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A Campus Planning Concept and Its Applicability to Utah State University

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A CAMPUS PLANNING CONCEPT
AND ITS' APPLICABILITY TO UTAH STATE UNIVERSITY

By
J. McRae JOHNSON

SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE DEGREE

MASTER OF SCIENCE
IN
LANDSCAPE ARCHITECTURE
AND
ENVIRONMENTAL PLANNING

APPROVED

Major Professor

Head of Department

Dean of Graduate Studies

UTAH STATE UNIVERSITY
LOGAN, UTAH
1965
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IN CONCLUSION
1 INTRODUCTION
Introduction

The primary assumption used in justifying this thesis is that growth and expansion will continue to occur for Utah State University. This is almost a certainty in view of the national trend and a general increase in the enrollment at Utah State University of from 6% to 7% over the past 10 years.

A recent poll of 1300 representative institutions indicated that a third of them had no plans for expansion beyond five years, and two thirds of them had no plans beyond a ten-year period, and this condition existed despite the well-realized knowledge of what was to come in the way of enrollments.1


LONG RANGE PLANNING WOULD SEEM TO BE THE ONLY HOPE IF CHAOS IS TO BE AVOIDED ON THE CAMPUS. BUT THE EVIDENCE IS THAT THE MAJORITY ARE NOT PLANNING EITHER COMPREHENSIVELY ENOUGH OR FAR ENOUGH INTO THE FUTURE TO MEET THE NEEDS OF THEIR INSTITUTIONS. 3

The purpose of this study, therefore, is focused upon the possible ways to accommodate a calculated but indeterminate degree of growth and change with an increase in order, efficiency, and beauty.

While it is difficult to maintain a perspective on current problems and needs, it would seem that order, coherence, and beauty of an overall campus form—which the classic campus undoubtedly has—is missing in many present day campus designs. There are notable exceptions but the older campuses do not seem to be growing toward any kind of all-inclusive unity.

With this in mind, the objectives of this study are:


4Dober, p.40.
1. To discover and identify those campus characteristics which are existing and worthy of preservation.

2. To project these characteristics as a nucleus for future campus development.

3. To chart future developments and expansions by combining the existing campus and the future campus into a more efficient and beautiful whole.

A final campus plan with supporting factual material is beyond the time and area scope of this study, but by using reasonable assumptions from basic factual material, a schematic master plan can be produced, which could be useful in pinpointing problem areas in site analysis, land usage, and design.

The value of this or any campus master

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5Morrissette, p. 126.
THERE ARE THREE CONVENTIONAL WAYS OF DEALING WITH THE PROBLEM OF A RAPIDLY EXPANDING COLLEGE ENROLLMENT; ONE, SHRINK OR LIMIT THE STUDENTBODY; TWO, INCREASE THE FACILITIES TO ACCOMO­DATE GROWTH; OR THREE, INCREASE THE USE EFFICIENCY OF EXISTING SPACE.

planning study is its effectiveness in a continuing process rather than its program for immediate action. The plan details will undoubtedly become obsolete with the interjection of unforeseen events and for this reason a clear communication of physical planning ideas to the decision makers becomes of utmost importance. This study is a process document; an attempt to clarify the thoughts that have led to the final conclusions. If those directly involved understand why certain recommendations are made, a more intelligent reappraisal of the initial plan can precede changes in the planning policies. This in essence makes the master plan a framework guiding future planning rather than a final document to be followed without flexibility.
2 PAST AND PRESENT
Past

In 1888, Anthony H. Lund introduced into the territorial legislature of Utah a bill to establish an agricultural college and experiment station. With the backing of the Morrill Act and the newly passed Hatch Law providing $15,000 for an experiment station, Mr. Lund found a favorable climate for his bill. A companion bill to establish a reform school was introduced and became part of the trading and bargaining that would eventually give the college to Cache County. "Provo had received the Insane Asylum; Salt Lake City had the university and the State Capitol; and the majority of the legislature felt that the new institutions should be given to Weber

The campus as it is seen at any moment is a product of the past, struggling to meet the present demands and finding it difficult to focus on the future problems.  

The reform school carried an appropriation of $75,000; and when Weber representatives felt certain they could swing the necessary support, they joined Cache County's fight to secure the college.

On March 8, 1888, the college bill passed the House and the Senate, and was signed by the Governor.

On March 26, 1889, the board of Trustees met in Logan to select a site for the college buildings. Two sites were considered on the benches east and northeast of the Temple. After a short consideration, the northeast site composing some


THE LAWNs HAVE BEEN EXTENDED TO DIFFERENT PARTS OF THE GROUNDS, SO THAT HERE ARE NOW DELIGHTFUL COLLEGE DRIVES DURING THE SUMMER MONTHS. WALKS HAVE BEEN MADE AND FLOWER BEDS PLANTED AND ALTOGETHER THE ENTIRE PLACE HAS BEEN SO BEAUTIFIED AS TO RECEIVE THE MARKED ATTENTION OF ALL WHO HAVE VISITED THE COLLEGE.  

93 acres was chosen and plans for a $20,000 building was advertised to be delivered before the 15th of April. Architect C. L. Thompson was retained and the first college building was located, "just east of the brow of the hill, the north wall being fifty feet south of a line extending east from the center of seventh street, the building to face west".  

By 1891 with the additions of several minor structures including the experiment station, the president's home, various farm buildings, and a boarding house with two cottages, the college had seven buildings.

In 1893 the North wing of the Main Building was added to complete the building.

4 Logan Journal, December 23, 1899.

5 Ricks, p. 23.


except for the west center portion with the tower. The Mechanic Arts Building was built in 1897 and the final portion of the Main was completed four years later in 1901. On September 11, 1905, the Mechanic Arts Building was destroyed by fire and rebuilt the same year at a cost of $26,288. In 1912 the Legislature appropriated money for the construction of the Smart Gymnasium and in 1916 gave the college $55,000 for the building of Widstoe Hall. 

