influence the shape and beauty of the buildings they created. Several informants volunteered the statement that the reputations of these men were so great that they had some control over their creations.

Group C were seen as business men with a special talent or service for sale. Some informants described them as they had the school people: professionals whose output was in the last analysis controlled by the exigencies of the market place or of the political bureaucracy. Other informants saw the architectural firm as part of a political-industrial complex which was interested only in money. Surprisingly (to me) few informants saw the architect as involved in the early planning of a building or complex of buildings or as having authority in the direction of its shape or construction.

The variation to this general theme of response came from a group of physicians with whom I met in San Francisco. Perhaps because of the newspaper coverage of the San Francisco planning scene, these men, while to a man cynical about the final political decisions over building (educational and otherwise), were respectful of the architectural firm and its leadership. Moreover, these men were the only ones whom I interviewed who knew about and volunteered discussion of architectural competitions and judging systems, of which they spoke with respect. It is perhaps significant that this group were in almost total agreement that a beautiful and functional complex could be built if the architect could be protected from "stupid" or "ignorant" school people and venal politicians. They saw the architect as a fellow professional who, like themselves, should be free from "outside" influences.

In summary to this section of this discussion, let me say that, to the extent to which my sample is representative of a number of American publics, these responses indicate a resigned helplessness on the part of Americans to, and often an ignorance about, school building programs. That is, these are the responses of a citizenry whose participation seems to be limited to whether or not it will vote funds for a school building program. Nowhere during my interviewing did I encounter any serious criticism of the American belief in the need for education for our citizenry or even any question about the idea that this should be a universal education. Furthermore, it was agreed that, while teachers were responsible for the educational process, the context for education should be in the hands of "practical" men. This, in spite of a general cynicism about graft and political opportunism. My own interpretation of this as an item of American culture is that for Americans a building is a place external to the events which take place within it. The building is a place, a locale or, and this seems particularly true of schools, a facility or a container.

To seem to digress, we may get somewhat more perspective by a brief look at another massive architectural and building phenomenon — the new church development. Like the school program, the church program is at least in part a response to the extensive shift in the American population. New areas need new buildings and old areas demand renewal. And there are other ways in which the church building pattern is relevant to the school building pattern.

My clerical friends tell me that churches in America have tended to be two kinds of places. On the one hand, for certain denominations as an edifice, the highly stylized, imposing, and, at time ornate, church, cathedral or synagogue provides a symbolic context for the religious experience. Sacred in and of itself, the edifice, the building, represents not merely a place but in some sense a structuralizing continuity which bespeaks intervention between man's soul and feeling and the Deity. As such, it does not merely stand for religion, is not merely a place set aside for religious ceremony but is designed for and is part of the organized religious experience. Some clerics go so far as to say that the edifice is a presence and entering into it may constitute the experience.

There is another tradition and one usually restricted to the more fundamentalist sects which sees the church as a shelter, a place sacralized by the feelings and the rituals which take place within it. A store front marked by an altar or other paraphernalia or a simple rectangular wood building with or without a bell is primarily a sacralized meeting place and is expressive of an essential asceticism congruent with the doctrines of the communicants. The congregation in its concert performance and feelings require an arena but, while there are conventional forms for such arenas, decoration or special structuring may be resisted as alien to the central religious task. The ascetic building is consistent with an ascetic doctrine.

I do not wish this discussion to pretend to examine the sociology of church architecture. However, since at the time of this writing nearly every American community is involved in church building as well as school building, the present evolution of church architecture as a compromise between the simple and the functional and the elegant and inspirational may be of relevance. In nearly every American community the box-like schoolhouse over the years has stood in manifest contrast to the private academy. The former, an ascetic shelter, the latter a statement of display, of expenditure and of context. As a student of American culture, artifactual and mentifactual, I cannot resist the temptation to see the new school facilities, like the new suburban churches, as somehow a compromise between the ascetic and the monumental or symbolic traditions.

Grady Clay, the sensitive and responsible editor of *Landscape Architecture*, has talked about the oblong colored boxes which encircle many of our American communities. He has said that their only aesthetic virtue seems to be that they elicit a response from the public that they "don't look like factories." I would suggest that there is a parallel development in the school building programs whereby the industrial un-factory is being matched by the educational un-school building. That is, the American landscape is being flooded by thousands of colored rectangular boxes with large windows and overhanging eaves, sold on the basis that they are no more expensive and that they "don't look like public school buildings." A perhaps over-sensitive friend of mine says that if you take the un-factory and the un-school and add a narrow angle triangle or a circular building to them you can also get an "un-church."

Now, what is the relationship between the pilot research reported in the early part of this discussion and these reflections about new buildings, industrial, religious and educational, which are appearing across America. In my opinion, education is centrally important to the future of the world, including America. As such it deserves the best planning that art, science and an informed citizenry can give to it. I am not convinced that it has had such planning or that such planning will be easily achievable. As a student of communication I am committed to research in the educational process. By this, I mean that I am concerned not only with so-called learning or teaching activities but also in the necessary surround

for such activities. I am persuaded by the data of twenty years research that communication is a contextual process. That is, the conditions within which man attempts to interrelate to man, within which he attempts to influence and to be influenced by other men are absolutely relevant to that which he wishes to convey or to share with other men. No, that is insufficient. It is not merely relevant; the surround is part of the message or the communication.

It has been said that the private school, the academy was a place designed to enable the priviliged to live a richer life. The public school, by contrast, was designed to train the individual to make a living. The architectural style of the buildings in which these processes were to take place reflected this puritan-cavalier contrast. It is my suggestion that the un-school building architecture which is appearing from one end of the country to the other represents some kind of relatively unthinking and hardly successful attempt to arbitrate and compromise the differences between these two points of view — that of the private school and of the public school.

Let me hasten to say that some of the presentations made thus far in this meeting contribute to my feeling that dull compromise is not a necessary state of affairs. Several of the community and junior college complexes shown here are not merely colorless reflections of divergent historic traditions but represent new and beautiful statements of a growing faith in human education rather than in class versus or plus mass education.

Pleased as I am with some of the complexes we have seen here, I remain dissatisfied with my knowledge about them. It is not enough to know that a community in the far west or New England or the south has built a beautiful educational complex. We need badly to know how they managed to plan and build such buildings in spite of the national uglification project that dominates school building in the United State. It is trite to say we need research. However, as a nation we need to know about the special conditions which made possible these unusual buildings, these reversals to the thoughtless trend. Clearly, there were people in these regions who gained the position to make themselves heard, who had the skills and the sensitivity to build such buildings and who were able to stir the community to participate in the venture. We need to know about these people and how these exceptional complexes were planned, designed and built. If we cannot explore and learn from these successful ventures — and cannot convince other communities of their rights, the millions already allocated will soon be spent and we will have missed the opportunity for another generation or more.

The electorate seldom understands or feels competent to intervene in a process which it feels is external, alien and tainted. If the findings presented above were in any way representative, clearly it will not be easy to educate or to encourage the electorate to feel either any sense of power or of choice with relationship to their school building programs.

We are building schools at the rate of almost one a week and we do not, as programs are presently conceived, have the time or the instrumentalities to educate each individual community to a full appreciation of its potential (even assuming we know how to do it). Yet, we are not impotent. Planning is not impossible. We must make the time and develop an educational program. As a first step, school administrators and architects must accept the responsibility for resisting unplanned buildings in the name of crisis needs. I fully support the use of temporary quarters: factories, department stores, even abandoned penitentiaries and mental institutions while we engage in national, regional and local research and planning about more permanent establishments.

In order to implement this planning interval, I urge the creation of National and State commissions made up of professionals to engage in survey, research and planning for educational structures. I do feel that this should be restricted to part-time consultants from our teachers colleges, to representatives on supported leave from architectural firms and to displaced employees from State and Federal departments of education, although these experienced men must have advisory relationships with the new commissions. Leaders from all of the associated human disciplines should be recruited and supported while they carry on both basic and action research in the educational building program. Particularly, I think that such commissions should recruit anthropologists, sociologists, social psychologists and ecologists to study and report upon the human beings who work in, live around and with these buildings. We need to know about the shapes of space and territory and of the human potential to deal with, to be frustrated or to be realized by our space arrangements.

I foresee a world in which education will be an aspect of the continuing life of most Americans. Schooling in the future will not be something we go through and are influenced by during a small and preparatory portion of our lives. Our technological developments are going to give us a fantastic leisure and education as on-going enrichment is one of the possibilities of this leisure. Education as part of living, not as preparation for it, will be a prerogative of the people and not merely of its juveniles. It is my premise that the school as a processing plant is going to pass. In our planning for the school of our near future, that school should be part of our life dwelling and not merely a facility for a passing and preparatory phase. The buildings and the campuses we plan and build must be planned and built to be part of education and of life in the community, not as merely containers or locales within which education is supposed to occur.

INTRODUCTION TO PANEL

John L. Cameron

As the immediate past-president of the Council of Educational Facility Planners, I express appreciation to Michigan State University for being such a fine and effective partner with the Council in sponsoring this conference. We are also appreciative of the contributions of the program participants and of the interest demonstrated by the attendance and active participation of the conferees.

In all probability there are few in attendance at this conference whose experience working at a junior college goes as far back as does mine. For five years, beginning in September 1937, I was on the faculty at Louisburg College, a two-year college owned by the North Carolina Methodist Conference. The first national professional meeting I ever attended was the convention of the American Association of Junior Colleges held in Philadelphia about 1938 or 1939.

There have been tremendous changes in junior or community colleges since my experiences at Louisburg. Louisburg was in fact a junior college; it emulated the first two years of a four-year liberal arts college. With the exception of a business course, its curriculum was limited to the preparation of students to continue their formal education at a senior college. The students came from all over the state and from several other states and countries. Most of them lived and boarded on the campus.

At that time, the college seemed to be in almost complete isolation from the community in which it is located. In visiting the campus in more recent years, it is pleasing to note that this is apparently no longer true. The recognition of the interdependence of the community and the college was undoubtedly prompted by the announced plan of the Conference to move the college to a nearby larger city and to convert it into a four-year college. A determined and successful effort was made to have it remain a two-year college in the town of Louisburg. From that time, one can observe the transition of the institution from a "junior" college into a "community" college.

When John McLeod, Bill Brubaker, and I got together to plan for our participation in this conference, we agreed that as moderator, I would make a few general remarks regarding trends in community colleges, followed by John McLeod, concentrating on non-urban and concluded by Bill Brubaker, focusing on trends in urban community colleges.

In attempting to identify general trends, I will not go into any detail since our time is somewhat limited and most, if not all of them, have been very adequately covered in earlier sessions of this conference.

1. Data have been presented showing the growth in the number of community colleges, but this growth bears emphasis — they are increasing at a phenomenal rate in some states, according to a well developed statewide long-range plan — in others, apparently without very much thoughtful consideration. Obviously what I am advocating is that every state make a careful study of its educational needs and to adopt a long-range plan for the development of all its educational institutions, with community colleges constituting one very important segment. Such plans need to be reviewed frequently and modified to reflect changing conditions that were not anticipated. Such planning is pretty difficult in a state that has a state board of education, a state board of vocational education, a state board of community colleges, a state board of higher education, and a state commission for higher education — each with supporting staffs.

2. Most of the new community colleges in this country are supported with tax monies. The geographical areas served by community colleges often cover many local governmental and educational jurisdictions, each having its own tax levying and bonding authority for the various levels of education as well as for other purposes. It seems logical that the costs of constructing, equipping, and operating public community colleges, over and above that which is covered through tuition charges, should be borne by the state with such assistance as may be available from the Federal Government.

3. New community colleges are, for the most part, commuter colleges; that is, no overnight rooming provisions are made for the students. This presents several unique problems, one of the most obvious of which is that of vehicular parking and traffic control. Another is the providing of home bases for the students. We may have to change some of our concepts of what a student union should be. With many students traveling fairly long distances, and with some of them carrying part- or full-time jobs in addition to going to college, an important function of a student union may be to provide reasonably priced places where students can get an hour or two of rest between classes.

4. Many community colleges start their operation in makeshift spaces or by utilizing secondary school buildings after regular school hours. This may account, at least in part, for the fact that the new facilities for community colleges are generally very well planned. By the time the new facilities are planned, the college officials pretty well know what the college objectives are and the things that must be accomplished in order to meet those objectives.

5. Community colleges tend to be more suburban than urban. There is nothing wrong with this if the objective of the college is to provide a reasonable degree of comfort and safety to its staff and students for a given number of hours each day while teaching and learning take place. On the other hand, if the college is to be a positive and dynamic force to bring about social, economic and physical improvements to the environment of the area served, consideration might well be given to locating

community colleges within the heart of the area in which greatest improvements are needed.

6. In many cases community colleges are including industrial, technical and other vocational courses in their curricular offerings. There is also a trend toward the offering of adult education courses and short refresher courses.

7. In terms of the physical facilities, I believe we all recognize the following trends:

- providing greater flexibility in the use of space — certainly more than in most universities
- providing year-round thermal comfort
- giving careful attention to the sonic environment including the extensive use of carpeting
- providing for the extensive use of many types of educational media

I started off by saying that there is a very rapid growth in the number of community colleges. My remarks will be concluded by emphasizing that the rate of growth will greatly increase in the several years ahead. The community college movement, as an integral part of our total education system, is still young enough that the opportunities to be far reaching and creative in planning its programs and facilities are great. This will be more difficult whenever community colleges become more commonplace. I believe that through the sharing of information and ideas, of a few thinking individuals, as has been done throughout this conference, the community college will become an even more significant facet of our American civilization.

We will now have a presentation on new concepts in campus planning for community college in the non-urban scene.

NEW CONCEPTS IN CAMPUS DEVELOPMENT

John W. McLeod, F.A.I.A.

"It is not absolutely necessary for the student to be where the books are ..... the community junior college must be sensitive to local needs."

American education has, from its very beginnings, held that the individual was all-important. Indeed, our whole way of life has stressed the rights and duties of the individual citizen. Higher education has, up to now, been fairly successful in maintaining this precept but the strains of growing numbers are beginning to tell. As the pressures are increasing on the 4-year colleges, and more and more students are seeking higher education, the junior colleges are being called upon to fill the gap. How well are the colleges meeting this challenge? How well are we meeting the individual needs? Not too well!

Since the future development of the suburban and rural junior college campus is anybody's guess, I'll try to give you my best guesses, based on things that are happening today – and their portent for the future.

It seems to me that changes in three important areas will have a major affect on junior college campus development:

1. The Library and Automated Instruction.
2. Physical Education vs Physical Fitness.
3. Parking and Traffic.

I. The Library

There is no question that profound changes have been taking place in the functions of the Library – so much so, that we are not even calling it a Library any more.

If you listen to our friends in the communications business, they will tell you that it will soon no longer be necessary to go to school to learn – just stay at home and flip a switch! Even if you don't buy this altogether, you will agree that for the first time, it is not absolutely necessary for the student to be where the books are. Think about that! Then, picture what this can do to the college master plan.

II. Physical Education

It seems to me that adult America is becoming increasingly conscious of the need for a continuing program of physical development. Participation in individual sports is increasing and programs of exercise for better health are becoming popular. Conversely, because of the limiting span of

two years, junior college athletic activities cannot ever be as important in student life as they have been in traditional college and university life.

These factors, taken together, would seem to indicate significant changes in the physical facilities for sports and physical education.

III. Parking

That the automobile has changed, and is still changing, our whole way of life is evident in every aspect of society. The frustrations of everyday travel are enough, but when we add the vexations of parking, we find that we have created a monster which just won't go away — at least, anytime soon. Automobile traffic patterns and parking solutions are, I'm beginning to think, consuming more planning time than is building design for any given master plan. This seems to mean that, truly, "the wheel that squeaks the loudest" does get the grease (no pun intended). Have we really taken any steps to resolve this problem?

Given these problems, and a lot of others besides, what is the solution for future junior college planning?

In addition to the purely physical demands, there are two major philosophical problems facing the community colleges in the future:

1. How to deal with increasing enrollments while still serving the community and the individual.
and

2. How to cope with automated education and secure its benefits without sacrifice of individual initiative.

Our single answer to both of these questions is for the suburbs to consolidate and, at the same time, decentralize. Let me attempt to explain this seeming paradox by showing you how I think this can be achieved:

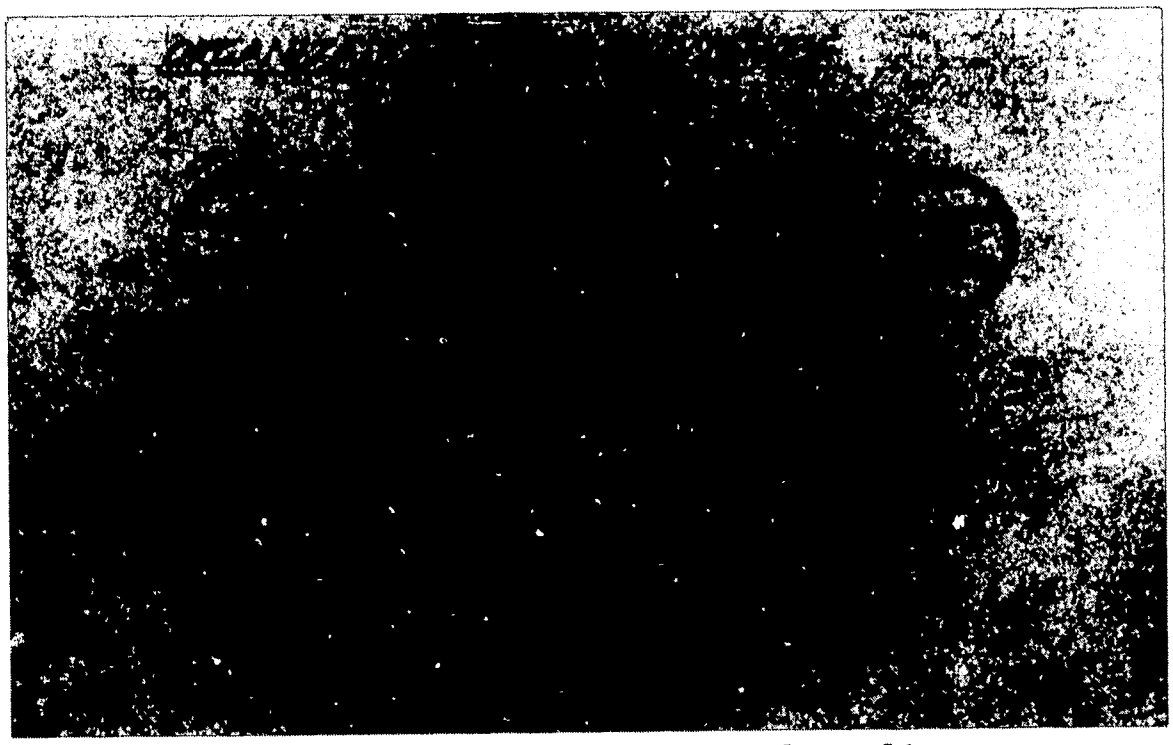
First, I think we need to consider the community's problem as a whole, not as a series of unrelated parts. Whether we think of the community as an entire state, a county, or a group of small towns — we must begin to broaden the boundaries of our service area. That is why I speak of consolidation.

In order to reduce the problem of numbers and give the individual some individual attention, I think we will need to decentralize our campus facilities; not into units of five and ten thousands, but into groups of one thousand, maybe fifteen hundred.

I have prepared some slides of purely hypothetical architectural solutions to the problem which, I trust, will prove of some interest. You will remember, of course, that these are only ideas.

The concept I am presenting for your consideration is a simple one, although it differs, in a number of respects, from the growth pattern to be found in most of today's junior college campus plans. Presently, many junior college districts are approaching the problems of growth by projecting the construction of two, three, or more, complete campuses, dis-

tributed geographically throughout the area to be served. While this solution, in my opinion, does help reduce the problem of size, it does not provide sufficient flexibility to meet the needs of individual students with differing economic backgrounds.

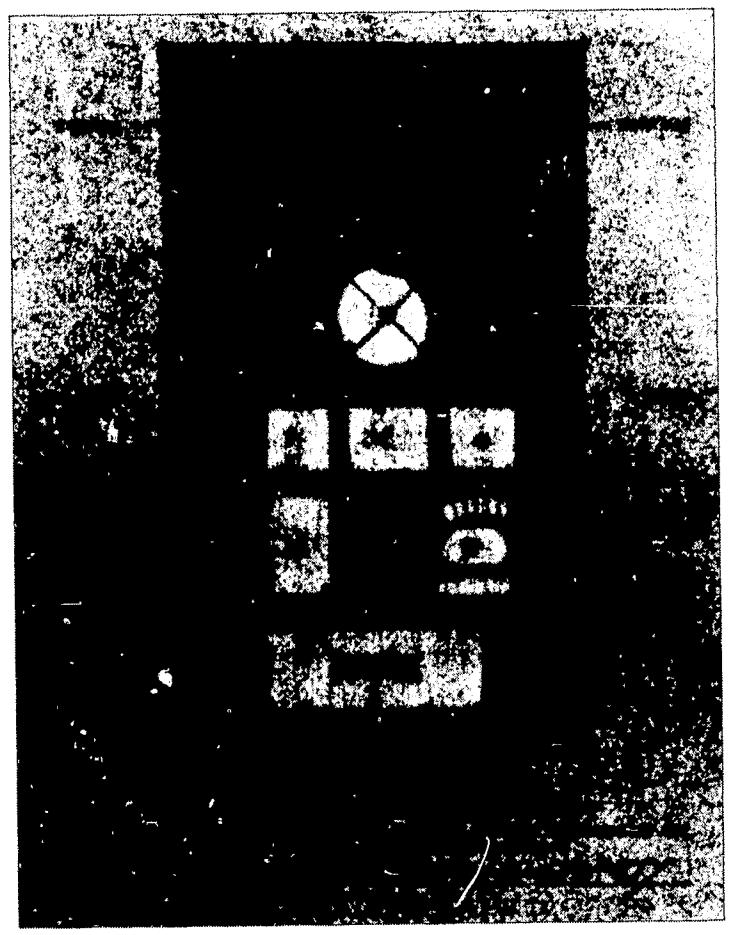


Drawing No. 1: Organizational Relationships

The organizational pattern which I am suggesting, envisions one major campus with as many small "local" campuses as present and future demands will determine. The slide shows, in graphic form, the relationships which might exist in any given district. Since the "main" or "college and community center" would serve, primarily, as the central administrative, cultural and recreational campus of the junior college system for the area, it's location, with respect to population centers, would not be critical. The "main" campus, then, could be placed where adequate "green" space was most available and less expensive.

The "local" campus, on the other hand, would provide a wide range of site and facility choices — both as to size, location and educational offerings. The diagram suggests a few, but specific community needs would develop many more. As the diagram indicates, the "local" campus could serve a dual interest — providing an academic program for students going on to a four-year institution, while, at the same time, providing vocational training in a wide range of technological subjects. The small sites needed to accommodate a "local" building unit would make it possible to locate these in the business district or in urban renewal areas, hospital centers, industrial parks or even in shopping centers. Not only would "higher" education be brought within the reach of "inner" suburbia,

but students would not need to have a "set-of-wheels" to get to college. For those occasions when the students would need to go to the "main" campus, some form of "shuttle" service could be provided between institutions, either on a scheduled basis or as occasion demanded.

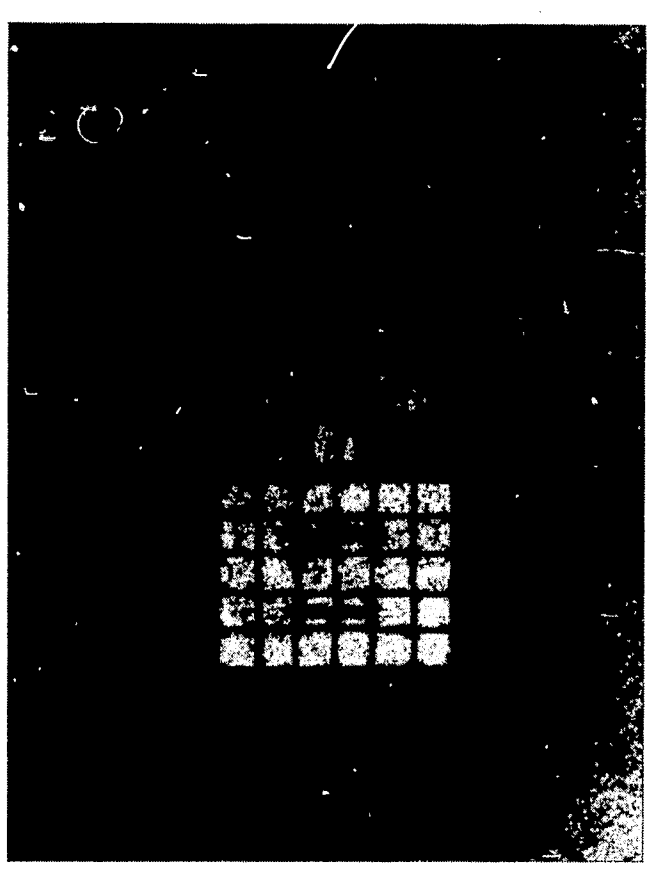


Drawing No. 2: Site Plan — Main Campus

This slide shows the types of facilities that one might find at the college and community center. As has been noted, most of these facilities are of a public use nature-administration; resource center, including a complete communications media operation which will link all of the "local" units with the central information "bank"; cultural center, including drama, music and art functions; and the sports center for athletic events. Such a site would, of course, need to be fairly large — at least a hundred or more acres in extent.

Depending upon the local need, this campus might include an instructional unit which would be similar to those proposed for the "local" campuses.

Drawing No. 3: Perspective View of Main Campus



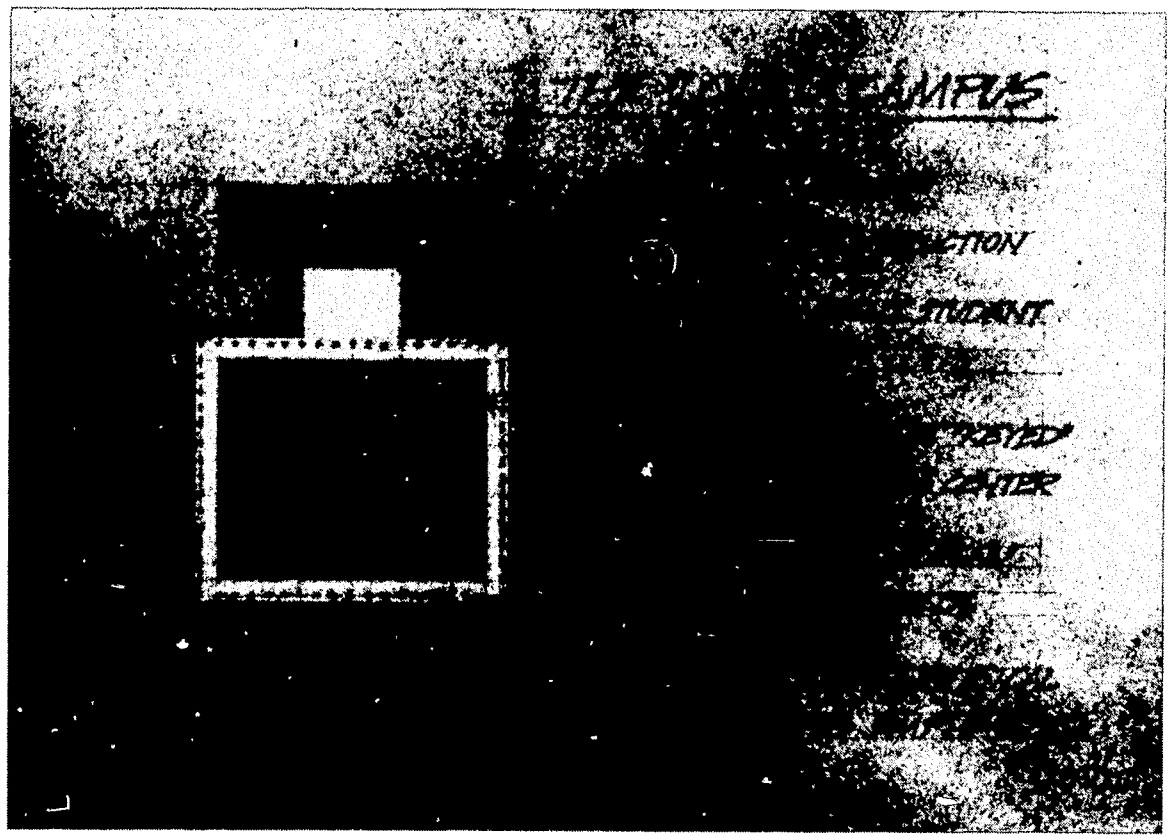
Drawing No. 4: Site Plan of "Local" Campus

This is merely a schematic showing a possible arrangement of units on the main campus. Size of site and topography would dictate the design approach, with adequate parking organized for both instructional and public use.

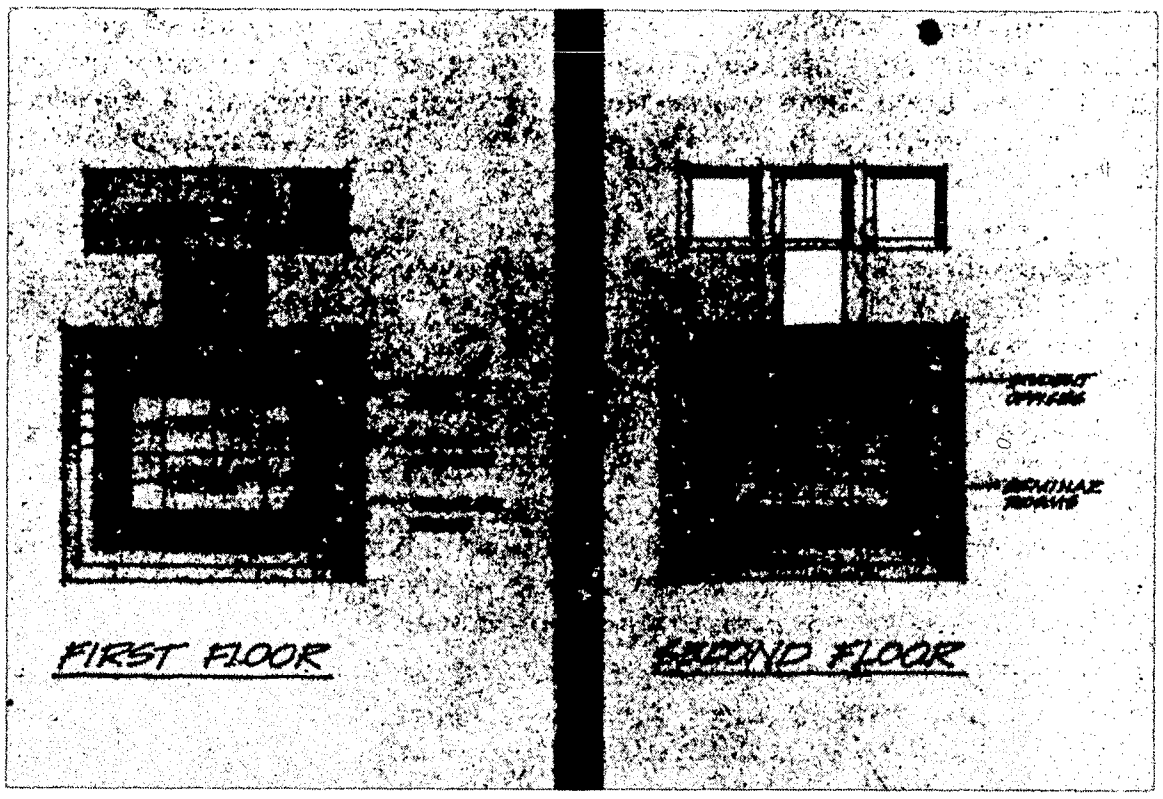
As indicated herein before, the facilities for the "local" campuses would need to be flexible enough to meet a variety of specific conditions. Since the area and height of the building would depend on the site available, it was felt that a modular "loft" type structure would best serve the need. The structural elements and the mechanical features, being arranged on a "modular" basis, would permit the use of demountable partitions and allow for present needs and future changes. In a minimal site situation, parking space could be incorporated into the building itself, with the lower floors designated as a parking garage. Again, the modular design of the structure could provide this type of flexible space arrangement.

Inasmuch as physical education at the "local" level would have its emphasis on physical fitness, rather than spectator sports, only those facilities would be provided which would allow for individual participation — swimming, exercises, tennis and handball. Student candidates for football, baseball and other team sports would commute to the main campus. The individual student could then "tailor" his physical fitness needs to fit his schedule — either on a formal or informal basis.