With the First World War came the military use of the campus as a site for reserve officers training. As a result, barracks were needed to house the trainees, and the Government proposed to erect temporary wooden structures. President
Peterson, the College Executive, saw an opportunity to increase the building space on campus and convinced the Governor that brick barracks could be constructed for wartime use and later remodeled for college buildings. The Governor was convinced and the brick barracks number one was started along with a new Animal Husbandry Building for which the Legislature had appropriated $55,000. Governor Bamberger had authorized an emergency war expenditure of $40,000 for barracks number two which was later to become the Plant Industry Building; but before construction could begin, the war ended and the need for a barracks building was eliminated. The building was finished with classrooms and laboratories; and by 1920, barracks number one had been
remodeled as a new Engineering Building. With these three buildings, the capacity of the college was almost doubled.

The years 1926 and 1927 saw the beginning and completion of a stadium, the first such athletic structure in Utah and 1929 ended a long struggle for an adequate library when the Legislature appropriated $175,000 for a new building. After the completion of the Library in 1930, the college proposed to completely enclose the quad by building a Commons and Home Economics Building, funds for which were appropriated by the 1935 Legislature. The same year also saw the completion of an amphitheater on the southwest slope of the campus large enough to seat 2,000 spectators. The first real step in what was to become an
extensive program in housing was the construction of Lund Hall, completed for occupancy in 1938. After a long struggle to obtain funds for a new and adequate Fieldhouse, a privately financed group of college backers received $81,808 from the Federal Government through the P.W.A. to add to the $100,00 they had obtained by selling bonds. Construction began in November 1938 and it was built from identical plans as were being used by the University of Utah who had received the same type of Federal help. The structure was completed in the latter part of 1939.

A provision in the original land grant act stipulated that military science must be taught at all colleges receiving land
under the land grant aid. In the summer of 1939 the Board of Trustees recognized a need for facilities to house the military science department and an addition to the Fieldhouse was decided upon. Construction began in November 1939 and was completed in the fall of 1940. This building became the last structure of any size to be erected on the campus till after the Second World War and ended a period of campus growth that was to continue with great gusto in the post-war years.
The greatest contribution of the Second World War to the physical campus was a large accumulation of temporary wooden structures. These war surplus barracks and storage buildings filled a very real need in many of the colleges across the country including the Utah State Agricultural College.

The beginning of these acquisitions from the Government came in 1943 when the then existing cafeteriea facilities in the Commons Building proved inadequate for the influx of military people stationed on the campus. To help alleviate the situation, the Governor appropriated $50,000 to move five C.C.C. Buildings from Cub River to be

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CRISES IN DESIGN ARE NOT NEW TO THE AMERICAN CAMPUS. PERIODIC SURGES IN COLLEGE AND UNIVERSITY CONSTRUCTION HAVE FOLLOWED ALL WAVES OF MIGRATION AND INCREASE IN POPULATION. THIS GENERATION HOLDS TRUE FOR THE COLONIAL ERA AS WELL AS FOR THE CYCLE OF POPULATION MATURATION THAT BEGAN JUST AFTER WORLD WAR II. ⁸

converted into a temporary cafeteria. They were sited northeast of the Library and joined into a building complex forming an "H". After 1945 the buildings were used as a temporary Union Building and became one of many surplus Government structures that were to help alleviate the need for space on the campus in the next few years.

The first decade after the war saw the beginning of a post-war building boom that has continued through the second ten-year period. The building program on the USAC campus began with the 1948 Legislature approving construction of a $200,000 technology building and passing a bill allowing the college to charge a $20.00 student

⁸ Dober, p. 13.
building fee as opposed to the then current $6.00 fee. The Board of Trustees were approached and pledged to use these funds for the construction of a new Student Union Building. The plans for the building were completed in December 1948, but financial difficulties delayed the beginning of construction until September 1949. The buildings on the proposed site, just south of the Fieldhouse, included the nursery and the cooperative dormitory. These were moved to the north of the Technology Building and are still used as the "co-op" houses. In 1952 the building was finally finished at a cost of $1,250,000.9

The same year the Board of Trustees

engaged K. C. Schuab and Sons to design a proposed $800,000 Agricultural Science Building and in 1953 the Legislature appropriated the funds. Construction began on September 10, 1953 and was completed for partial use by the fall of 1954.

The 1955 Legislature gave in to a five year campaign by the education department for a new training school and appropriated $500,000 for the construction of such a building. The site was determined by a land exchange between the college and Logan City. The City received 32½ acres and the school, 18½ acres south of the cemetery between 9th and 10th north. The Board of Trustees outlined a $7,600,000 building program that included a Forestry and
Biological Science Building and a new Engineering and Physical Science Building. In 1957 the Edith Bowen Training School was completed and the Legislature appropriated $1,380,000 for the beginning of the new Forestry and Biological Building, and Engineering and Physical Science Building. The site location of the Forestry and Biological Building was just north of the Agricultural Science Building and the first phase was completed for the beginning of fall quarter 1959. The first phase of the Engineering Building which included classrooms and laboratories was completed in mid-February 1960. The 1959 Legislature appropriated $1,519,000 for the final phase of the Engineering Building and $700,000 for the second phase
of the Forestry and Biological Science Building. Both phases were completed in the fall of 1961. The same year the Legislature appropriated enough funds to complete the final phase of the Forestry and Biological Science Building. Construction was delayed due to financial difficulties in the budget but the building was finally completed in 1964.

The 1961 Legislature also approved as part of the $7,600,00 building program a new Library for which they appropriated one million to start construction and the plans for an addition to the Union Building which would cost 1\frac{1}{2} million. The first phase of the Library was finished in early 1964 and the Union addition was ready for use during the fall quarter of the same year.
FOR THE MOST PART, COLLEGES ARE HOUSING MORE OF THEIR STUDENTS BECAUSE THEY MUST. AS ENROLLMENTS SWELL, PRIVATE HOUSING WITHIN REASONABLE COMMUTING DISTANCE OF THE CAMPUS SIMPLY CANNOT ABSORB THE OVERFLOW FROM BULGING DORMITORIES.  

The housing structures on campus began a real period of growth and change following the Second World War. Beginning with the acquisition of surplus military buildings from Washington and Oregon to house veterans the number of students housed on campus has continued to increase.

In 1955 three new women's dormitories were built at a cost of $200,000 each and in 1957 one women's and three men's dormitories were constructed, greatly increasing the facilities to house single students on campus. A married student project was planned in 1961 to help alleviate the pressure on the over-used pre-fab housing and the first and second phases were completed by late 1964.

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The University is now looking forward
to an ever increasing enrollment whose
needs they hope to satisfy by extending
the facilities of the present campus. A
Fine Arts Building is about to be started
and the University housing is being extended
by the addition of two new highrise dorm-
itories. As the face of the campus contin-
ues to change the need for a logical and
planned program of land use becomes more
and more imperative. The indecisive nature
of an institution that lets planning become
an after-thought must someway be prevailed
upon to reverse its action. This is the
major problem that now faces many institu-
tions across the nation as they contemplate
an indeterminate increase in the use of the
university facilities. Utah State University is not unique in being confronted with this same problem.

NOTE: Much of the research for this section was from the "History of Utah State University Task Papers" in the possession of Professor Leonard J. Arrington, Logan, Utah.
The present campus presents an inconsistent and confusing visual picture. The pleasant tree-covered walks, green lawns, and mature shrubs that enhance the southwest corner of the campus gradually disappear and in some cases end abruptly in certain areas of the new campus. In many cases this same abrupt line also designates the beginning of a parking lot that is located in the logical path of pedestrian circulation and becomes an unfortunate solution for the lack of an adequate circulation pattern.
The heart of the physical campus has been filled with temporary buildings, garages of unsightly construction, storage yards for the maintenance department, and numerous greenhouses.

These areas, with the poor placing and designing of parking lots, have destroyed the character of the old campus by their abrupt ugliness.

If the areas of land reserve are left unplanned, they can nullify the effectiveness of a master plan and discourage the enthusiasm needed to maintain a positive program for beautifying the campus.
The advantage of a site on the brow of a hill is its commanding view of the land below in as many directions as possible. To eliminate all or portions of this view, because of bad planning, is economically and aesthetically a poor investment.

One of the important aspects in designing additional facilities on campuses already blackened with surface parking lots might be termed screening or hiding parked cars. The sides and tops of automobiles do not compare aesthetically with trees, grass, and bushes. It is natural, therefore, that landscape architects seek means of parking vehicles without dispoiling the otherwise academic atmosphere.¹

¹ "Parking Programs for Universities" University Facilities Research Center New York, New York

The integration of the physical objects on the campus landscape is one important factor in determining a pleasant campus character.
The desired campus character exists only in certain areas and needs amplifying. With careful planning these successfully developed areas can become the nucleus of a new effort to create a pleasant academic atmosphere.

Some pedestrian walks are well planned as pleasant circulation routes and the planting composition around certain buildings is a delight to the eye.

Generally, however, the campus lacks unification and a consistency of character; specifically it lacks the direction and healthy growth experienced by a planned campus that is not constantly subject to the decisions and personal whims of untrained officials.
3 THE STATISTICS
GROWTH COMPARISONS
BETWEEN PRIVATE AND PUBLICLY
SPONSORED INSTITUTIONS

The Statistics

"Never before has there existed such an urgent need for total, systematic planning. Only by careful evaluation of the separate functions and operations of an institution can the parts be assembled into a balanced whole."¹

This section deals with some of the primary considerations in each campus operation with an eye to its function in the total campus picture.

To build or not to build and when, is a big decision and imposes questions such as: Is this expenditure necessary? And if it is, how can we be sure to

¹"To Build or Not to Build," John X. Jamrich; New York; Education Facilities Lab., Inc., 1962, p. 4.
THE OUTLOOK FOR CAMPUS PLANNING CAN BE DESCRIBED IN THREE WAYS: FIRST, BY EXAMINING ENROLLMENT PROJECTIONS; THEN BY EVALUATING WHAT THESE MEAN AS TO PHYSICAL PLANT; AND, FINALLY, BY MAKING A COMMON SENSE JUDGMENT AS TO WHAT CONDITIONS OR EVENTS WILL AFFECT THESE PROGNOSTICATIONS.  

get the most for our money? The answers are not easy to find. Only an informed look at the existing facilities and how they are being used can help to determine a need. Maybe it is only a need for better utilization of existing structures or perhaps it points to a need for new facilities not seriously considered before. This type of informed looking is called by most educational planners a "space utilization study" and the data accumulated by a familiar method found in the Russell-Doi "Manual for Studies of Space Utilization in Colleges and Universities" includes facts about the extent of plant and instructural space, 

TO AN EVEN GREATER EXTENT, THE PRESSURES OF SCHOOL POPULATION GROWTH ARE NOT ALLOWING TIME FOR CAREFUL EDUCATIONAL FACILITIES PLANNING—EVEN THOUGH SUCH PLANNING IS THE ESSENTIAL ELEMENT IN EDUCATIONAL FACILITIES THAT ARE BOTH AN ECONOMIC AND A FUNCTIONAL SUCCESS. IN EDUCATION TODAY, THE APPROPRIATION OF FUNDS FOLLOWS SO CLOSELY UPON UNDESIRABLE NEED THAT THE EDUCATOR—PLANNER TOO OFTEN FINDS HIMSELF WITH A FULL PURSE AND A PRESSING OBJECTIVE, BUT NO ROUTE TO FOLLOW FROM THE PROMISE OF ONE TO THE FULFILLMENT OF THE OTHER.4

4 James D. MacConnell, Director School Planning Laboratory School of Education, Stanford University.

curricula, salaries, teacher student ratio, class size, and financing. The information gathered from these studies can be used to determine many types of planning decisions, and in planning a campus the more pertinent information available the more effective the decisions can be.

For many pilot or schematic master plans, another method can be used for determining a rough estimation of the campus growth. This method is dependent upon an enrollment projection for the university and is usually based on the past enrollment figures and a general national trend.