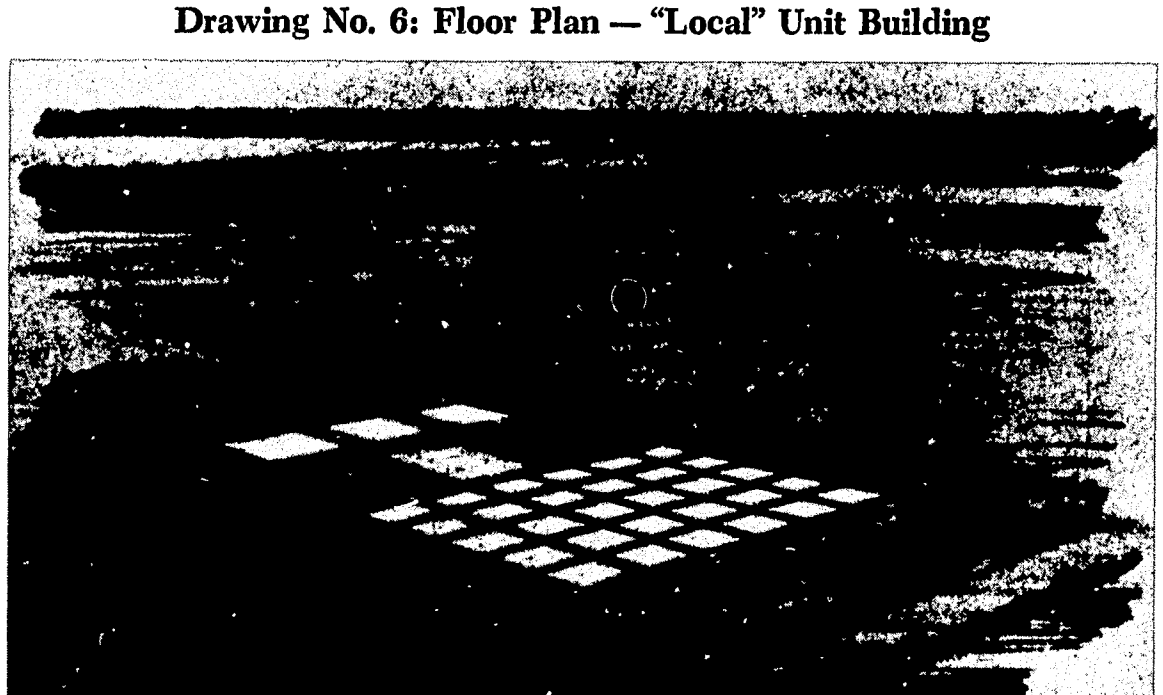
These are simply suggested arrangements for a "local" campus building. It should be noted that considerable space is devoted to independent



Drawing No. 5: Floor Plan — "Local" Unit Building



Drawing No. 6: Floor Plan — "Local" Unit Building



Drawing No. 7: Perspective of "Local" Campus

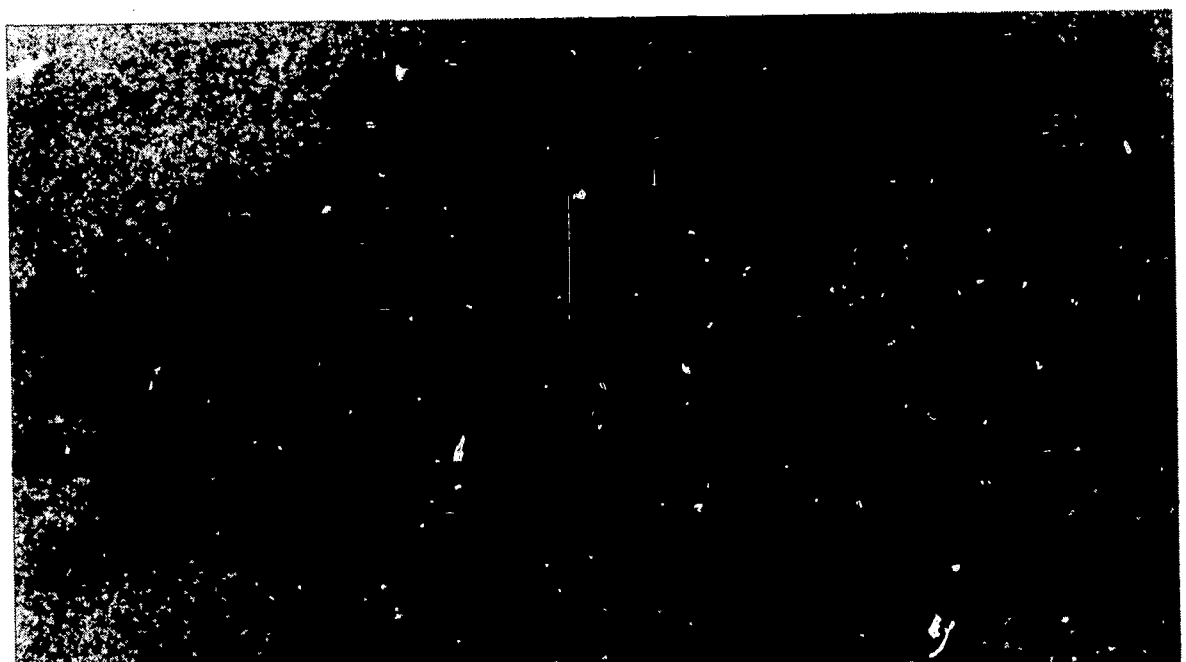
This slide simply suggests a building form expressing the modular design of the structure.

study. Full-time "academic" students might use a "study-office" cubicle, while part-time students could make use of open-carrel type study spaces. In all cases, these study spaces would be equipped with all of the electronic aids necessary to link the student with the information center on the "main" campus.

Classroom instruction would be more in the nature of large-group lectures, small seminar groups and individual student-teacher conferences, than in a conventional classroom – laboratory situation. To permit this, teachers would need individual offices and conference spaces readily accessible to the students.

Space arrangements for technical subjects might vary rather widely in each "local" campus unit. A unit in the business district might emphasize data processing and business machines, while a local campus adjacent to a research complex might concentrate on laboratory techniques. With the modular arrangement, shifts in local needs could be accommodated by changes in space arrangement and equipment.

So much for the suburban college. We get now to the rural junior college situation which, I feel, might stay about as it is now – perhaps, increasing in size (as is natural with everything we do today). Taking my own state (while my office is in Washington, I do live in Maryland), I can discuss a situation that I am familiar with. This slide (drawing #8), shows you most of the junior colleges that are either in being or contemplated in Maryland. There is an interesting thing happening in Mary-



Drawing No. 8: Maryland Junior Colleges

land, which might be a trend in the rural or regional junior college field. You will notice that in the upper left hand corner – the Allegheny Community College, it has a little tree by it – the emphasis there is that they will deal with some of the problems of and courses in forestry. In Essex Community College (the new college they are building is located directly adjacent to a hospital complex) there is a relationship going on now between the community college and the hospital complex. So, this relationship between college and community is similar to the arrangement I was referring to in my discussion of suburban colleges.

Again, down in Charles County (Charles County Community College – on the lower left), we are installing a sewage disposal system which is actually referred to, I believe, as a pollution control laboratory because it is not only going to dispose of the sewage of the junior college but is actually going to be a laboratory where they are going to demonstrate techniques and sanitation methods and, I would hope, they will be training sanitarians there. There is going to be a much greater demand for this form of laboratory if we are ever to control pollution in the streams.

Chesapeake Community College, the lower one on the right, is an interesting institution. It is actually a regional college and fills the needs of four counties on the Eastern Shore of Maryland – four fairly sparsely populated communities (counties). These counties have combined to build one institution that is almost at the geographical center of the four

counties and they are working, at present, on a project for a marine science laboratory – on the Bay, a little removed from the college campus itself. They have the interest and the support of the fishing industry of the Eastern Shore which, as you know, is the main support of most of this area.

So, we are finding here that there are certain things other than academics that some of the community colleges are beginning to think about. Dr. Silver, President of Chesapeake Community College, (which is trying to set up the marine station) is seriously studying the problem. He is thinking that all of this diversity of interest among neighboring junior colleges probably will require some kind of living accommodations on campus. He sees these as being of the "hostelry" type. For example, a student in one of the other junior colleges wants to get into the marine science field, he can go to Chesapeake Community College, stay a week, a month, or a semester, or as long as he needs to in this dormitory facility. If this happens, all of the state's colleges may get an interchange of students. You might find that a student from the Chesapeake area could take his academic subjects there and once or twice a week (or whatever) he might go up and study forestry. This is an interesting facet of community colleges – they can be flexible and sensitive to local needs.

While I am sure that many of you will not agree with my proposals for the future of suburban and rural junior colleges, I do hope that I have stimulated your interest in planning for the future.

THE FORM GENERATORS IN COLLEGE DESIGN

C. William Brubaker

"The community junior college is especially receptive to new ideas .... it is less encumbered by tradition .... it is more responsive to local conditions, to broad social needs .... more varied in character. It is where the people are."

American colleges enjoy great variety in design. This cherished fact can be attributed to:

1. Great variety in the facts of site. No two college sites are alike in size, shape, neighborhood, access, geography, topography, vegetation, etc.; therefore, no two colleges can properly share a common master plan.

2. Great variety in educational program. No two colleges have the same curriculum, teaching methods, policies, organizations, faculty or student body; therefore, no two college programs generate a common facilities need or a common design.

3. Great variety in age. Colleges are conceived and built in different eras; fashions change (and architecture is not exempt — styles continue to sweep the country); materials and methods of construction change, as do laws and regulations; methods of financing and economic conditions change, altering desires and abilities to build; social conditions and population density change. Each age produces its own distinctive architecture, adding variety to the stock of college facilities available to succeeding generations.

These are the great form generators in college design — the unique nature of each site, the unique nature of each educational program, and the unique nature of each age. The form of each campus should be influenced primarily by these factors, and not by eclectic selection (arbitrarily stealing some other form) or by planned sameness (which is always a danger when organizations grow and decision-making is centralized).

The form generators have served higher education well. We do have great variety in college design, and this is in sharp contrast to the oppressive sameness of our ordinary elementary and secondary school buildings.

Rich, wondrous variety is natural and desirable. And since the world continues to change dramatically, we can reasonably expect to see dramatic new colleges designed in response to new social conditions, new educational programs, and new kinds of sites.

The community junior college is especially receptive to new ideas. It is less encumbered by tradition. Being a community enterprise, it is more responsive to local conditions, to broad social needs, and is, there-

fore, more varied in character. Compared to senior colleges and universities, community college programs are not yet "set" and innovation is more likely. Finally, the community college is usually where the people are — whether in the city center or in the suburb — and not so often set apart from the community, as was the private college not many years ago.

Look at the growing, changing urbanized world. Our population grows, and most people choose to live in the existing, growing metropolitan areas — so urbanization continues at an alarming rate. At this late date, many studies are being made in all cities to learn how (or whether!) growth can be influenced and controlled (or is city growth a natural ecological process which is outside the influence of planning?).

Washington, for example, has been the subject of many studies, and planners would like to see the area grow following a radial star pattern, with higher density corridors reaching out from the District of Columbia up to Baltimore, out to Hagerstown, over to Annapolis, etc. (Figure 1.) Perhaps this will be the Washington region tomorrow; if so, college planning will be affected. For example, both expressways and high-speed transit lines create the development corridor spines, and most community colleges should be located directly on these major-circulation lines.

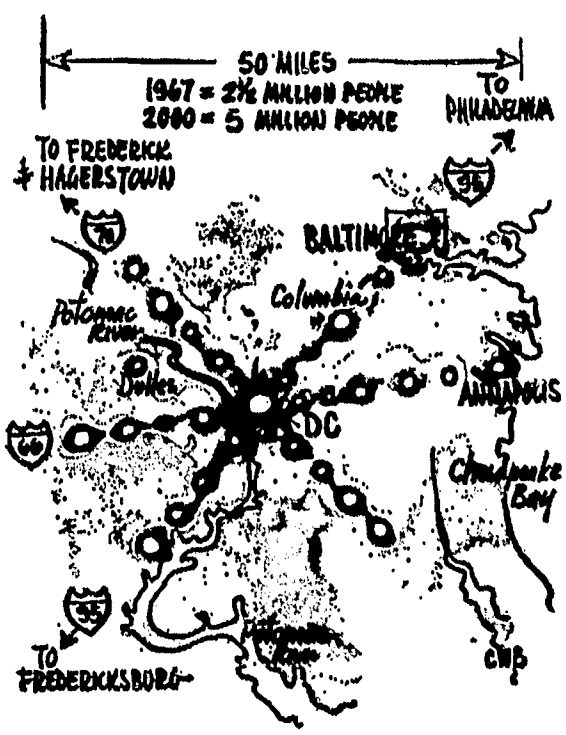


Figure 1

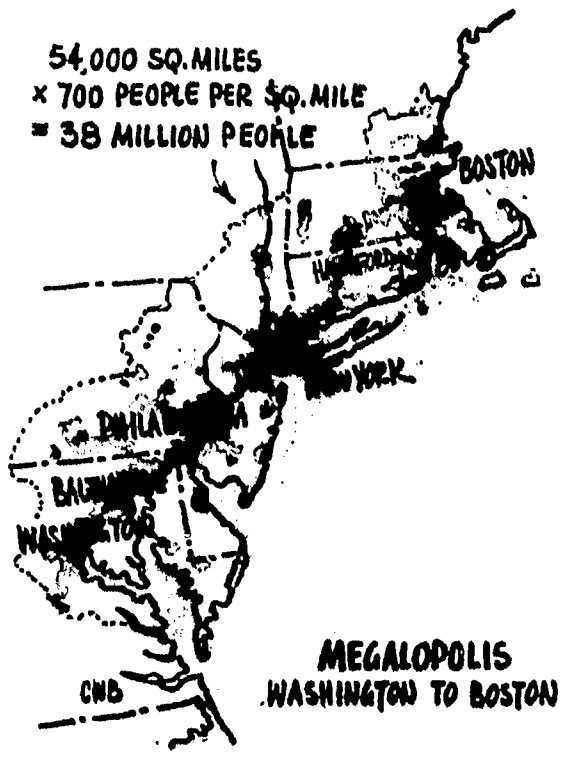


Figure 2

Now consider the bigger picture: the Boston-to-Washington Megalopolis, which is the urbanized northeastern seaboard studied by Gottman and others. (Figure 2.) This Megalopolis has an area of 54,000 square miles. Right now it is not all densely populated, and when you fly over it, you see mostly woodlands and farms and lakes and the ocean. Present

density is reported to be about 700 people per square mile. Think of what could happen. Density could continue to increase to 14,000 people per square mile, which is the present density of the District of Columbia. If we allow this to happen, then the Boston-to-Washington Megalopolis will have a total population of 54,000 x 14,000 = 756,000,000 people. This is almost four times more population than the present total of the entire United States.

There's one of the problems — one of the facts of site for our future institutions. The colleges we plan today may exist in gigantic urbanized areas. Lewis Mumford reminds us that "trend is not destiny," but we are doing very little to counteract the trend. The main point here is a reminder that 1. no community college is an island, and 2. planning cannot stop at the property line but must extend out into the community and must relate to and link with the many other plans of the community and region.

The automobile is of special interest. We still haven't tamed it, but we all want it and we are not likely to surrender the great mobility it gives us. The automobile, in fact, makes the community college possible. The commuter drive-in college is the proper expression of the auto age. A new form is evolving naturally and properly. No perfect answers exist yet, especially in the city. But the city — with cars demanding large amounts of space — is where the action is and where the design challenges are.

Infinite variety in need and opportunity!

Contrast the rural and urban colleges. Eero Saarinen's quiet Concordia Senior College in Fort Wayne, Kump's residential Foothills, Meathe

Figure 3

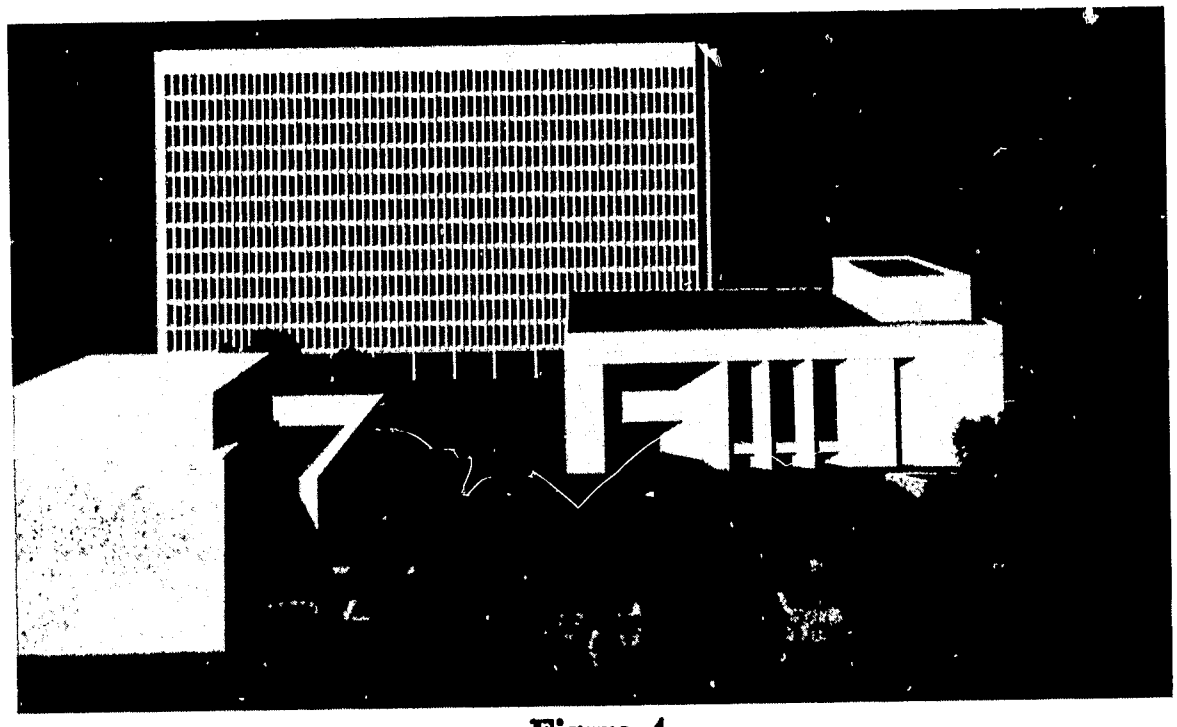


Figure 4

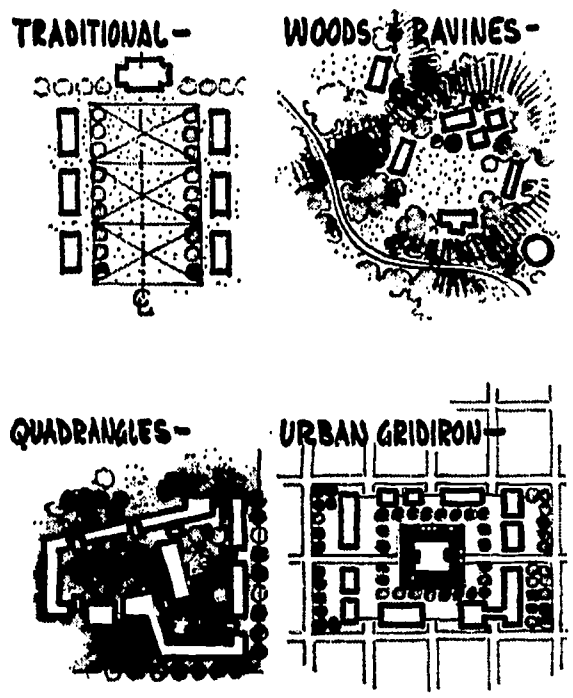


Figure 5

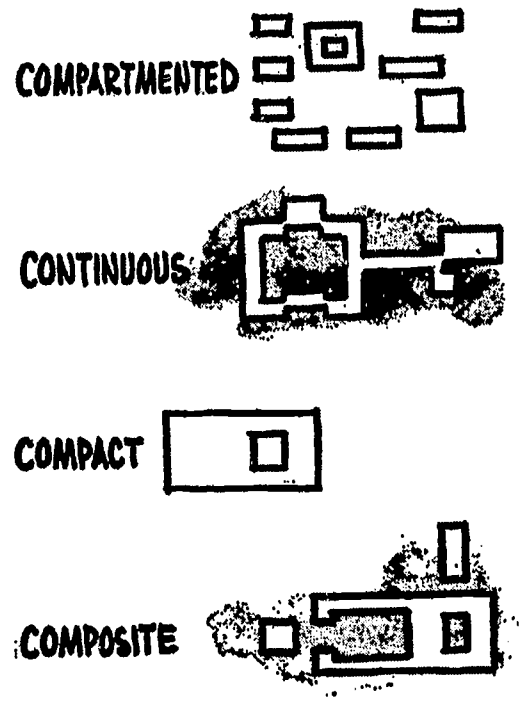


Figure 6

& Kessler's dispersed Grand Valley College in Michigan, and wooded Lake Forest (Figure 3.) or Lake Erie College are in sharp contrast to SOM's Chicago Circle or Fordham's city campus on Broadway at Lincoln Center (Figure 4.), while the University of Chicago's quadrangles and Harvard's spaces are urban, too, and elegant but of a different era.

Such differences in character can be diagrammed. (Figure 5.) The traditional campus was axial, formal, balanced, in a more stable world,

when the education process was known and assumed unchanging. A controlled and predictable symmetrical or otherwise formal plan seldom serves needs well today. In contrast, a site with an informal character, as woods and ravines, suggests an informal plan -- you might say "no plan." The quadrangle form, with building units linked to create continuous structures, has long been an important campus building system and is currently enjoying new attention. Finally, in the city, with geometric patterns of land ownership and utilities and traffic, the urban situation suggests other building forms.

Both site and program influence building form. (Figure 6.) Most college campuses in America consist of many small and independent structures, with each function or department housed in a separate structure. We might identify such a campus as compartmented. The advantages are apparent: identity, scale, ease of building in stages, dispersal of risk, neat financing packages, etc. The disadvantages are also apparent: inflexibility, encouragement of empire building, discouragement of inter-discipline work, discontinuous sheltered circulation, etc. Therefore, we now see great interest in continuous buildings, with many functions and departments closely related, often with flexible "surge space" connecting more specifically committed areas and with circulation uninterrupted. With the development of air conditioning and efficient electric lighting after World War II, the compact building was suddenly feasible, and those who promote such structures claim maximum flexibility. Some campuses cannot be properly classified as compartmented, continuous, or compact but are a composite of two or three building attitudes.

Since most colleges are compartmented with many separate structures, noting examples here is unnecessary. Such structures can be linked, how-

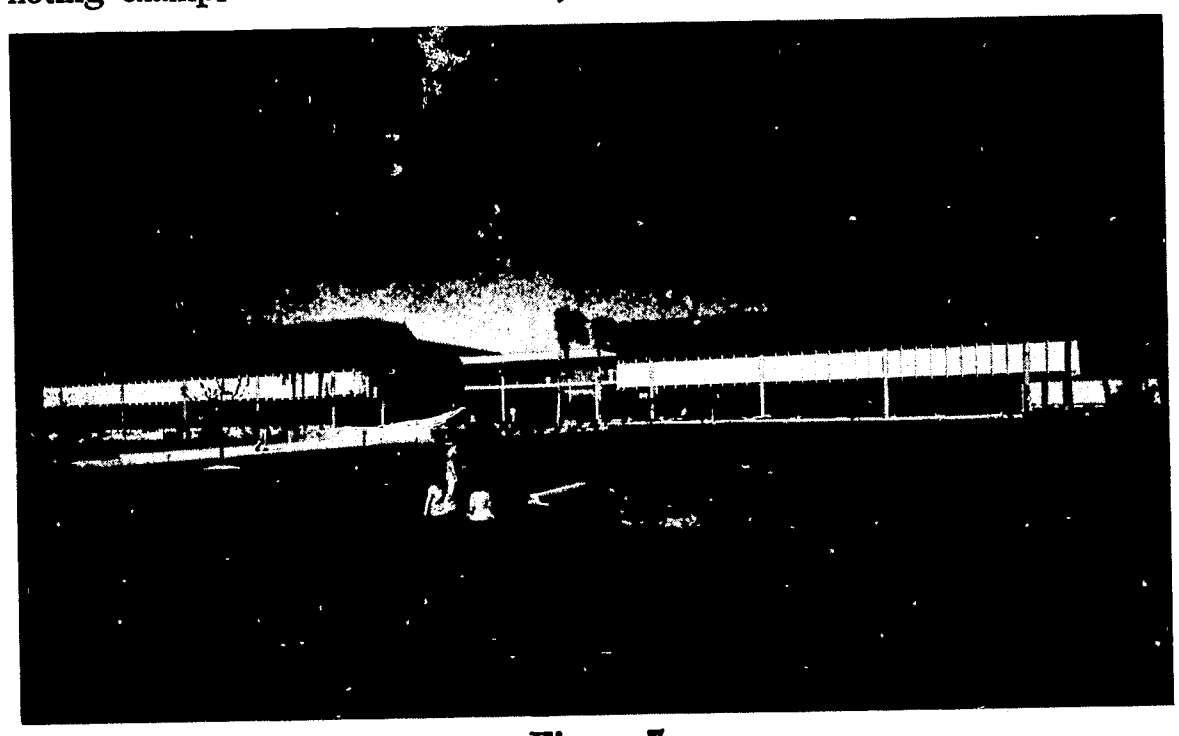
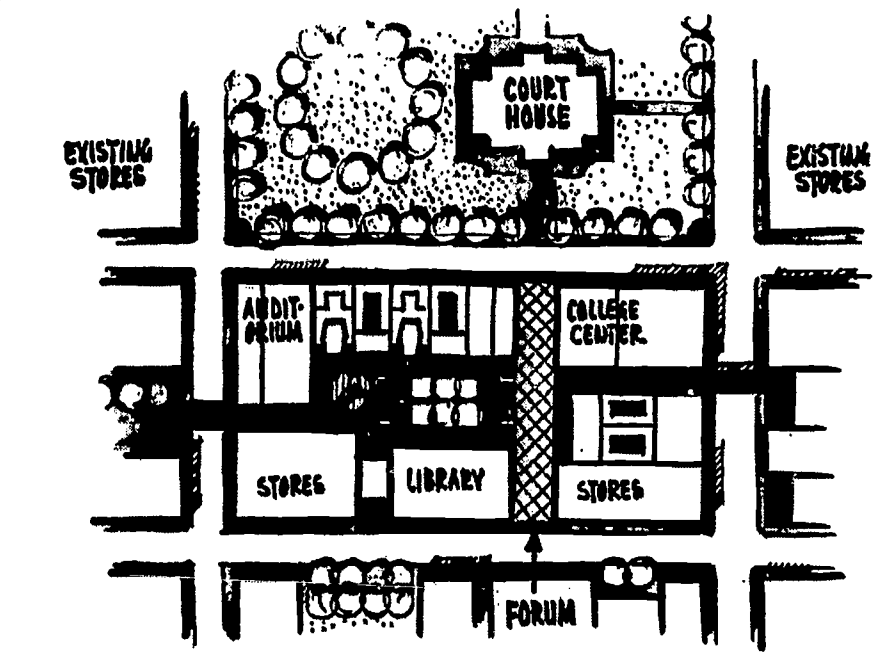


Figure 7

ever, by underground connections or by second level bridges. Edison Junior College at Fort Myers, Florida connects units with bridges (Figure 7.), and Lorain County (Ohio) Community College, west of Cleveland, incorporates both bridges and tunnels.

The Canadians have produced the outstanding continuous building — for Scarborough College, east of Toronto. All elements of the college are

Figure 8



COMMUNITY + COLLEGE

Figure 9

strung along a single interior (multi-level and dramatic) circulation line. Paul Rudolph's design for Southern Massachusetts Technical Institute, near New Bedford, Massachusetts, is in the same spirit, and the campus is worth a special trip. The first unit is a large continuous structure, with Massachusetts' strict fire laws satisfied by dramatic "stairhalls" which are actually spacious multi-level lounges. The students obviously enjoy the ski-lodge kind of atmosphere which the raw concrete in bold forms creates and which is "warmed up" with red carpet.

The compact building, the megastructure, is still hard to find but is being studied on a number of drawing boards. Knight Campus (Figure 8.) in Rhode Island will cluster all facilities around and under and over an enclosed great space — a remarkable chunk of controlled climate.

What about downtown in the small city? There are thousands of county seat towns and cities in America that need new action. The pendulum of interest has swung to the big city and planners, sociologists, economists, and other scholars publish reams on the Urban Crisis. The pendulum will swing back. Here's my proposal to use the community college as a renewal stimulator in the small city: establish the college downtown, mix the old and the new, saving the best old buildings, replacing the worst old with new construction, and mix educational facilities with commercial and governmental buildings. (Figure 9.) The college will grow naturally and continuously with the total community; it will have a

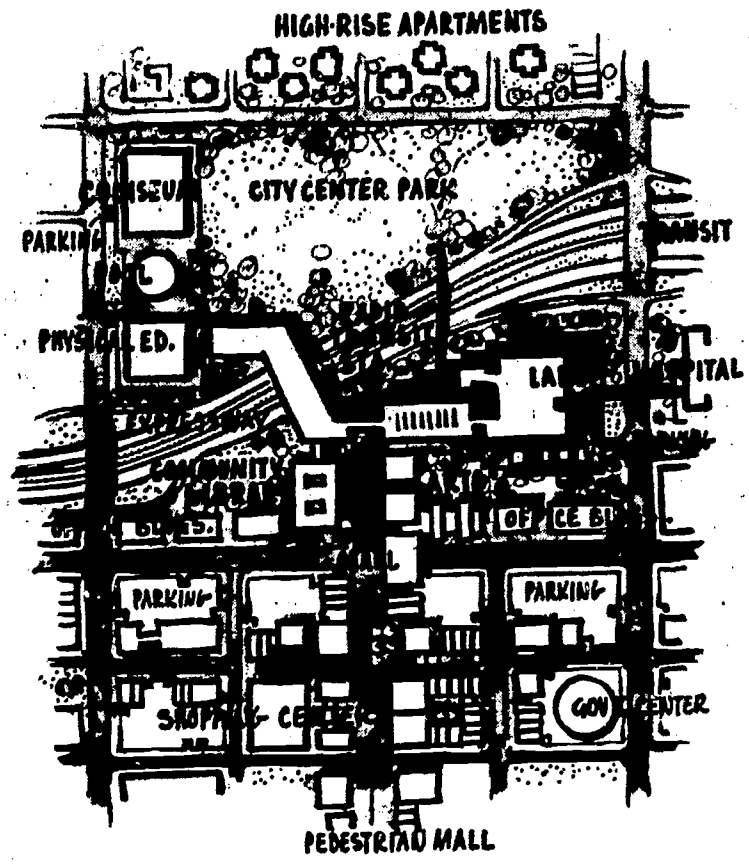


Figure 10

time scale and a history; it may utilize some older structures for a few years; new college facilities will be community facilities too, enhancing not only the educational program but the total community; in short, this will be a community college.

Some examples: Grand Rapids (Michigan) Junior College has always been downtown and it will grow, bridging streets and parking facilities, and it will be closely related to other community cultural and educational facilities. The Dallas County Junior College District remodeled a department store in downtown Dallas to create "El Centro," an interesting and handsome urban campus on a single city block.

Clark Kerr, recently called for 67 urban-grant colleges to match the 67 land-grant colleges (conceived by the Morrill Act a hundred years ago). The architecture can't match, however. Purdue's Nineteenth Century plan and buildings would be an unacceptable model for a 1968 urban-grant college. The urban campus will embrace urban building forms, bridging streets, accepting high-rise sometimes, learning about flexibility from the modern office building, utilizing air-rights, sharing land with other functions, and it will be closely related to its urban neighbors. Colleges will be planned with expressways and transit and other cultural, commercial, and governmental facilities. (Figure 10.) The Bureau of Public Roads encourages concurrent development of land along and over proposed new expressways, and as in Baltimore and in Chicago, we now have multi-discipline design teams studying future expressways and related development.

Finally, the educational program is a major form generator.

Huge organizations and huge numbers of students generate huge buildings, vast plazas and spaces. In California, the growing Irvine Campus is an example. In contrast, administration policy decisions can create smaller organizations and smaller groups of students, and therefore, smaller buildings. California's Santa Cruz campus is developing in this spirit, and it should be interesting to compare it with the Irvine Campus.

New media and the computer threaten teaching methods' status quo. The predicted automated library will 1) centralize collections, and 2) decentralize use. All the new hardware is and will be expensive. Many colleges may share collections and computers and television studios. Networks are suggested; data and instruction can be broadcast to many locations – to many different campuses, or more dramatically, directly to homes. Obviously, tomorrow's educational programs will be affected, and new programs will generate new campus forms.

Interest grows in independent study and in individual scheduling. The ubiquitous classroom method of learning is being challenged by not only the new media but, more fundamentally, by new understanding of how students learn and by fresh new methods of teaching. Oakland Community College, Oakland County, Michigan, has adopted the tutorial method of teaching. This innovative educational program generates new campus forms.