After this information is acquired, a breakdown of present and past enrollments into the various colleges or departments of the university will give an indication of a
## ENROLLMENT TRENDS: U.S. VS UTAH STATE UNIVERSITY

<table>
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<th>Year</th>
<th>United States Universities</th>
<th>Utah State University</th>
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<tr>
<td></td>
<td>Students in Degree Programs</td>
<td>Students Registering for First Time</td>
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<tr>
<td>1962</td>
<td>4,206,000</td>
<td>1,038,000</td>
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<tr>
<td>1961</td>
<td>3,891,000</td>
<td>1,026,000</td>
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<tr>
<td>1960</td>
<td>3,610,000</td>
<td>930,000</td>
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<td>1959</td>
<td>3,402,000</td>
<td>827,000</td>
</tr>
<tr>
<td>1951</td>
<td>2,000,000</td>
<td>-</td>
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**SOURCE:** Utah State University statistics, Logan, Utah, 1965
growth pattern. These figures can be applied to a chart similar to the one on the next page, prepared to determine square footage planning standards. No method is free from some kind of variabilities but the important information to obtain from the program is:

1. The gross square footage necessary to support each department or subject area.

2. The time sequence in which their needs will come due.

3. The probable form which these programs will take--buildings, recreation areas, parts of buildings or outdoor spaces.

This basic pilot program can be expanded as the planning needs become more critical, and is then translated with other information into a planning design analysis for the master plan.
SQUARE FOOTAGE PLANNING STANDARDS PER FULL-TIME STUDENT
PER FACULTY MEMBER AND DEPARTMENT BY SUBJECT FIELD OF INSTRUCTION

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<th>SUBJECT</th>
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<th>LOW DIV CR</th>
<th>TL</th>
<th>UPPER DIV CR</th>
<th>TL</th>
<th>GRAD DIV CR</th>
<th>TL</th>
<th>RESEARCH FAC</th>
<th>OFFICE ACAD</th>
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<td>7.5</td>
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<td>-</td>
<td>200</td>
<td>300</td>
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<td>-</td>
<td>9.5</td>
<td>-</td>
<td>9.5</td>
<td>-</td>
<td>30</td>
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<td>140</td>
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<td>30</td>
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<td>30</td>
<td>80</td>
<td>180</td>
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<td>130</td>
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<td>8.4</td>
<td>15</td>
<td>40</td>
<td>40</td>
<td>140</td>
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OT - Other space
CR - Classrooms
TL - Teaching Laboratories
Faculty - Includes teaching assistants
Chart from Dober, "Campus Planning," p. 75.

38
ULTIMATELY EACH COLLEGE OR UNIVERSITY MUST DEVELOP ITS OWN EDUCATIONAL PROGRAMS; AND, FROM THEM, DETERMINE WHAT FORM ITS BUILDINGS WILL TAKE AND HOW THEY WILL BE EQUIPPED. THE MOST SUCCESSFUL INSTRUCTIONAL FACILITIES ARE MORE THAN BRICK AND MORTAR. WHEN THEY ARE APPROPRIATE TO THE INDIVIDUAL COLLEGE, THEY CAN BECOME TEACHING TOOLS IN THEMSELVES.  

In the study of instructional facilities, three items stand out as indicative of the trends that will most affect the design of academic buildings. First, a greater reliance on the individual teaching himself, which would result in more self-study spaces being provided in libraries, study buildings, and dormitories; second, the introduction of mechanical aids as a time and space saving device in teaching; and third, the design of multiple function buildings to facilitate a change in curriculum emphasis and to help accommodate growth in many directions.  

The planning of the academic facilities must be preceded by an academic program of

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5 Bricks and Mortar Boards, p. 48  
6 Dober, p. 67
A SUCCESSFUL CAMPUSS PLAN, LIKE A GOOD BUILDING PLAN, MUST BE TAILORED TO FIT THE EDUCATIONAL PROGRAM TO BE SERVED BY THE PHYSICAL FACILITIES. WITH THIS PRINCIPLE IN MIND, THE CAMPUS PLANNERS CONDUCTED ALMOST ONE HUNDRED INTERVIEWS WITH OVER THREE HUNDRED PEOPLE (ADMINISTRATORS, FACULTY AND STUDENTS) TO DETERMINE THEIR CONCEPTS OF THE FUTURE EDUCATIONAL PROGRAM AND ORGANIZATION. THE PLANNERS FOUND WIDESPREAD OPINION THAT CHANGES OUGHT TO BE MADE, BUT VERY LITTLE AGREEMENT AS TO THE NATURE OF THESE CHANGES.  

purposes. This process of directing the campus growth uses a professional planning approach as opposed to "an educated guess by the President and Board of Trustees as to what the school could afford, as a favorite informal approach." Among the considerations of the people formulating an academic program must certainly be a deliberate planning for an increase in the speed of education, as well as the direction. The body of knowledge is expanding even faster than the body of students, and to keep a university effective in a world of accelerating change, the learning process itself must undergo an acceleration. To accommodate this change, designers must house effectively the tools and equipment of mass education just as the campus must accommodate their

7 Memo - on the O.S.U. campus planning studies, Ohio State University 1960, p. 4.
comings and goings.

To counteract this faster, programmed, mechanistic process, the campuses are yielding to a concept of free flowing space and an architecture that does not seek to overwhelm the individual but to serve him.
RESEARCH FACILITIES

The increase in research activity since World War II has had several effects on campus planning. The space requirements for research are the highest per user of any other university supported functions.\(^9\) The National Science Foundation estimates an average of 300 sq. ft. of research space per full-time person as opposed to 150 sq. ft. per undergraduate.

Research space also averages out to be more expensive than other academic space costing between $40 and $50 a square foot, almost twice as much as average academic space. Other infractions on the academic atmosphere may range from hazardous activi-

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\(^8\) Educational Facilities Laboratories, "The Cost of a School House", p. 113.

\(^9\) Dober, p. 97.
ties to obnoxious smells and noise. The need to keep the research activities in close proximity to the campus is understandable, but it would be hard to justify placing a large, land consuming facility serving only a few people in the center of the campus.

This leaves the fringe areas of the campus as the most plausible sites for research facilities. Even in areas where periphery land costs are a barrier to normal academic expansion, the Federal and privately supported research activities may find these areas within its budget.
EXTRA-CURRICULAR CENTERS

The variety comes about by using changes in levels, by mixing large and small interior and exterior open spaces, by siting the individual buildings on ground planes which are treated dissimilarly and by avoiding long axial vistas... Existing campus landmarks should be used as design foils, in that glimpses and views of the existing architecture could visibly connect the new center and older sections of the campus.\textsuperscript{10}

There is usually a number of non-academic buildings on campus that have special requirements in the campus design, including the union buildings, chapels and churches, and in many universities, faculty clubs. These buildings are usually built only once or twice a century; but because of their specialized nature, should be planned for in the preliminary site studies.

The main problems usually involved in siting a unions building are; providing enough area for expansion and adequate vehicular servicing and parking areas. Because the proper site of a union building is in the central part of the campus, expansion and parking areas are difficult to

\textsuperscript{10}Dober, p. 102
reserve. The union is usually a display building as well as the crossroads of the campus and should be as elaborate outside as inside. It is difficult to solve these problems successfully, but once a reasonable site has been selected then at least land use and circulation decisions can be made.

Religious interests play an important role in many colleges and universities because of the great number of private institutions with denominational ties. But due to the great increase in public institutions, the need for the campus planners to provide for on campus religious facilities is decreasing. At most campuses of public institutions, religious groups maintain their own facilities off campus.
Most extra curricular functions are peculiar to each campus and must be handled individually if they are to be a successful part of the campus.
AT AN AVERAGE COST OF ROUGHLY $4,000 PER STUDENT, THE TYPICAL STUDENT RESIDENCE JOINS TWO STUDENTS, TWO BEDS, TWO BUREAUS, TWO DESKS, TWO STRAIGHT CHAIRS, AND 200 SQUARE FEET OF FLOOR IN AN EFFORT TO PRODUCE ENLIGHTMMENT. 11


HOUSING

The role of housing as a function of educational institutions has been a debated issue for 300 years or more, and even those institutions committed in some way to housing debate the extent of such commitments.

Among the institutions committed to a program of housing, the major trends are greatly diversified and include:

1. Expansion of the housing role to include all segments of the campus population including undergraduates, graduates, married students and sometimes faculty.

2. Diversity in housing from villages for married students to a mixture of male female students on one site. Greater attention as the location of housing in
IN VOLUME HOUSING REPRESENTS THE LARGEST SINGLE CAPITAL INVESTMENT AMONG VARIOUS TYPES OF BUILDINGS ON CAMPUS.\(^2\)

relationship to playfields, recreation areas, campus libraries and other common facilities.

3. The operation of student housing as an income venture.

4. Cooperation with off-campus housing housing developers for quality university policed living quarters.

Many campuses are solving the housing problem by locating the campus within commuting distance of a greater number of students. Good reason seems to support this policy. The cost of education can be reduced if students can live at home; and coupled with a trend toward larger families and a social pressure on some form of higher education, this economic break is welcomed.

Some educators, however, regard housing

PLACES OF RESIDENCE OF 7001 U.S.U. STUDENTS BY CLASS RANK AND SEX

ACADEMIC YEAR 1964-65

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Figures are based on a random sample of 4,927 students.
Data supplied by Utah State University Housing Office
EXPERIENCE ON NUMEROUS CAMPUSES HAS SHOWN THAT THE PLACING OF MEN'S AND WOMEN'S DORMITORIES IN CLOSE PROXIMITY TO EACH OTHER SOMEHOW TENDS TO TAME THE SAVAGE MALE AND RENDER HIM LESS BRUTISH AND MORE GENTLEMANLY, MORE AMENABLE TO THE NICETIES OF LIFE.  

as an instrument of learning, with the objectives being leadership, cooperation, good citizenship, and social competence.

"To an extent not previously considered possible, housing promises to be an integral part of campus development in the decades ahead." Even high estimates of housing needs may fall short of fulfilling the future needs. Some of the reasons cited include an increase in graduate students of all ages, pressure by private schools on public education to provide a similar learning experience, declining ability of sororities and fraternities to house students and small colleges using housing as a means of economic survival.

13 Dober, p. 118.

14 Dober, p. 140.
The American universities generally are committed to some type of physical education program which includes all or some of five distinct areas of activity. They are: (1) physical education and hygiene, (2) intra-mural sports, (3) intercollegiate sports, (4) informal recreation activity, and (5) instructional courses in preparing physical education teachers.16

Within these areas there is a need for several types of facilities including swimming pools, gymnasiums, stadiums, and field spaces. Like many other campus functions, these activities are becoming specialized and need specialized buildings.

15Dober, p. 147

16Dober, p. 147
Because the total problem is so complex, large colleges and universities often set up a special office of institutional research and planning whose sole purpose is to carry on studies related to planning matters.  

A strong emphasis is felt on almost every campus toward intercollegiate athletic contests and for these spectator sports the demands are for the greenest field or the shiniest floor. Other facilities are provided for the regular physical education programs while the best facilities are used only a small number of times each year. This restricted use of prime university spaces may be challenged as the campus becomes crowded, but from all indications the athletic programs on campus are quite secure and a necessary part of the university.

Programming sports and recreational facilities is of all programming most individual; the climate, campus density, university policies on athletic and co-educational areas for participation.

17 "To Build or Not To Build," p. 7.
CRISES IN DESIGN ARE NOT NEW TO THE AMERICAN CAMPUS. PERIODIC SURGES IN COLLEGE AND UNIVERSITY CONSTRUCTION HAVE FOLLOWED ALL WAVES OF MIGRATION AND INCREASE IN POPULATION. THIS GENERALIZATION HOLDS TRUE FOR THE COLONIAL ERA AS WELL AS FOR THE CYCLE OF POPULATION MATURATION THAT BEGAN JUST AFTER WORLD WAR II.  

1. Carry over sports which include skills that can be acquired early and continued through old age such as golf, tennis, and bowling.

2. Diversity in intercollegiate sports extending the traditional sports to include tennis, skiing, rifle shooting, soccer and bowling.

3. Multiple functions where similar facilities are used for both men and women.

4. Special recreation buildings where the population can support individual buildings for the various types of functions.