Orchard Ridge Campus, the first new campus in the multi-campus Oakland Community College system is distinctly influenced by two great

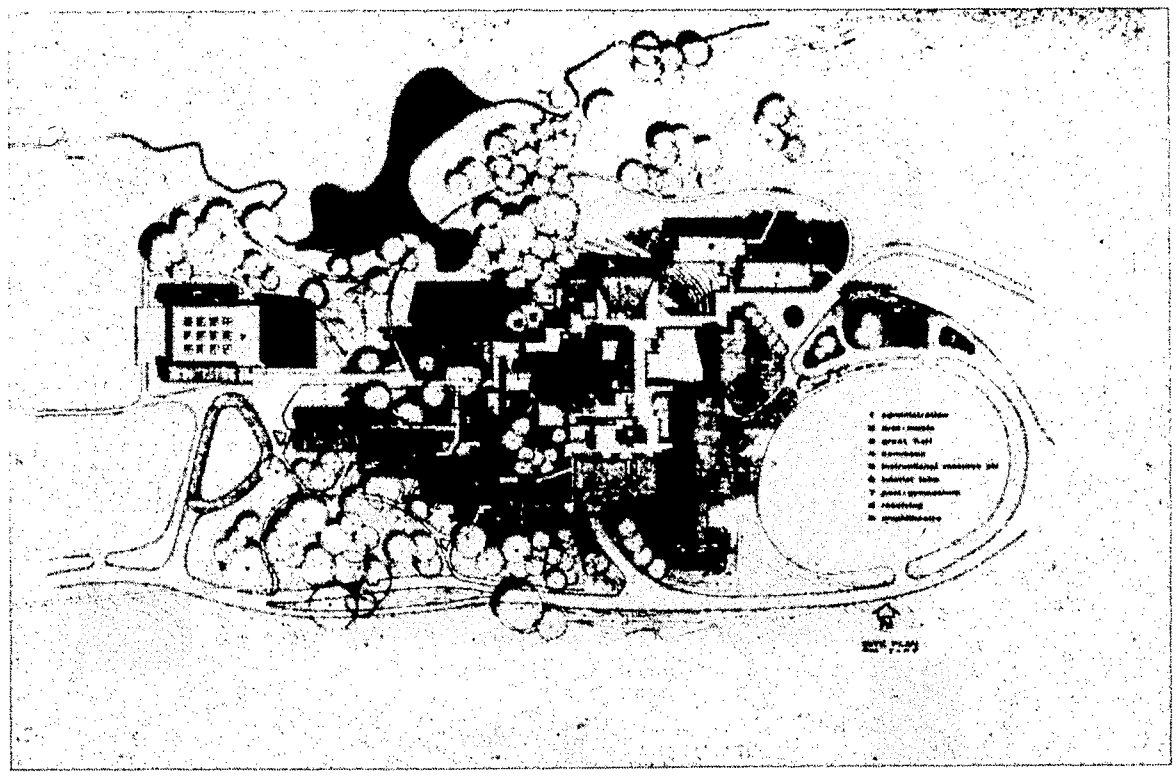


Figure 11

Figure 12

form generators – a site with character and a program with character. Neither is bland.

The site, when planning began, was rural, but it was on the growing edge of the Detroit metropolitan area, and the city is growing around it. (In planning any college, one must look ahead and try to anticipate – or even influence – what the surrounding area will be like in ten, twenty, fifty years.) The 150-acre site is a mile long, a quarter-mile wide. It is rolling and wooded, with a stream which has been dammed to create a lake. It borders an Interstate expressway, with a major interchange at one corner – giving excellent access to all parts of the county. Thirty-five hundred parking spaces, consuming 35 acres of land, are provided. A best area for buildings was selected. (Figure 11.) The process involves both science and art. We (the planners and architects are Giffels & Rossetti and The Perkins & Will Partnership) selected an area partially in the trees and partially in the open, near the lake, where building units could step up and down hills. (Figure 12.) The site exerted its influence on the form of the campus plan and the form of buildings. Long, narrow, linked 2½ story structures fit into the trees best and on the contours best. Simple brick-wall buildings with deep-set windows and pitched clay tile roofs looked best on this wooded rolling property. (Figure 13.)

The program, however, had an even greater effect on the architecture – both the campus plan and the buildings. The Oakland Community College Board of Trustees, President Jack Tirrell, Dean Al Canfield, and Provost (of the Orchard Ridge Campus) Dick Wilson were committed to an unusual, advanced, and innovative educational program – the tutorial sys-

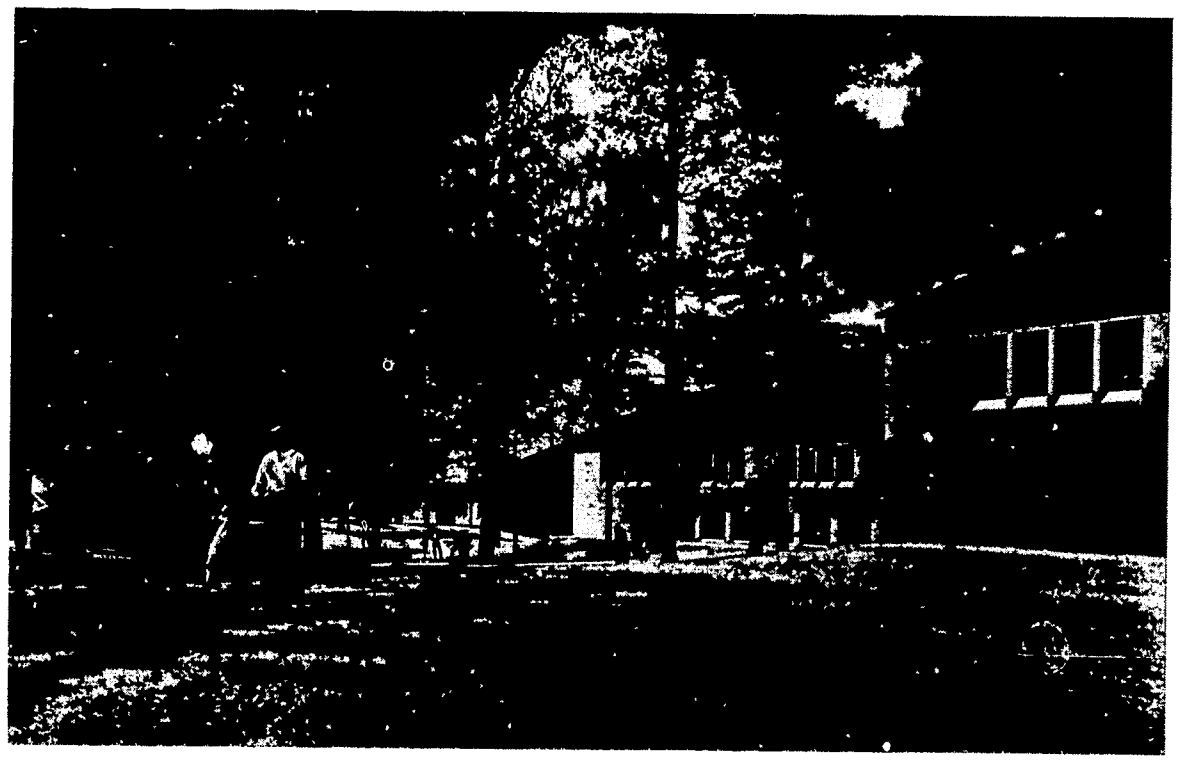


Figure 13

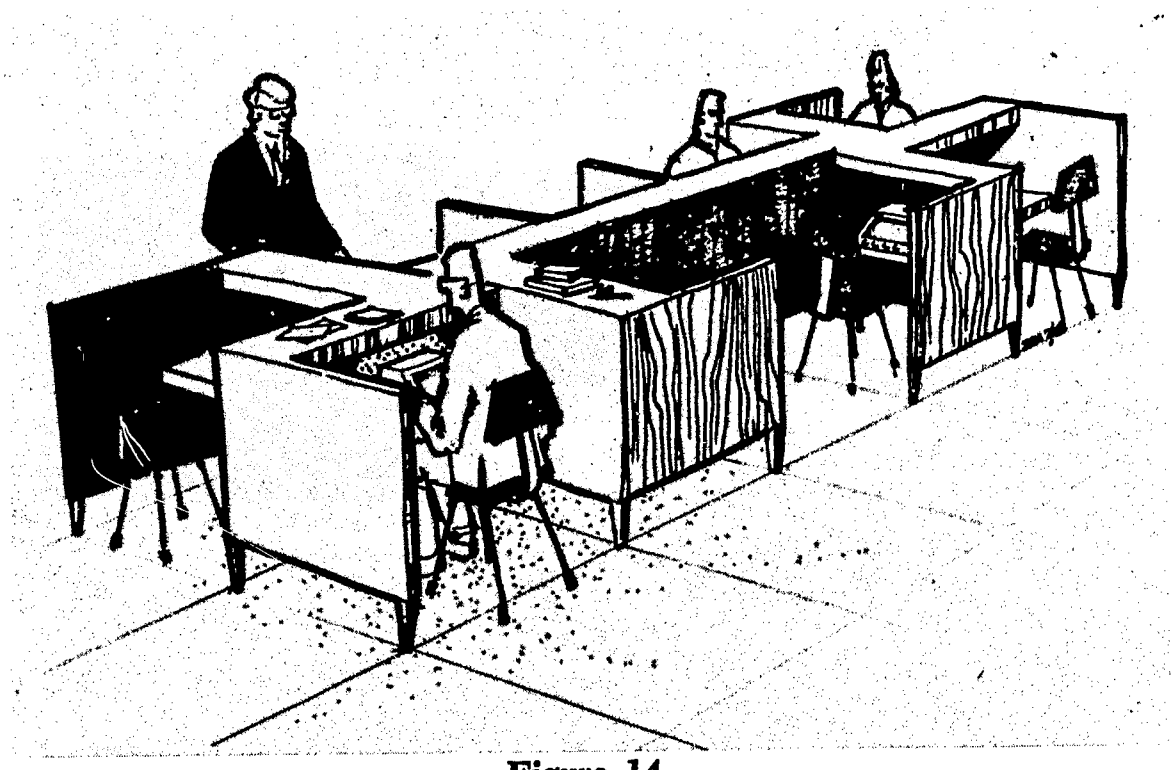


Figure 14

tem based on a few large lectures plus independent study for each student on an individual schedule basis. Orchard Ridge was to be a college without classrooms.

The Oakland Community College program began in a converted hospital building. The first students complained that the independent study tutorial system was a lonely process – especially since the old hospital structure consisted of many small compartmented rooms. There was inadequate opportunity for social interchange. When we began designing the new Orchard Ridge Campus, all agreed that the college needed an active, swinging, multi-function "hub" which would encourage social interchange. Therefore, the hub brings together, in a complex multi-level structure at the center of the campus, large lecture rooms, dining, snack bar, bookstore, lounges, recreation, exhibition, and direct access to the library. When students leave the lecture room, they are in the coffee shop!

The tutorial units, in contrast, surround the hub and are quiet, low-traffic, subject-oriented areas. Each tutorial unit houses a special subject or subjects; each provides space for the materials and the faculty offices and the student study carrels. (Figure 14.)

The students move about the campus, going to different tutorial units to study appropriate materials, use lab equipment, see faculty members, converse with other students, and to study independently. Students go to these tutorial units whenever they wish – day or night. Some students will want to spend only a short time each week in the biology lab, but others will want to spend many hours there and may wish to come back the following day. Each student is out of the lockstep system finally. The college

is not run on the typical classroom system with its rigid time demands. The college is run on an individual study basis, and each individual student has a much greater responsibility for his own education.

Architecture is an important factor. Large flexible areas are suggested for carrels, but overly-large, mechanistic spaces with rigid rows of carrels would have defeated the goals of the educational process. We tried to provide a variety of spaces within the tutorial units (and still achieve a

Figure 15

rather open environment) by developing a 2½ floor design, with "wet labs" at lower floors and "dry labs" (to borrow scientific parlance) at upper floors and on mezzanines overlooking the more dramatic sloped ceiling spaces. (Figure 15.)

Neither the college program nor the building design is based primarily upon the extensive use of new media, such as teaching machines, dial access systems, television, or computer-assisted instruction. The tutorial system does not depend upon the hardware. It depends upon the software—the programs and the attitudes of faculty and students.

Regardless, the current educational programs at Orchard Ridge Campus do utilize many of the new learning devices. The new media (tapes, films, especially single-concept films) and the computer are used in many of the programs. The planner should note that the equipment itself is portable—it arrives by truck, is installed and used, will wear out or become obsolete rapidly, and will be carted away. Equipment is a short-term investment. The building, in contrast, is a long-term investment. The building must be designed to accommodate all kinds of future (now unknown) programs and people and equipment. It must be flexible and, simply, beautiful. To paraphrase Rudolph at S. M. T. I.—"program will change; art alone endures."

The form generator concept stands. If the program demands long-range flexibility, the architecture must respond to that need. The college form must provide that flexibility which is necessary if future programs and people and equipment are to be successfully accommodated. The new colleges, including Orchard Ridge Campus, will have to wait many years for a meaningful evaluation.

TO REMODEL OR TO BUILD NEW

Richard Tonigan

A comparison of the factors relating to remodeling vs. a planned new facility.

The Community-Junior College movement is of great concern and interest to school planners because approximately one new Community-Junior College is being opened every week in the United States.

I am particularly pleased to have the opportunity to talk to you about the question of whether or not it is best to remodel existing facilities or to build new ones. Because virtually all of the other speakers on this program are talking about new facilities, I will limit my discussion primarily to statements concerning the remodeling of facilities, leaving it to you, the audience, to equate whether to remodel or to build new facilities.

I am going to be brief and selectively talk about only a few of the more major remodeling factors. I have several charts which I will use during the discussion.

For purposes of our discussion this morning, it will be safe to equate all such terms as renovating, remodeling, and rehabilitation; and thus, I will use the term "remodeling" even though I know that it may be somewhat misleading. That is to say, to some people remodeling means just redecorating — to others it means redecorating and relighting — to still others it has a still more comprehensive meaning — but again, for purposes of my presentation, fine distinctions will not be necessary.

The very first step which should be taken when a Community-Junior College begins to consider whether or not it should remodel a structure is the completion of a feasibility study. This feasibility study should be a rather quick over-all analysis of the quantitative and qualitative aspects of the existing structure. Is the building functionally obsolete, structurally obsolete, unsafe, unhealthy, etc., and if so, to what degree in each case? Likewise, the building has to be evaluated in terms of its comfort and convenience provisions and thermal, visual, and sonic conditions. The age of the plant is a factor, but by itself should not determine whether or not a building should be remodeled. I have seen a number of 75-100-year-old buildings on major university campuses that were built well, had been given good care, and that made a lot more sense to rehabilitate than to replace. On the other hand, I have seen some 20-30-year-old P. W. A. built public elementary schools which needed replacement.

One has to look at the size of a plant in relationship to what it now does and what it is that it should be in the long range future, both in

terms of the longevity of the existing program and to the probabilities of future programs.

One of the interesting things about remodeling buildings, especially older structures, is the fact that a great deal of space can frequently be converted from non-assignable to assignable space. Many of the older buildings contained large basements, large attics, big storage rooms, oversized mechanical spaces, and similar areas which can now be converted to assignable space. During my ten years at Teachers College, Columbia, we salvaged something like 75,000 sq. ft. of floor space from unassignable space, converting it into offices, classrooms, laboratories and research centers.

The adequacy of the existing site, as well as the potential of expanding the existing site, are factors which must be considered in a remodeling feasibility study.

Of prime importance is the question of whether or not a facility is functionally adequate: if a classroom — in terms of education; if a dormitory — in terms of living, study, comforts, convenience, etc.; if a warehouse — in terms of safety, volume, mechanization, etc.

Spatial adequacy is another question. Does the building contain enough room? Can sufficient additional room be economically and functionally added? Can functions within the building be reasonably spaced and functionally related?

If remodeled, will a building stimulate human effort? Is it aesthetically appealing? Does it promote creative human responses? Is it a place where faculty and students will want to work? Is it a place which students will enjoy seeing and using? In other words, part of the adequacy of any facility is the appeal which that facility has for its users. I suspect this is one of the biggest errors that we facility planners have permitted to occur in our elementary and secondary schools; namely, the construction of buildings which fail to stimulate people to perform at their highest levels of output.

Your remodeling study should consider whether or not the building can be made acceptable in terms of both visual and acoustical conditions to the maximum support of the program. Likewise, can the building support all of the potential equipment requirements? Can it house the administrative and instructional support systems that will be increasingly required in educational plants? Can the building be remodeled so that it will contain sufficient flexibility for conveniently changing program activities? In education, a building is generally not worth remodeling unless it can be made functional for at least another decade and probably another generation.

The appearance of a remodeled building, as well as its accessibility and location in terms of other buildings and activities on the campus, are considerations. How will it look in the same settings with other buildings being rebuilt or remodeled? Does it consume too much valuable ground area? These are among the questions that must be answered.

A major factor in a remodeling feasibility study is the question of financial cost. This will include the financial condition of the particular Community-Junior College system as to what funding resources are currently available and what might likely become available in terms of the unit cost or total building cost that it will take to accomplish the remodeling in relationship to the probable cost of a new building.

In this second chart, I have attempted to show that a new building may cost somewhere between $20-$40 per square foot; and, comparatively, a quite thorough remodeling job of a building suitable for remodeling can be accomplished for about 60% of the new cost. Of course, how thorough the building is to be remodeled depends on its present condition, how long you want to use the building, what you want to use it for, etc. The point being that remodeling may cost as little as a few dollars a square foot or up to about 60% of the cost of a new facility, depending upon the point from which you have to depart and the nature of your ultimate objective; and further, that remodeling can almost always be accomplished for considerably less than new construction cost.

Another interesting feature related to construction financing is the fact that remodeling budgets can be more easily tapered to the amount of construction money available than can new construction budgets; that is to say, if you have a $40,000 surplus this year, you can almost always find a good place to spend $40,000 for remodeling; and the same is true if you have $100,000 or $200,000. On the other hand, if you are going to build a new structure, you either have to save each year's surplus until enough accumulates to build one or more major units, or you have to borrow the money and pay interest and in the long run spend 50-75% more money than actual cost for each facility. Remodeling thus makes it possible to more frequently operate on a pay-as-you-go basis. Of course, if this process will not get you the facilities you need when you need them, then borrowing becomes necessary.