18 Dober, p. 13
In a pilot or schematic master plan study, it is well to estimate from a general planning index the space needed for each activity, and plan to meet not only these area requirements but those indirectly involved. These may be parking for spectator sports, orientation to campus circulation, safety precautions in well used areas, and operational and maintenance costs.
A FULL REVIEW OF UTILITIES IS WARRANTED IN ANY LARGE-SCALE PLANNING ENTERPRISE. A CONCENTRATED PLANNING EFFORT IS ALSO A GOOD TIME TO BRING BASE INFORMATION ON UTILITIES UP TO DATE. 19

19 Dober, p. 167.

PLANT OPERATIONS

In the delegation of campus land, Plant Operations has the lowest priority in the usage of the central campus area. The functional operations of a campus community must be secondary to its commitments of instruction and housing, and the use of prime academic land for maintenance activities is poor planning. The very nature of the servicing operation lends itself to a periphery location. Storage areas for supplies and maintenance work must be near a main circulation artery for convenience. The storage of university vehicles when not in use could never justify priority over the need for highly used academic space. Most work crews have a basis of vehicular mobility which can be supervised and
controlled with advantage by a intra-campus communication system. If the Plant Operation and Maintenance is located on an easy access road to the campus, the required spaces such as utility plants, repair yards, and shops, garages, storage rooms, etc., are best placed on the edge of the campus.
CIRCULATION AND PARKING

Three types of flow comprise the campus circulation system: automobiles, bicycle, and pedestrian.21

Generally, the internal campus circulation is pedestrian being not only routes of convenience and safety under good planning, but also walkways for aesthetic pleasure showing off the advantages of the site. The secondary paths have much to do with setting the campus character and perpetuating the significance of campus landmarks, special buildings, and vistas.

Bicycling is becoming popular again mostly because the alternatives are few. The problems of cyclers, however, lie in


21 Dober, p. 162.
WELL DESIGNED CIRCULATION SYSTEMS ARE ESSENTIAL TO THE EFFICIENT USE OF THE PHYSICAL PLANT.\textsuperscript{22}

their insistence on parking at the front door, the hazard imposed upon pedestrians, and the storage problem. On the other hand, bicycles should be encouraged because they reduce the requirements for automobile parking and traffic. Scooters and motorcycles should be included in the same category as automobiles not bicycles. In planning, only the bicycle would need special lanes in minor roads or separate channels next to major paths.

One of the most troublesome and challenging problems of the campus planner is the commuting student and his automobile. Properly handled, the automobile is not an impediment to good design but the general campus character will determine the place it should play in the master planning scheme.

\textsuperscript{22}Dober, p. 162
The automobile has made a significant effect on the present "campus" and a more impressive effect may be felt as a trend for "drive in" or "rubber-tire" campuses increases. This consideration alone can be a great determinate in a campus character with needs changing to provide (1) a one-to-one student-car parking ratio as opposed to an average ratio of four-to-one; (2) a steep decline in the needs for on campus housing; and (3) a reduction in the campus facilities that are more extensively used by residential students.24

At most universities in small cities, a large proportion of the students live on campus or close enough to walk. It is

23Dober, p. 164

24Dober, p. 159.
POSITIVE ORGANIZATION OF CAMPUS TRAFFIC AND PARKING IS ESSENTIAL TO PROCUREMENT AND MAINTENANCE OF PERSONNEL AND THE MAINTENANCE OF OPERATIONAL EFFICIENCY. IT CAN NO LONGER BE HINTED TO EMPLOYEES THAT THE PERSONAL CAR IS A LUXURY.  

possible, therefore, to adopt and enforce stringent regulations regarding student parking and driving. Some universities have restrictions limiting automobile ownership and use by either class, distance from campus or marital status.

Parking space for students living on campus or within walking distance should be subordinate to the requirements of the faculty, staff, and visitors.  

Consultants conclude that finally it is a university obligation either to fully control the use of automobiles by students or provide adequate parking space for them. This does not imply that the parking space adjacent or even close to university

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26 University Facilities Research Center. "Parking Programs from University," p. 5.
THE CAUSE OF THE PARKING PROBLEM IS SIMPLE. "AMERICANS HAVE MADE UP THEIR MINDS TO LIVE IN METROPOLITAN AREAS AND RIDE IN AUTOMOBILES." 27

buildings or that it be provided free of charge, but somewhere on the campus-owned land there should be space to park the necessary student-owned automobiles.

Most universities exercise some control over the streets running through the campus and in most cases, the sides of the streets are lined with automobiles. Planners generally agree that from the viewpoint of safety and aesthetics, curb parking is undesirable. If large sums are being spent to beautify the campus, it can often be nullified by the unsightly appearance of curb-parked automobiles.

Few universities can provide an unlimited area for parking expansion. A generally accepted estimate of future enrollments indicated a sixty percent increase

JOHN O. SIMONDS CONTENTS ONLY MAJOR PEDESTRIAN PATHS ON THE FORMAL AXES OF THE CAMPUS NEED BE DESIGNATED. "MINOR PATHS AND MEANDERING PATHS COULD BE LAID DOWN LATER ALONG THE UNCONSCIOUS AND NATURAL LINES OF MOVEMENT WORN THIN IN THE TURF."  

by 1970 which by present standards would mean a similar increase in parking spaces.

Although it is difficult to estimate the value of campus property, there is a point where parking structures become more feasible than parking lots. By current costs a surface lot costs $1.00 to $1.50 per square foot and open deck garages vary from $4.50 to $6.00 per square foot. Therefore, when the cost of land exceeds $3.50 to $4.50 per square foot, it is more feasible to construct parking garages.  

The subject of suitable parking locations also raises the question of maximum walking distances comparing walking distances statistics in both large and small cities. Planners have suggested an average walking  


29 Bennett, p. 14.
CIRCULATION CAN BE DESIGNED AS A PLEASANT EXPERIENCE. GETTING THERE SHOULD BE HALF THE FUN. SITE, LANDSCAPE, BUILDINGS, SPACES, CHANNELS OF MOVEMENT CAN BE ORGANIZED TO PLEASE THE SENSE, NOT TO STUN THEM.  

distance of 500 feet as acceptable with 1000 feet as maximum. For some extreme sections of certain campuses a shuttle bus system is provided. Students can be expected to walk longer distances than faculty and staff, making some remote parking feasible.

When planning the campus, circulation, convenience, safety, and aesthetics should be main considerations, requiring a coupling of functional requirements with design opportunities.  

The most effective method of estimating future campus circulation is by analyzing the land use patterns and the student population forecasts with allowances for

30 Dober, p. 161.  

31 Dober, p. 161.
changes in housing on campus improvements in mass transportaion, athlete and extra-curricular programs and the operation patterns of the school schedule.
4 THE CONCEPTS CONSIDERED
A unified theory as to what constitutes the best relationship between numbers of students and types of curriculum and kinds of physical facilities existent or required has yet to be developed. In urban design important theories are emerging from comparative studies of the physical structure of urban localities: similar basic research is needed in campus planning.¹


As universities continue to grow and new colleges are being created, concepts in planning continue to change and evolve. The concepts considered here are individual concepts and would be altered or combined with other elements to fit a new campus situation. Most concepts are illustrated by examples of existing campuses as an indication of their practicability. Each has contributed in the evolution of a concept involving the Utah State University campus and in the final analysis played some part, however small.

A basic concept is the crux of a campus master plan and within this conceptual context the refinements of the plans
are free to change and fit the needs of a growing campus. The concept when conceived should be capable of coping with the present and future problems of the campus, eliminating the need to change basic decisions each time a new academic approach is considered or a new field of study emphasized. With this need in mind, the following concepts have been studied.
Sketch of the plan for University of Virginia designed by Thomas Jefferson.

THE QUAD

The "quad" concept seems to be the oldest and most enduring arrangement of buildings on the campuses of United States. From the first campus plans of Harvard and University of Virginia until the early part of the twentieth century, the center of the campus has been planned around a quadrangular arrangement of the administrative and academic buildings.

As these campuses grow, they very seldom retain this formal concept in their new building arrangements and as a result often make chaos from what began as a symmetrical campus plan. Today some newer campuses are returning to a specialized "quad" orientation in an attempt to bring some kind of order into the campus character.
The satellite concept envisions areas or colleges separated from each other physically and visually and containing several learning centers with a small union or collegiate center as a nucleus.

The collegiate center will serve as a gathering place for students and faculty in each satellite. The building is appropriately small and informal in character, tying the satellite buildings together visually and architecturally. The spaces within the building are of a variety and for a variety of uses such as dining, small quiet conversation groups, general large lounge areas
and areas of more intense activity.

Each learning center is designed to accommodate approximately 500 students with the first floor of a two-story building devoted to classrooms, lecture halls, and faculty offices; and the second floor to a library and self-study areas or carrels.

Flexibility in classroom sizes as well as instruction is emphasized, the building thus expresses two kinds of environment. The first floor in introverted and disciplined; the second floor more informal and personal.

The important design features of this plan are:

LEARNING CENTER
ITS GEOMETRIC SHAPE AND DISCIPLINED FUNCTION RELATES TO LEVEL PLATEAU

COLLEGIATE CENTER
LESS RIGID ARCHITECTURE THAN L.C. IT TIES VERY SENSITIVELY TO THE RAVINES

PEDESTRIAN BRIDGE
JOINS PLATEAUS FACILITATING UNIFICATION OF SUB-COLLEGES

SKETCH FROM JOHNSON, JOHNSON & ROY CAMPUS PLANNING STUDY

RAVINE PROVIDES SITE WITH A DRAMATIC NATURAL ORGANIZING FRAMEWORK
1. Each satellite consists of three learning centers dispersed about a collegiate center or student union.

2. The core—in the central area of the site—will include library, labs for science, and the arts, administration and auditorium.

3. Foot bridges over ravines will join satellites and core of college and satellites.

4. Athletic and fieldhouse will occupy a level area away from ravines.

5. The service center is on boundary highway.

6. Campus is approached from three directions and leads to main campus drive, a curving boulevard road which serves as a spine of the plan and reaches all
SITE ANALYSIS

Satellite Concept
by Johnson, Johnson, and Roy; Ann Arbor, Michigan
principal building sites.

7. Student parking lies outside this drive, faculty parking within--pedestrian traffic uses best routes to reveal full drama of site.
THE ARCHITECTS WERE INFLUENCED BY THREE PRINCIPLES THAT SERVED AS GUIDE LINES IN THEIR THINKING AND BECAME "MUSTS" AS THE DESIGN DEVELOPED: BUILDINGS MUST BE EXPANDABLE TO PROVIDE FOR ORDERLY GROWTH; THEY MUST BE FLEXIBLE AND MUST BE INTERCHANGEABLE IN ORDER TO ACCOMMODATE NEW TEACHING TECHNIQUES AND PROVIDE A CLOSER INTERRELATIONSHIP BETWEEN THE VARIOUS ACADEMIC GROUPS.2

CHICAGO CAMPUS FOR THE UNIVERSITY OF ILLINOIS

Skidmore, Owings and Merrill
Architectural Record, August 1963

This new urban campus was designed with "groups of buildings"—each serving a function rather than an academic discipline. The buildings are placed and built to best serve their function with following results: Classrooms generate a mass movement of students in short periods of time so that three to four story buildings are the best solution; laboratories also use three or four story buildings but usually require a 12 ft. ceiling making a unified laboratory building the most economical; and offices and seminars which are used by smaller groups with an even flow of traffic makes high rise elevator buildings the best

2 Architectural Record, August 1963, p. 123.
economy in this maximum land use campus.

Land restrictions eliminate the possibilities of resident students or faculty, eliminating the need for extensive student union facilities and dormitories but increasing the library and study carrel needs.

The arrangement of the buildings is such that the high-rise structures are on the outer areas of the campus with relatively large open spaces between them, while the low-rise buildings are grouped in a more compact pattern in the core of the campus providing cohesion and a feeling of unity.

Traffic to and from the campus is accomplished by automobiles and public rapid transit. Parking lots are provided on the periphery along with transit stations while the campus is strictly pedestrian.
except for service and emergency vehicles. The campus is tied together with an interesting elevated express walkway providing split-level access to most buildings while leaving room on the ground level for sitting areas, gardens and in some cases a covered walkway.

This urban university is relatively dense with construction covering 33% of the campus but skillful planning has reduced any notable crowding. Its design makes an important mark in the development of the urban university.
A CAMPUS PRE-PLANNED FOR CHANGE

Southern Illinois University
Architects: Helmuth, Obata & Kassabaum
Architectural Record, August 1963

The site selected for this university was an urban-rural site giving the advantages of rural land for expansion but the close proximity of several urban centers to provide the students and faculty.