As the financial factors develop in your remodeling feasibility studies, it becomes important to assess priorities of the facilities to be built so that money, time, and human effort can be intelligently scheduled. The manner in which your work is phased will, of course, control the rate at which funds must be made available.

The cost of consultants is a cost factor which must be given a little extra attention in remodeling programs. Architects will want a higher percentage of the contract cost for their fee than they would for a new building. This is logical because they must spend considerable time evaluating and measuring the existing facility and developing alternate schemes of how the existing facility might be altered. On projects of anywhere near the same dollar value, the design problems are generally considerably more difficult on a remodeling project. This is also true for construction; contractors will generally add a little extra in terms of overhead and contingencies on remodeling projects. This is to protect themselves against the many unknowns which may be hidden within walls, under floors,

above ceilings, etc. They also will budget a little extra to provide safety conditions for other people who may continue to work in the building and to provide protection for portions of the building which are not to be affected by the remodeling job.

Incidentally, there are contractors who specialize in remodeling and who specialize in remodeling at different price ranges. I think one of the most unique remodeling subcontracts I have ever heard of is a firm in New York City which specializes in putting holes through difficult walls – holes through which conduit, pipes, or other construction materials might be placed. I believe the company's name is Holes, Inc.

As you complete a remodeling feasibility study, you should have sufficient facts available to enable you to intelligently decide whether and to what extent you will remodel, whether or not any additions will be added to existing facilities, or whether it will be better to build a new building either on the site of the present facility or at a new location.

In retrospect, you need to look at this in terms of ability to pay, educational adequacy, operational conditions that will prevail, operating costs that are likely to be part of the operational pattern, how long the facility will continue to be usable, and the relationship to how it harmonizes and balances with the facilities on the balance of the site.

This is the point at which a decision must be made, a decision which thereafter dictates the route to be followed, a decision which gives direct guidance to the planning process to be developed, to the consultants to be employed, to the staging of construction, and to the use of capital funds.

It is worth noting that the planning process for remodeling is a little different than the planning process which may be utilized for new construction. Remodeling requires a slightly different team of people. It requires members with a different series of experiences in terms of the architect, in terms of the contractor, and in terms of the planner. Remodeling takes more steps requiring an analysis of existing facilities, extensive field measurements of existing buildings, physical conditioning ratings on existing facilities, and in essence, probably as much as one and one-half the amount of time that would be required to plan a new building of comparable scope and size.

If you have ever been through a remodeling planning program, you already know what can happen. The architects and engineers may keep calling up to say that they forgot to take this measurement or that measurement. Or, the architect or engineer sends a man back out to recheck certain measurements that don't check out in the drawings. Or, the contractor is complaining that a particular type of fitting won't connect at the particular point required on the metal to which the existing fitting is composed. Thus, all kinds of additional work is involved during the planning and construction or remodeling projects. There is just no doubt whatsoever that remodeling is decidedly more difficult to plan than new construction.

Involvement-wise, you will have many more people potentially concerned with the remodeling job.

First of all, you have an existing faculty with whom plans should logically be developed. In my experience, failure to involve an existing faculty is one sure way of having a new or remodeled facility that is far from satisfactory – many of the colors will be unacceptable; the furniture or the equipment will be considered of the wrong size or shape; partitions will be slightly out of place; doors at the wrong end of a room; some rooms too small, others too large; too few shelves will be provided; etc., etc.

Very often, in planning a new facility, a faculty has not yet been organized and the number of people to be involved and to have effect upon design are many fewer in number.

Just as educational specifications are required for the planning of a new building, educational specifications (including local policies and practices that are to be standardized in the remodeling plans) are necessary for remodeling projects.

A number of physical characteristics of an older plan provide an indication of whether or not remodeling might be a suitable path of action. These characteristics would include high ceilings, wide structural expanses, solid framing, high quality building materials in the original building, conventional-to-work-with materials, conventional sizes of doors, windows, etc. Conversely, there are many old buildings which possess characteristics which will obviously make it difficult to remodel; these characteristics include odd-sized doors, windows, ducts and louver openings, and out-of-date finish materials, building materials of an unusual shape, thickness or locale, and floor surfaces which have been badly worn in an uneven pattern.

I suspect that it is fair to say that planners and contractors working with remodeling projects ought to have more experience in this work than their counterparts working in new construction. This seems logical to me because the planner needs to be acquainted with the materials, design concepts and construction methods spanning several generations, rather than with those of just the current generation. In addition, planners and contractors working in a remodeling field must have an additional concern for the safety and protection of persons and property in the immediate areas and often these planners and contractors must make provisions for continuing activities in operation while remodeling is in process. Another important consideration is timing; that is, the phasing of the work. For example, heating system remodeling most likely will need to be accomplished during the summer months. Demolition activities which are frequently noisey and dirty will very often need to be phased in between semesters.

It is probably evident by now that the owner and the architect may have to exert extra effort and ingenuity to assure themselves that contractors experienced with remodeling are bidding on each job. Certainly, if a contractor inexperienced with remodeling is the low bidder, it would be prudent to verify his understanding of the requirements of the project prior to signing the contract.

It has been interesting to see during the last few years the extent to which remodeling can be accomplished. I have seen several buildings in New York City, not just "gutted" but completely stripped down to the bare frame and original foundations, and then a new building built on the old framework. Sometimes, additional steel is added to permit a heavier building to be built or for additional floors to be added. Perhaps some of you visited Times Square in New York City during the last few years when the famous Times Building was stripped down to the original steel and rebuilt as a new, modern building by the Allied Chemical Company.

School and college educational facility planners who are becoming involved with remodeling for the first time need to know that a number of resources are available to the remodeling planner. For example, several AIA school plant studies have been published on remodeling topics. In addition, several doctoral theses have been written about remodeling; for example, Chapman's at the University of Nebraska and mine at Columbia. Several recent books including *Schools For America* contain chapters on remodeling principles and practices. The *Guide For School Plant Planning* contains principles which will guide planners in modernizing environmental standards. In addition, there is a film, "New Life For Old Schools," available from the Great Cities Research Council; numerous newsletters published by the Research Council of the Great Cities Program for School Development discuss rehabilitation practices. EFL has published a small folder called "The High School Auditorium – 6 Designs For Remodeling." Many educational periodicals carry articles on remodeling and rehabilitation, and many architects, engineers and educational consultants have sets of slides, pictures and charts that can be used as a learning resource. The Sumption-Landes Work Book and the Linn-McCormick Rating Chart, as well as the Michigan State Obsolescence Survey Folder, can all be used for rating the degree to which remodeling ought to be accomplished in any individual facility.

In concluding, I would like to summarize:

1. Remodeling takes m[illegible] time and care, both in planning and construction activities.

2. Remodeling can cost less money than new construction and satisfactory levels for educational performance can frequently be obtained.

3. An educational building does not have to be old to require remodeling. New teaching and learning methods and equipment are being so continuously developed that the wise school district or college budgets remodeling on a continuous basis. The philosophy that buildings should only be remodeled when they get run down is an obsolete philosophy.

4. Remodeling can require more creativity by the owner, by the architect, and by the engineer than does new work. All of us have seen some interesting and highly creative remodeling projects. I have seen a five story elevator shaft combined with a wrap-around stairwell "gutted" and converted into a nine story set of professors' offices. I am sure that many of you have been at West Point where the old riding stable, dirt

floor and all, was converted into a four story, extremely modern academic building. One could identify hundreds of illustrations in which people have had the idea that something could be done, have used imagination, have hired the right kind of consultants, and have designed remodeling projects extremely compatible with the planned educational program.

What's New in Vocational-Technical Education Facilities?

Charles E. Trotter, Jr.

"To prepare youngsters to meet the needs of society, it is necessary to fuse academic and vocational curriculums into a comprehensive system of education."

Nobody questions the fact that our society needs skilled technicians nor the fact that people need employment. We are served by an industrial complex that obtains only a small percent of the skilled technical help it requires annually.

Yet, at a time when automation is bringing about a decline in unskilled jobs, our schools are producing an ever increasing number of unskilled graduates. At a time when more and more money is being appropriated for the needs of the talented or retarded student, the average majority is being left to find its own way. At a time when industry is short of skilled technicians who can bridge the gap between the college educated professional and the craftsman, we are faced with the growing problem of high school graduates who cannot compete in the academic university program on the one hand, and are not sufficiently challenged by the craft oriented curriculum on the other.[1]

Essentially, schools are offering a high quality university preparatory program at one end of the scale, and by manual skills training at the other. This often means the vast majority of students must either gravitate toward unrealistic goals or settle for less than their real potential.[2]

This gets us down to a basic problem. To prepare youngsters to meet the needs of society, it is necessary to fuse academic and vocational curriculums into a comprehensive system of education. We have been trying to accomplish this feat for nearly a century without adequate success.

We have not, for instance, found a way to offer students both academic and vocational preparation simultaneously without burdening them with more credit hours than they can reasonably handle. We have not solved the problem of how to turn accredited teachers into good technical instructors or how to turn technicians from industry into accredited teachers.

There are many psychological aspects we have barely touched. How do we encourage the young man who lacks the potential to become a doctor, and will probably flunk out of medical school if he tries it, to train

1. School Planning Laboratory, *Educational Specifications for a Pre-Tech Facility.* Stanford: Stanford University, 1966, p.i.
2. *Ibid.*, p.i.

instead for a career as a medical technician? How do we stimulate the youngsters whose sights are set too low – youngsters who have the potential but lack the motivation – to move up to the skilled or semi-skilled occupations? Numbered among these young people are nearly a million high school dropouts plus a million high school graduates who enter the labor market each year, most of them without clearly marketable skills.

We would doubtless make more progress with these problems if both educators and the general public took a more generous – and for that matter more realistic – view of the importance of vocational education. Many educators still tend to regard vocational training as an awkward adjunct to the curriculum. Attuned to the atmosphere of the college, we are prone to develop more interest in the students who plan to follow our own educational pattern than in the far greater number who will not.

It would be helpful if we realized that academic education and vocational education are not two different animals, but twin aspects of personal development that must be blended if our schools are to graduate youngsters capable of dealing with their responsibilities both as providers and as citizens. We must seek ways of drawing upon the academic curriculum for information and for points of view that will strengthen and nourish the vocational curriculum.

Nearly all children coming up through our school systems are vocational education majors in the sense that some day, they will enter the labor force. During junior high school or high school most youngsters have begun to make some decisions about what they will do when they grow up. This approach works well enough when the son of a biochemist wants to become a biochemist and has the ability to do so. It works well when the son of an electrician expects to become an electrician and join his father's firm. It does not work when the son of parents on the county welfare rolls has the ability to become a biochemist, but never finds out at home or at school that there is such a thing as a biochemist and that he might aspire to become one. It does not work for many of the professions and technical skills which did not exist 10 years ago. I doubt that many teen-agers have ever heard of electro-photo optics, much less considered it as a vocation. And it certainly does not work for the majority of high school graduates and dropouts alike who stumble into the labor market without any idea of what they can or want to do.

The fact is that vocational education is applicable to almost any academic subject. The high school physics instructor teaching the theory of sound waves might suggest the applications of this theory in such fields as oceanography and aerodynamics, both of which need people at professional and sub-professional levels. The theory of electricity might suggest careers in home appliance design engineering, a profession; and X-ray technology, a sub-profession. Certainly, the future welder should know how metals react to heat. A grounding in geometry is needed by the draftsman and surveyor. Chemistry is valuable to the farmer of tomorrow.

The struggle to incorporate and then emphasize vocational aspects of

education in the development of today's youth is reflected by the way space is allocated in which to teach vocational-technical programs. In many cases, instruction must be carried out in basements abandoned by other programs, in hastily thrown up temporary war surplus buildings. These inadequate structures indicate the low priority and status granted to vocational-technical education.[3]

A school plant influences what can or cannot be taught. It can help or hinder the instructural capabilities of a teacher. It determines the environment for learning. It can stimulate professional excellence in the teaching staff. We might say, the attitude of a community for a program of vocational-technical education is expressed in physical form in the facilities they provide. In the last analysis, then, the school plant represents the type and kinds of educational experience desired by a community for its youth.[4]

A number of communities have recognized a need for quality programs in vocational-technical education and have done something about this need. For the next few minutes I would like to take you on a tour of several educational facilities which have recently been constructed to house quality vocational-technical education programs. I will not attempt to describe the complete program in each community, but merely give you some interesting highlights of each of the programs and related facilities. I also do not intend to indicate the programs I describe to be the only good programs. There just happen to be some with which I am familiar. Let us first go to Oklahoma State Tech where training is offered to students in 35 skill fields.

Oklahoma State Tech, Okmulgee, Oklahoma

As Grant Venn has said; . . . "Since the goal of all persons is a place of some value in the nations' work force, it is essential that the schools accept their responsibility to prepare each student to make his maximum contribution."[5] That is precisely what the staff at Oklahoma State Tech has prepared itself to do. Let us take a look at some of the programs being offered here to prepare youth in Oklahoma for the world of work designed toward a career in a technical field. An interesting and significant aspect of this program is that training is offered to a group of students heretofore largely neglected. You are looking at the Red Door Restaurant where total operation and management is part of the program — a bakery — second to none -- fresh bread and cakes can be purchased each day — a dry cleaning plant where students learn the entire process — including management of a busintss — boot-making-saddle construction and repair so important to this area of the United States — commercial art —

3. Knezevich, S.J., "A road to Quality Vocational Facilities:" *Proceedings of National Conference on Vocational Technical Facility Planning.* Reno: The University of Nevada, 1967.
4. *Ibid.*, p. 13-14
5. Venn, Grant, "Education U.S.A.," *Educational Specifications for a Pre-Tech Facility.* Stanford: School Planning Laboratory, Stanford University, 1966, p.6

lithography including the operation of a letter press — the complete printing and engraving process — watch repair — the repair of small engines — here you see an outboard motor and a chain saw receiving attention by students — drafting, note the buildings were constructed to provide for handicapped persons — barbering — an interior view of the Red Door Restaurant — the cabinets were all constructed by students in the cabinet shop — in fact all cabinets for the entire school are constructed by students — a diesel shop where complete overhaul of engines can be affected serving the entire community, in the event students and equipment can not come to the school, the school has a portable diesel shop and classroom which goes to the student — and finally for those students interested in learning the operation and management of a service station, provision for learning the complete operation is provided.

Quincy, Massachusetts[6]

In 1965, the city of Quincy undertook an educational analysis that involved study of its academic and employment needs. School administrators learned that nearly 9,000 of Quincy's 90,000 residents work in the shipbuilding industry. About 25 percent of the high school graduates go to college. But the school curriculum followed the traditional secondary education pattern — about one-half of the students were enrolled in a college preparatory program and one-third in business education. The rest were divided between general and vocational programs — with vocational programs drawing less than ten percent of the student body. The pattern was unrealistic in view of the employment opportunities. Clearly, Quincy needed to strengthen its vocational-technical program. The city's educational policies committee, established to study the matter, determined that a new kind of curriculum was needed — one that would deal with whole families of occupations rather than specific job categories as in the past.

Beginning this past September, the project introduced a curriculum of 11 families of occupations: Electro-electronics, metals and machines, power mechanics, general woodworking, general piping, food preparation, computer data processing, graphic and commercial arts, health occupations, home economics, and business education. These families comprise 255 specific occupational skills.

The three R's are the center of the curriculum. Each boy will take science, English, social studies, and health education; beyond that, instruction will be as individualized as possible.

For example: If a student starts in the electro-electronics program, his course of study will include algebra, trigonometry, science, and physics during the next three years. He will also study electronic theory and practice related to his occupational choice, using hand and power tools, and generating and testing equipment. In addition, he will learn the mainte-

6. Farmer, Nan, "Quincy builds a new vocational-technical education," *American Education*. July, 1967, pp.12-13.

nance of electronic devices along with electrical wiring, which is the major emphasis of the program he undertook.

The new building, four stories high and as modern as the curriculum, has no interior bearing walls. Classrooms and laboratories are formed by flexible, portable partitions. If teachers want to reorganize their space, equipment and walls can be shuffled quickly and easily. An enclosed second-story walkway, called the "bridge," links the old and new buildings to provide free movement of teachers and students between the program areas.

Quincy calls for an interdisciplinary staff as essential to the new curriculum. This is not a form of team teaching, but rather involves the assignment to each curriculum family of a unit of at least five teachers including a mathematics teacher, a teacher from one of the sciences, a social studies teacher, an English teacher, and a vocational specialist. Together they work out the curriculum for the students in their occupational family. Programs are weighed, balanced, and fitted to the learning patterns of each student when he is ready.

St. Paul, Minnesota[7]

The St. Paul Vocational-Technical Institute, built at a cost of over eight million dollars has a gross floor area of over 390,000 square feet. The first, second, third, and fourth floors are air conditioned – the ground floor has a supplementary ventilation system for summer use. The limitation of the site and the need for economy, both in first cost and operating expense, dictated a compact plan for this building.

The development of the educational program at St. Paul involved planning by persons representing all segments of the community. It represents a program that is community-wide in its scope and significance. Because of this, present training programs of the St. Paul Vocational-Technical Institute relate to the substantial employment market. This also means that major areas of specialization and course content must be under constant revision. At the Institute, courses have been categorized under four major headings.[8]

1. **TRADE AND INDUSTRIAL** – The pre-apprenticeship trade offerings reflect the employment work of the community. As industry has grown, so have building trades which construct new houses and new industry.

2. **TECHNICAL PROGRAMS** – The technician develops varied manual skills as well as proficiency in science, mathematics, and communication. He becomes a member of an engineering team employed in research, production, and service.

3. **BUSINESS EDUCATION** – Trainees for employment in the business world and in the rapidly expanding service industry acquire a blend

7. Saint Paul Board of Education, *Saint Paul Technical-Vocational Institute.* Brochure published by St. Paul Board of Education, St. Paul, Minnesota, 1966, p.5.
8. *Ibid.*

of skills in teamwork and in operating increasingly sophisticated machines such as you see here.

4. **RELATED AND ELECTIVE PROGRAM** – Related subjects supporting the industrial, trade, technical, and service areas have become increasingly important. A high degree of specialization in every industry requires a continuing program of inservice and extension training.

Finally, the Institute is aware that the problems of the world gives it the responsibility for the development of good citizenship with people of every occupation.

Atlanta, Georgia[9]

The Atlanta Area Vocational-Technical School is located south of downtown Atlanta. The two buildings on the 48-acre site have a total floor space of over 296,000 square feet. The main building houses all offices, auxiliary services, classrooms, laboratories, and shops with the exception of the aeronautical program which is in a separate building.

This 30,000 square-foot aviation building has areas for power plant and air-frame mechanics. Related classrooms and shops are nearby.

The Atlanta Area Vocational-Technical School offers courses in 49 different areas. Co . .ses include: air conditioning, civil engineering, building construction, mechanical engineerinng, data processing, sanitary engineering, and electrical engineering. Trade programs include aviation mechanics, auto mechanics, diesel mechanics, sheet metal, and welding. Health occupation programs include training for dental assistants, medical assistants, and practical nurses. A series of business education courses are also available.

Near the front of the main building are an instructional materials center and a television center. Closed circuit television facilities include equipment for originating programs in the television studio and portable equipment for originating programs in the classroom.

Instruction here is on a post-high school level. While a high school diploma is essential for the technical program and preferred for admission to other programs, students may be admitted on the basis of aptitude tests without having graduated from high school.

Kenosha, Wisconsin[10]

Kenosha Technical Institute . . . located on 50 acres . . . is a school planned to provide an educational environment for an expanding vocational, educational program. The interior spaces are designed to meet changing needs over the approximately 80-year life span of the structure, and a grat deal of flexibility has been built into the building to help

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9. School Planning Laboratory, *Profile of A Significant School, Atlanta Area Vocational-Technical School.* Knoxville: University of Tennessee, 1965.
10. Kenosha County Board of Vocational-Technical and Adult Education, *Kenosha Technical Institute.* Kenosha: The Board, (n.d.).

achieve this goal. Constructed at a cost of just over $3 million . . . the 190,000 square foot school cost about $16.00 per square foot and was planned to accommodate 1800 students. Classrooms were designed to help the learning process . . . in most instances triangular or trapezoid arrangements were used. Ceilings, walls, and floor tile are light colored. Brilliant colors used in the arrangement of furniture focuses the student's attention to the lecture desk. Two-way closed circuit television allows an instructor to videotape important lectures which are stored in the central TV studio for call-up whenever needed. TV receivers bring close-up of demonstrations to all students . . . and permit communication between classrooms.

The main building features seven corner rooms which are actually triple classrooms. They are used for large group instruction with the partitions fully opened and stacked on curves out of the way, or as three individual classrooms with the partitions closed.

The library . . . centrally located in the main building gives accessibility to all providing ample reference material. Study carrels have individual TV receivers where students can privately view videotaped lectures. The stack area can be closed at night eliminating the need for a librarian to be on duty . . . and permitting study to continue.

Complete medical, dental, and nursing laboratories are an important part of the curriculum. Lab facilities are typical of what students will find in local medical offices. Patient examining rooms . . . which can be closed off from the lab area by folding partitions . . . allow students to gain practical experience in nursing and dentistry.

The sewing lab has many innovations which enhance learning. Tables are large and have flat tops . . . sewing machines can be swung down under the table for storage . . . much like the way typewriters are stored in desks. The table tops can be used for cutting materials . . . even as an overflow classroom for mechanical drawing. The room is divided by a large folding partition. At the rear are dressing rooms where students can try on the clothes they have made . . . and where privacy is assured with folding partitions installed on curved track.

The first year of horticulture is devoted to work in the classroom . . . the second year to actual work in the greenhouse . . . which includes a display bubble and a fully equipped "retail store." The educational specifications required the curriculum to combine formal education with simulated actual conditions which the student would find in the working world in Southeastern Wisconsin.

At Kenosha Technical Institute there are faculty planning areas which consist of custom built desks and bookcase units which include a bulletin board and credenza for the instructor's use.

The drafting room is exceptionally large . . . to accomodate the big drawing tables and the huge enrollment. It has TV receivers strategically located to bring big screen illustrations to all students. The room can be divided into smaller rooms with acoustical folding partitions.

Closed circuit television is a vital part of the educational plan at the Kenosha Technical Institute. Each classroom and laboratory will be able to receive a program from any other classroom or laboratory. Programs can be originated from any point in the building, and projected to any other point.

Miami-Dade County, Florida[11]

The Science and Technology Building is the third major academic building on Miami-Dade Junior College's North Campus, first of the three 10,000 students facilities called for in the College's multi-campus Master Plan.

These structures are neatly and picturesquely situated along three sides of a tree-lined architectural lake.

The new Science and Technology facility, designed for instruction in a variety of technological subjects, contains large laboratory – workshop – drafting room combinations, classrooms, a unique teaching conference room, and offices for the teaching and administrative staffs.

The office area deserves a separate word of mention: offices have been grouped together in such a way that facilities may be shared by those having similar interests, and are in close proximity to classrooms and laboratories as well as to the connecting bridge leading to other buildings.

This cluster of offices "floats over" the ground floor to form a covered atrium and create an open space designed to relieve the precast solidity of the larger masses.

Maintaining the architectural design of the other structures of the campus, the precast exterior of the Science and Technology Building is modulated by narrow ribs at the panel joints. Window recesses contain columns and reveal the ends of the heavy beams. The color of the precast facades is soft beige contrasted with sandblasted concrete and white glass mosaic stair towers. Texture in the exposed concrete is achieved with a sandblast finish. Stucco, in the few places it occurs, is textured and painted.

The Science and Technology Building reflects a significant approach to the problems of designing academic facilities, in which faculty and architects worked closely as a team on design.

A primary objective of this team was to achieve optimum program offerings to meet the community's increasing needs in the areas of technology, business, and related fields.

Laboratories constitute the main mass of the building and surround a central classroom block. These facilities are separated by opaque walls of porcelain or cork paneling. Corridor walls are built with precast framed windows which permit viewing of the laboratory spaces. The building's

11. Fisher, Martin, Paul Gillespie, Maurice Hawa, George Mehallis, and Max Norris, *Miami-Dade Junior College Science and Technology Facility Building*. Miami: Department of Graphic Arts, Miami-Dade Junior College, 1965.

deep transverse concrete beams, exposed in the ceilings, permit major acoustical subdivisions of laboratory or class spaces.

A unique feature of the building is the very useful and functional teaching conference area. As you can well see, this space certainly presents many possibilities for communication.

Las Vegas, Nevada[12]

Let us take a quick look at a unique facility recently constructed near Las Vegas. The Southern Nevada Vocational Technical Center is not intended to be a miniature college or university, neither is it intended to be a comprehensive high school. The stated objectives of the educational program which this facility was designed to house are:

1. To prepare youth and adults for satisfying and productive employment in the world of work.

2. To assist workers to achieve satisfaction and success in present jobs or advance to more skillful jobs.

3. To assist unemployed workers to obtain needed skills to become employable.

To accomplish these ends the Southern Nevada Vocational Technical Center was designed embodying several concepts which I would like to present to you briefly.

1. **Open Space** – There is an abundance of space in this building which serves as teaching and learning areas. The materials resource center is an extension of this concept – Centrally located and readily available. Other examples are the openness of the classrooms. In the words of one of the officials: " . . . we wanted flexibility, emphasizing small group instruction and individualized teaching. This is a school that's operated in an adult atmosphere and this is what we were aiming at from the start. The old four walls had to go, they have been obsolete for years."[13]

2. **Carpeting** – A great deal of this building is carpeted, including the dining area as you can see in this corridor and classroom area.

3. **Integrated Ceiling** – A third feature of this building that merits mention here is the concept of the integrated ceiling. An integrated ceiling must contain at least four factors. It has to contain all the light source for the space that you are utilizing at the time. It must contain acoustical properties, outlets for the air conditioning supply and return air, and finally it has to be completely flexible. Through planning, each of these factors has been embodied in this building.

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12. Odell Mac Connell Associates, *A Campus Master Plan for the Southern Nevada Vocational-Technical Center, Clark County School District, Las Vegas, Nevada.* Stanford: Stanford Professional Center, 1964, p. 3.

13. Strum, Ray, "Program Participants Answers to General Questions on Southern Nevada Vocational-Technical Center and Related Matters," *Proceedings of National Conference on Vocational-Technical Facility Planning.* Reno: Univ. of Nevada, 1967, p. 56.

I have tried by drawing your attention to these unique features to underscore the need for detailed planning of proposed new facilities. Through the use of these concepts, carpeting, open space, integrated ceilings, etc., and with excellent planning for maximum efficiency, a truly functional building has been constructed in Las Vegas.
In SUMMARY, I might say:

Historically, vocational technical education has been treated almost as a step child . . . all too often left to local industry in the form of on-the-job training . . . or, if provided by governmental bodies, it has been contained within rigid curriculum, without organization . . . and housed in unattractive buildings . . . many times in buildings discarded for other school use.

But, there is an awakening . . . a new awareness that many of our youngsters leaving high school do not go on to college . . . a sudden perception that industry . . . and the community . . . need blue collar workers who have been adequately trained for their important occupations.

We have finally begun to realize that our economy can no longer absorb great numbers of unskilled workers. Young people are being helped — in a highly technical economy that embraces thousands of skills and aptitudes — to sort out careers that are adapted to their individual abilities. Our schools are beginning to assume responsibility for providing not only the necessary academic training but the technical education required for these youngsters to effectively compete on-the-job market and to assume their rightful place in American Society.

I should like to conclude with the words of President Lyndon Baines Johnson in his Manpower Report to Congress in 1964 in which he said:

> "We must raise our sights — and strive to realize each person's highest productive and earning capability. We must seek to develop more completely our people's talents and to employ those talents fully — to fulfill the rich promise of technological advance and to enable all to share in its benefits."[14]

14. Johnson, Lyndon Baines. *Manpower Report of the President.* Transmitted to the Congress, March 1964. Washington: Government Printing Office, 1964, p. XL.

New Concepts in Area Vocational-Technical Schools

Michael Russo

"We must provide for all the people . . . every part of the facility must serve as a teaching station."

I would like to give you a very brief history of what an area vocational school implies and the role that we think that people must assume.

I would like to also preface my remarks by saying that we in vocational and technical education division do not at any time wish to leave you with the connotation that vocational-technical education is going to be the panacea for all of our ills. We do, however, believe that it is one of the very critical steps in meeting the needs of teaching our people the basic skills for entry into the labor market.

The schools that have been presented to you have been constructed since the passage of the Vocational Education Act of 1963. The passage of the Vocational Education Act of 1963 was the first Federal act, in terms of vocational education, that appropriated funds for construction of area vocational-technical schools. Prior to the Act as has been emphasized by our previous speaker, many vocational-technical facilities were makeshift, make-do, quite unlike the remodeling process that we heard the gentlemen describe this morning. Many times we inherited facilities which actually had been condemned for other educational purposes. We are pleased to say that this trend has been reversed throughout the country. I offer you the following statistics as evidence of the progress that has been made to date.

The '63 Act, basically, in terms of funding, has been in operation approximately 3 years. Prior to the '63 Act throughout the country we had 405 area vocational-technical schools. Now, these schools meet the intent of the State in terms of a definition; they did not necessarily meet the definitions as defined in the '63 Act. In other words, if this school meets a geographical problem, or the specific need of that area, it very likely was designated as an area school. It did not necessarily mean that it had high levels of attainment; it did not mean that the curriculum or the program met any particular requirement other than its geographical need. The '63 Act goes beyond this and requires specific objectives be met in order to be considered an area school and become eligible to utilize Federal funds.

It is most gratifying to see the progress that we have made. In approximately three years, we have had an increase from 405 area vocational schools to 1,171. Our projections indicate that by 1975, if we are to meet the training needs of our people, we will have to have a complex of at

least 1,900 area vocational-technical schools throughout the country. Now what does this mean in terms of dollars and cents? Last year under the provisions of the Vocational Education Act of 1963, $164 million were expended for area vocational-technical school construction. Of this total amount only $64 million were federal funds. In addition to this, $66 million were utilized under the provisions of the Appalachian Regional Development Act, and of this amount, $25 million were federal funds.

As of September of this year, 185 additional new schools were in operation for the first time. We presently have 320 new schools under construction.

What these schools mean to our national economy is based on the philosophy of the '63 Act. These schools must meet the needs and interest for training and retraining of all the people in the communities that these schools serve. So, basically what this implies is that we must be prepared to offer vocational training programs and any related and remedial programs which will span the entire vocational-technical educational spectrum. One of our basic concerns is that over the years we have, perhaps, over-emphasized the degree programs and neglected the programs geared for preparation for the world of work. The problems are so complex and of such magnitude that they require the combined efforts of all educators in order to cope with the problems. No longer can we isolate ourselves into our own small areas of interest, but we must assume our share of the total responsibility. Therefore, what I am saying ladies and gentlemen, is that we all have to put our shoulders to the wheel in order to cope with this problem.

In terms of our area vocational education facilities, and what the future holds, you have seen a few illustrations of the hundreds of schools that have been built in the past two years. These that we have shown you are not the only ones which have fine outstanding features as there are many others similar to these.

If time permits we would take a "tour" starting from the outside of a building and proceeding through the interior, and I would attempt to point out to you many of the innovative components that are essential to meet today's demand for a total educational program.

Perhaps, I should comment at this point and state that too often in the past specialized facilities were not built to house vocational education programs. Now we are pleased to say that the educators are becoming very selective in terms of geographical placement, selection of site, a fundamental design to meet the present and future anticipated needs of the vocational offerings.

In many of the larger metropolitan areas, we are faced with a very critical problem of securing adequate land for future expansion. For example in Jamaica, New York, land is at such a premium that the school authorities are proceeding to fill in 40 acres of Jamaica Bay on which to build a school. We also have a number of schools built across major

throughways and on sites which in the past we did not consider suitable for educational purposes. We are faced with problems such as the location of future highways, air rights, mineral rights, service units below ground level, such as power, sewage, and rapid transportation systems.

We are placing a great deal of emphasis in our design factors on the concept that our schools must be operational twenty-four hours a day, year round.

Most interesting are the results we have had relative to environmental control. We are going much further than partial control or isolated zoning. Approximately 90% of the schools presently being built have complete environmental control.

As we plan these buildings, we are very much concerned with the parking facilities. We are utilizing a ratio of three to one in terms of students driving to school in private vehicles. Based on the theory of year round utilization, which will include many public functions, parking can be, if not adequately prepared for, a deterrent to the growth of a program. Factors to consider are proper paving, sidewalks around parking areas, lighting, etc.

The interiors of these buildings for the use of a better term, are being planned with a maximum of degree of "permanent maintenance." In many instances, financial assistance is available from State and Federal sources, for initial construction, however, the operational phase of the programs often receive very little financial support. Consequently, we emphasize that the interiors be built with materials which will require a minimum of maintenance for years to come.

During the previous discussion, you heard the term "flexibility," and "adaptability." What this means is the ability to modify the interior of a facility with a minimum of effort and expense to cope with technological changes which will demand program change. For years many of our programs have become stagnant due to a static-wall concept. We are moving forward in overcoming this and many of our buildings do not have interior bearing walls. Many walls installed are portable or movable and can be readily and rapidly adjusted to meet the needs of the program.

Accompanying the flexibility and adptability concepts we see an occupational clustering of units which if designed properly will greatly reduce the duplication of equipment and facilities. There seems to be a definite trend to eliminate the long double-loaded corridor effect so common in our older facilities. In the process of clustering many architectural designs have been developed, such as the round, snowflake, finger, etc.