The campus was planned to expect quick growth and therefore, has maximum flexibility and convertibility. The first stages of the campus were planned for total commuting of students and faculty. Dormitories will be added as the campus grows.

One of the important aspects of the planning was accommodation of the automobiles. Present and future parking needs were established and coordinated with the

3Architectural Record, August, 1963, p. 113.
highway access. The parking requirements were considerable with parking space needs ranging from 3,000 initially to 12,000 in the future. From the outset it was desirable to keep a clear separation between automobiles and the pedestrian campus area. After innumerable schemes were studied, they decided to consolidate the parking in two large landscaped areas and restrict the central campus entirely to pedestrians. Only special service vehicles will be allowed in this area and all vehicular access to the buildings is from a periphery road.
This decision to restrict parking and automobile access reserves all the area inside the periphery road for future campus development.

The interior campus was planned by using building clusters (as colleges) and leaving open spaces for integrating the campus to the site. These open spaces also retain the land within the academic boundaries for future expansion.
A somewhat different type of college community is envisioned in this plan for a new campus. CRS partner, John M. Rowlett, architect, says that: "The contention that quality architecture and construction economy would be achieved if the complete plan for the campus were known, and the curriculum used as the core for planning, is manifest in the campus plans for Denison." The key was space planning. Man is a gregarious creature, and he organizes himself along streets, then what could be more appropriate for a western Iowa town than a college campus that is Main Street? There is no zoning in the traditional sense; the academic
avenue is an integration of residential and academic functions, with the accent on variety, human scale, and the motion of the pedestrians. The street, 2,000 feet long, meanders, narrows, then widens into a court. The spaces will expand and withdraw along the street into places where people sit and talk, eat or study, or wait before classes. The emphasis will not be on the individual buildings, but on the experience derived from the total environment.

As the college grows the street will lengthen and expand laterally into byways for services and recreation. The first buildings will be the administration building and two dormitories. The administration unit will house an auditorium, classrooms, and offices and the dormitories will have living and dining facilities. Instead of
a day college of classrooms and a night
college of dormitories, and two will be
combined. Social rooms will double for
seminars, public lounges will serve for
tutorials, dining rooms will be divisible
into lecture halls. This total flexibility
means reduction of required construction
space and lower maintenance over the years.
AN EARLY STAGE OF CAMPUS DEVELOPMENT
Caudill, Rowlett, and Scott- Architects
APPLICATIONS TO THE UTAH STATE UNIVERSITY CAMPUS
The successful accomplishment of a master plan is indicative of a vast amount of preparation including research, analysis, study plans, design, and administrative preparation and co-ordination. It is never a small task and one university in the midwest recognizing this spent two and a half years and $100,000 in preparing their master plan.

The research and background material contained in this study is only an indication of the areas that need extensive consideration. The concepts considered are limited and point only a few of many directions that might be pursued in determining a final basic concept. Therefore as an outgrowth of this research
Preliminary Site Analysis
Utah State University
and preparation only initial planning decisions can be suggested.

As future expansion is considered the Utah State University campus becomes a unique and challenging site. In a predominantly rural situation the possibilities for growing horizontally have been restricted by the physical location of the campus. The south and west boundaries of the site are defined by sharp slopes, pushing the bench above the valley floor. On the north the city cemetery becomes an insurmountable barrier and the west boundary has become an indefinable line, interrupted by a variety of obstacles, making expansion in that direction difficult.

The campus for all practical purposes has been confined to its present boundaries with the best possibilities in planning
centered around a wise use of the campus core.

With these facts as guides the decisions suggested in this study include:

1 - An elimination of all temporary and obsolete buildings, relieving large portions of the campus for a more wise use.

2 - A plan suggesting future building sites in which an attempt is made to visually and physically tie the structures of the university together.

3 - An extention of the present "quad" area to include two more "quad" areas of a similar but individual character in an attempt to re-emphasize the green, growing experience of the older parts of the campus.

4 - A relocation of parking areas with the desire to provide parking where it is most needed and most used, and at the same time
free vital areas of the campus core for use by academic needs. This would probably entail parking structures when the land costs and needs indicated.

5 - An elimination of intra-campus vehicular circulation and the realigning of a periphery road. The planning of a network of walks that would tie the campus together as well as providing a series of visual and aesthetic experiences indicative of a general campus character.

6 - An awareness of the view possibilities from this bench site with the expectation that the future buildings will be designed to take advantage of this asset.

7 - A land use study which suggests basic land allocations in terms of special uses by the university. It should be noted that
in most cases the service areas are assigned a periphery location while this land use study merely limits its expansion to the needs for administrative space. It is suggested that the more land consuming service facilities (greenhouses, vehicular storage, equipment sheds, etc.) be moved to an area off the campus core.

8 - A suggested use of high-rise structures in both academic and residential buildings as a better use of existing space.

9 - A limited use of residential structures in the campus core reserving the land for academic and administrative functions.
IN CONCLUSION
A COLLEGE IS PEOPLE, IDEAS, AND A PLACE - AND IN THAT ORDER. A COLLEGE ASPIRING TO COMPLETENESS IN ALL THINGS WILL SOMEHOW FIND A WAY TO CAST UP A PHYSICAL ENVIRONMENT THAT SUPPORTS AND SUSTAINS ITS MISSION.¹


**Conclusion**

Because of restrictions on campus expansion, the central campus today shows a tendency towards a concentrated campus character with high-rise academic buildings, parking structures, restricted traffic, and limited university housing.

The single identity of Utah State University that should be retained and enhanced is the "quad." Since the University is identified as a "green" campus, the symbolism of the green "quad" area should be preserved and extended to tie the parts of the University together.

The walkways and pedestrian malls are
becoming more and more the symbols of unity, tying the elements of the University together as well as suggesting a pattern along which the academic functions can mix with the environmental functions for a pleasant campus character.

The brightest possibilities for accommodating indeterminate growth and expansion lie in the economical and wise use of the present available land. This encourages the removal of condemned and temporary buildings, moving certain unrelated functions to the campus periphery, making duel and efficient use of existing buildings and the planning of a more dense academic community within the present campus boundaries.
LITERATURE CITED


A College Campus that is Main Street. 1965. Architectural Record. 137:124-126.