In all areas designed into a facility, we must bear one thought in mind. They must be built for possible utilization as teaching stations. As an example, when we talk about a cafeteria, we are talking about a cafeteria that will be designed so it can be utilized for a program of culinary arts. This will dictate a different design factor which presently exists in most of our school cafeterias. Specific units will be built that

have the same physical and equipment features as seen in a unit utilized in most diners and restaurants. Combined with the culinary arts aspect will be programs for students in waiter, waitress training, and dining room management. The cafeteria must also be adequately designed for more than the multiple servings of the past, but also to serve breakfast and in many cases evening meals to students participating in the various programs.

A number of school systems are placing on contract two and three separate faculties. As more of the schools move in this direction, we must plan for adequate teacher preparation rooms. Rooms which will be equipped with desks, ample storage units, and facilities for viewing films. It must also be adequate in size to permit small units such as "team teaching" groups to meet and formulize their educational plans.

The library facilities should have greater utilization than simply meeting the needs of the school population. It must also be utilized as a community facility. A number of our newer schools have developed a library complex for joint utilization of the school and the community which it serves. Consequently, the library should not be an interior isolated area, but rather one readily accessible to the public. It should assume the role of being the technical resource center for the community.

The facility and the term first-aid room is another unit that is being absorbed into a larger complex called health units or health suites. Again we are emphasizing a unit which will not only serve the school population but the community also. We cannot achieve educational goals when many of our students are in need of medical assistance. No longer can our communities afford the luxury of the excellently equipped facilities such as a health unit to be only utilized for a short period of time.

Canteen units are being given a top priority in our area vocational school complexes. Our clientel in many instances are people who have worked all day, who do not have the opportunity to return to their homes for an evening meal, but most come directly to school for training and retraining in order to prepare themselves to cope with technological changes. These areas must be well-planned to handle the above problems. These areas should have, as a minimum, "standup tables," but we would also suggest that this area not be located adjacent to a student lounge.

The maximum utilization of these facilities goes well beyond the factor of hiring 2 to 3 separate faculty staffs and the incorporation of specific units to handle the larger number of students. We are faced with the problem of ordering materials in larger quantities. To cope with this, we see a definite trend toward large centralized receiving units. One that can also be a teaching station, where the supplies are received and inventoried by students who are in a class on warehouse management.

As we strive to meet the needs of all our people, we are faced with a problem of designing our facilities to handle the physically handicapped. Provisions must be made for exterior and interior ramps, proper handrails, drinking fountains at a height that a wheel chair student can use;

bathroom facilities to enable wheelchair students to enter with a minimum of effort.

These along with many other such units must be planned for and must also be projected into the design factors of certain pieces of equipment to accomodate their students. We are making progress in this area, however, we have a tremendous gap to overcome.

In conclusion, I wish to state that time does not permit me to discuss in length many areas incorporated into our facilities, however, I trust that this presentation will stimulate within yourselves the ideas which should be incorporated into our new emerging facilities and will enable us all to do a better job in meeting the needs of all the people.

Significant Advances in Educational System Development

Norton F. Kristy

"In a decade, a college student will be able to carry a 3,000- or 4,000-book library in something no bigger than a purse or vest pocket . . . . every student who goes to a post-secondary school will have a personal library of perhaps 10,000 volumes."

I feel just a touch equivocal about being the closing speaker. It reminds me of the comment that John Gardner made upon taking over the Department of Health, Education, and Welfare. He described it as something of a catastrophe, cleverly disguised as a great opportunity.

Frankly, I am going to try to influence you today. I am going to try to persuade you that we all have a great opportunity. I do not think it is an opportunity that arises out of a catastrophe, but it does arise out of the intense pressure on all of us to improve the quality of education — and particularly for the group of young people we call "disadvantaged" — to improve the efficiency of education within this burgeoning instrumentality, the community college (or junior college, or vocational college).

Let me start with the assigned topic of my talk, that is, where system analysis and system planning are going. It might be appropriate, right at the beginning, to dispel some of the mythology and mystique about system concepts. They have, perhaps, been overrated with regard to their innovation potential and value. System analysis and all of its evolutionary friends — operations research, cost/benefit analysis, program planning and budgeting — are really rather simple-minded processes. In fact, they are actually the simplest possible logical schema for doing the following: defining what is needed within a given operating situation and then taking a realistic and hard look at what alternatives exist for obtaining the best solutions.

I do not mean to belittle these techniques; they have come a long way and are very useful. As a matter of fact, they evolved out of military technology. Back in the early '40's, when airplane engines became complicated, when weapons systems on fighters and bombers became fairly complicated, and when the airplane itself became more sophisticated, airplane designers discovered that all three elements simply would not work well together if they were designed independently. The designers found that these elements had to be developed as members of an integrated system. It was at this point that many of us made the brave discovery that there were lots of organizations and human systems as well that would not work very well if their elements were designed or evolved independently.

At this meeting, I have listened to various discussions of how to build buildings and how to build facilities. I have heard serious comments about relating technical programs — the educational process — to the facility. And I have heard comments like the following: "Let's see, we have to fit an advanced library capability in here; and we have to have such things as learning laboratories; and we have to have instructional research centers. Frankly, I do not know what all these things are! My field has been human learning, but I really do not know what these things are because we are just inventing them. We are just discovering how to facilitate human learning."

These remarks indicate some very exciting potential for system work. There are a lot of things we can do, and there is a lot of talk about these things. Currently, for example, we are developing concepts of recorded instructional materials (RIM) that are truly comprehensive and can effectively support education. There is a lot of work going on around the country in the field of computer-assisted instruction, with all its exciting implications. There are great possibilities with respect to information storage and retrieval, affording immediate access to all kinds of information for students when they need it.

How do all of these things tie together? How do you, as educators, architects, persons concerned with improving the quality, capability, and efficiency of a community college — how do you make sense out of it?

I shall try to help by listing some of the things that I think are the hottest prospects, those that we can all work with, test, and try, that have the greatest chance of success. Before doing that, however, I must say that I do not think any one segment of education — of the "education industry" — can do this job alone. I believe its is dangerous to leave these matters to chance or to education research laboratories — or, for that matter, to industry, university research, or the campuses. I believe that the current ground swell of technology applied to education will become largely misdirected, even lost, if we cannot work out effective collaboration between all the many agents of change.

There are several things to look at in terms of trying to make sense out of this great range of opportunity and possibility for using new tools in education. The first of these is a list of demands on us. I shall try to relate them specifically to community colleges.

The first and perhaps the greatest demand (and, I think, the basic reason for the immense growth of community colleges across the nation) is to provide quality education at a reasonable cost. When one sees the rising expectation of young people to have some kind of post-secondary education, one finds that if we attempt to give most or all of that in a university setting, the costs run right through the ceiling. TECHNOMICS has just completed a study on education and communications and the intercampus sharing of resources for the State University of New York, the largest educational system in the country. We found that rising costs can be bridled by sharing resources, by careful balancing of facilities and

staff, and by the intelligent use of technology. Thus, if one looks at the cost of higher education and sees where these costs are going, clearly the community college offers us one of the best opportunities to provide quality education at a reasonable price. This is one of the greatest pressures on us — and one of the greatest challenges.

A second demand on the community college is embodied in an overworked word: "diversity." What is a junior college, or a community college, or a technical college, names that are often being applied to the same critter? What is it supposed to do? What educational outcomes, what practical outcomes, what economic benefits do you wish to achieve with it? If we have hard answers to these questions with regard to a specific educational institution and the genre of community colleges as a whole, I think we can come up with better assessments of what ought to go into them. And here, of course, the educational community in general is hung on the horns of a serious dilemma. There are those in education who say: "We have no problem. The 'Feds' are going to pick up the bill ultimately, for the most part, and all we are going to do, really, is . . . You know, it is going to be like the auto industry, with half a dozen giant companies dominating the educational-materials market. The curriculum development is going to be done for us. And in the end, we are going to make a choice; perhaps we will have a choice between a Ford and a Plymouth, but we do not have much more choice, really, than that." Then there are those who say exactly the opposite: "Federal incremental funding is going to give us the opportunity to do the real job of educating." I think the answer falls somewhere between the two, but I think the responsibility lies directly with you. You are the ones who are going to have to take some very active initiatives if, in fact, education is not going to go the General Motors route.

The third (societal force exerting pressure on community colleges) is the tremendous demand that will occur in the next two decades for post-secondary education of a kind that really greases the skids for the disadvantaged. I think that community colleges are going to be an important vehicle to provide educational opportunities for those who have slipped and lost the brass ring in the early cycle of education. At TECHNOMICS, we did a nationwide study for the U. S. Office of Education of Title I (Public Law 89-10 — this is the aid to disadvantaged children in both elementary and secondary schools). Our study and a number of others came up with exactly the same answer: namely, that if one does not augment the educational help for these children at the ages of four, five, and six, if they do not get aboard the educational trolley at that point, you have missed them. Here is why: By the time a youngster is in third grade and has fallen a year behind, it costs, in direct cost/effective terms, four or five times as much to help him catch up; in other terms, he is getting about 20 cents worth of payoff for the educational dollars invested in him versus the payoff that occurs in spending additional funds when he is four, five, and six. By the time that child is two or three years behind, the cost/effective payoff is down around 10 cents

on the dollar. If he lags beyond that point, he is finished. This country, rich as it is, is not rich enough to retrieve children at that point.

There is one other point in the educational cycle at which youngsters can be picked up. It starts at ages 13 and 14, when these youngsters can be partially recaptured by the educational experience but in a wholly different context. This is, for the most part, do-it-yourself, hands-on, skill-training experience. Post-secondary institutions are going to be put under immense pressure to take those who have slid through to ages 18, 19, and 20, to try to turn them on again in the context of vocational and semi-vocational training. There are several possibilities here: One is intensive tutoring by classroom teachers; another is "each-one/teach-one," in which those who have started through the process (perhaps starting with the equivalent of a sixth- or seventh-grade education) each take one or several students one year behind them and work with them on a tutorial basis, comprising a self-help chain up through the educational experience; a third is the use of teaching machines and computers to stimulate learning in a group that does not relate well to traditional authority figures.

These, then, are three areas in which community colleges may be seen as being under intense pressures and demands. These are the needs. What are some of the possibilities? What are some of the opportunities? Let me list just a couple of areas in which technology offers potential help – though let me say in advance that it by no means offers automatic help. The help that it offers is in no way assured to be relevant or even useful unless it is carefully thought out, thoroughly tested and evaluated in the operational setting (namely, in the schools), and is the product of extremely close collaboration between industry, research centers, and educators working in the field.

First, computers. Computers are getting cheaper: This we all know. They are getting cheaper very rapidly. The computer power that cost $1 million seven years ago now costs $75,000, and the same computer power will probably cost $25,000 in about 28 months. The price for any given measure of computing power is going down so rapidly that we can now begin to think seriously of computers as a support utility, available for whatever purposes we wish to use them.

What does this mean? It means that we can begin to use computers in many new ways. But let me say that I agree with Ray Birdwhistell that we ought not to use them in unthinking ways. There are those who have a stilted image of computer-assisted instruction: an individual going into a lonely carrel, sitting there and working with a computer for hour after hour. I have no such image. Not at all. And computer-assisted instruction has been an area of some activity and interest on my part for years. My image of the computer as a direct teaching tool is that you can tune in on it for everything from 15 seconds to 20 minutes whenever you wish. You can have two people, three people, five people, seven people compete with one another in a learning game. You can create learning experiences in multimedia ways that bring to bear on a given human

learning situation the vast range of human knowledge; and you can do it in more creative ways than Plato would ever have dreamed of. You can create a dialogue between an individual and the great figures in history in which he believes that he is all but physically there. And you can structure CAI in ways such that any conceivable information is brought up in microseconds.

I had the pleasure of participating in the design of the NASA training program for manned space flight. In that context, of course, we were involved in creating rather sophisticated simulator-trainers. Out of that experience has come the design and the potentiality of something very relevant to community colleges, and particularly relevant to the vocational and skill training that was talked about this morning.

In a short period of time, we will be capable of putting computer-assisted instruction and the most sophisticated of skill-training simulation techniques together in a package to train technicians and junior engineering personnel of every kind, on the job, so that they are in fact building, designing, repairing, and modifying in a simulated on-the-job setting. Do we want to do this? Is this the way to go? What payoff does it have for us in terms of efficiency and what implications does it have for us in terms of pedagogy? What implications does it have for those involved? I have seen human beings learn 12 to 16 times more rapidly in this type of environment than in the most effective classroom environment. But, is this what we want? And, are we willing to pay for this kind of capability in our community colleges?

It poses some very basic questions. For a long time, at least a part of the philosophy of education has been custodial. We have been supportive of many educational institutions that are not necessarily immediately, directly, or completely focused on the educational process. Thus, in some ways, highly efficient educational technology could be startling and frightening.

In a conversation with Dr. Richard L. Featherstone just a few moments ago, we talked about one of the implications of technology. Dr. Featherstone described getting up one morning several weeks ago, turning on his TV set, and seeing the instant communication (by television camera) of a fire in California, noting that the fire was on a street where one of his relatives lived. He telephoned this relative and learned the immediate state of affairs with regard to the home of that relative. Dr. Featherstone and I talked for just a few moments about the fact that instant communicaion is increasingly influencing our society in terms of elections, in terms of the impact of social protest, and in terms of the response of the media and of the public. It is influencing our attitude toward the war in Vietnam. We get immediate and detailed coverage of battles as they are being fought. These are all powerful influences. In some ways, technology can be frightening; it can seem to shape events for us rather than be under our control. And indeed, this will be true if we do not take appropriate and desirable measures to bend it to our will and our uses.

Computers, then, offer great potential. But how do we want to use them? For what purposes? To what ends? And how do we want to limit these uses? We talked at this meeting about libraries, for example. I would like to describe for you, for just a moment, something that I think will be a fact of life a decade from now. I think that, in a decade, libraries will not be comprised primarily of books. I think we will still have books, but I do not think we will use books primarily. Libraries will be in ultramicrofiche. They will consist mainly of 4"-x-6" film strips on which somewhere between 60 and 10,000 pages will be printed. I think that up to 10,000 pages will be available for no more than a dollar, and that certainly somewhere between 10 and 25 books will be available on a single fiche. I think that a college student will be able to carry a 3,000- or 4,000-book library in something no bigger than a purse or vest pocket. I am confident that ultramicrofiche portable readers will be not much larger than an average textbook, that every student who goes to a post-secondary school will have a personal library of perhaps 10,000 volumes, and that most of these volumes will be given to him by the educational institution.

Assuming that this occurs, what impact will it have on library design? Such a library will require a storage capability for a million volumes certainly no larger than this speaker's platform, the speaker's table. Access to any single fiche, containing six, eight, or ten related volumes, will take no more than 15 seconds on the part of the librarian. It may be cheaper to give the person the book than to have him return it, because the data on present library retrieval indicates that it now costs anywhere from $2 on up just to get a book out of the stacks, give it to a student, and put it back on the stacks. This, I think, is a practical reality. What do we want to do with it?

Another area of practical reality which I think we all sense is emerging, and which I would like to make a little more explicit, is what might be called an "information and instructional automat." I think that all of you in the community colleges will have this in one form or another within the next decade. Many of you, in fact, are developing it in early form right now. This automat enables a student to get the information he wants when he wants it, to have this information available to him as an individual, or as a member of a small group, in dialogue with an instructor, or for that matter in almost any social and learning context which he desires. We now have some of the primitive tools. We have multimedia audio-visuals; we have dial access; we have a number of other ways of retrieving information quickly, but we are just at the beginning.

The analytical tools that will provide us with the capability of high-speed collation of information — in ways which we want it organized, collated, structured, and analyzed for us — are in primitive forms, but they are improving very rapidly. In the next five years, we will be able to ask the appropriate questions. We will learn how to ask questions that will enable computers and other retrieval devices to analyze data, to reduce data down to essentials, and to provide data on the level that we desire.

In some ways, this might seem to leave the human being in a less than creative posture. I do not think it does; most of us do not have time to go into great detail on very many things. Most of us want information of the kind that is usable here and now, within the context of the need or the demand for it. But this kind of information retrieval capability, if we think it through and structure it intelligently, will provide the greatest increment in our potentiality for human learning yet possible. And I think it can facilitate learning by an order of magnitude. I think that we will get used to learning 5, 10, and even 15 times more rapidly than we do now.

However, these things are not going to happen, at least not in the ways that we want them to happen, unless we have some way of working together. This dilemma exists right now. Industry has entered the field of education and it wants to do good things and make money doing it. We want to do truly useful things. However, most of education-oriented industry does not know which way to go. The learning-research laboratories are trying to come up with improved answers to many of these questions and are, in fact, attempting to use some of the technological tools to find out how human beings really learn. But they are not in the classroom doing the job. It is the people who are presently concerned with teaching in the community college who have the problem, have the job, have the needs, and have the context in which they can test and try. We are not going to get adequate answers in the laboratory. I think that we need more mechanisms, more institutional arrangements for joining the research people, the industrial proponents of technology, and the campuses in trying to make these new ideas work. We must evolve or invent this set of linkages that will enable us to make a difference in community college education in the decade or two ahead of us.

APPENDIX:
List of Conference Participants

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November 12-16, 1967

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