STUDENT ACTIVITIES CENTER
INDIANA UNIVERSITY • PURDUE UNIVERSITY • INDIANAPOLIS

William E. Payne
Thesis

August 15, 1980
Thesis Prof. Robert A. Fisher
Facilities for Student Activity and Gathering have been an integral part of the American University since the beginning of the twentieth century. The Activity Center (traditionally, the Student Union) has evolved from an organization, e.g., Oxford and Cambridge, to a multi-purpose facility that provides for recreational needs as well as a common point of social activity for the student, faculty, and community. Today, the Activity Center must recognize the needs of the evolving University Campus and Student/Consumer which include commuter facilities, continuing education, and service as well as providing for the traditional need for relaxation, recreation, and forum.

This thesis project, a Student Activities Center for Indiana University/Purdue University at Indianapolis (actual planning phases to begin in the near future) has been programmed and designed with the commitment towards recognizing and providing for these needs.

In accomplishing this goal it was necessary to understand the IUPUI campus and its context. The majority of the students at IUPUI are seeking professional degrees (although enrollment of undergraduates is steadily increasing), commute to school, and many of these students work and attend school simultaneously. Therefore, the Student Activities Center must act as a 'Home-Base' for students arriving and leaving
campus. It must provide varied dining services, administrative services, and lounge and commuter facilities.

In the context of the Indianapolis Community, IUPUI is one of the largest concentrations of educational facilities as well as potential cultural amenities. In fact, IUPUI is one of the largest urban campuses in the United States and is still growing at a rapid rate. The Student Activities Center should become a focus for this concentration of activity in which people can come together; it must provide for demonstration, exhibition, theatrical production, and social interaction.

Finally, this facility must accommodate this diversity of functions and simultaneously respond to the planning criteria of a real and growing urban university campus. It must allow for spontaneity of activity outside of the classroom and coexist and enhance within the context of the campus.

The Student Activity Center is a building which must find a comfortable fit within its context and yet, in its own formal language, respond to the diversity and vitality of the functions of which it is composed. It is in the spirit of the Student Union and the diversity of the Multi-Purpose Facility that this thesis project was conceived, planned, and developed.
Foreword

The purpose of this thesis (or any architectural thesis dealing with facility design, in my opinion) is twofold: The design and development of the product, i.e., a real building, and the realization and documentation of the design process. This should be reflected in the choice and the scope of a thesis project. In choosing to design a Student Activities Center at IUPUI, it was my intention to become involved in a complex program with many variables and to strive to develop this program into a concrete set of images.

I have my own conclusions concerning the completeness or reverse of this goal for which I have reserved comment in the process portion of this book. I will maintain here that the scope and complexity of this project were such that to achieve this goal took a strong commitment and many hours of work.

The second purpose of this thesis is realized most concretely in this book, although the discovery and evolution of my design process neither started or stopped with this thesis. I have attempted to array material in a way that it may be most easily digested; but I will not content that the evolution of this project was always this clear to me at any given point in my thesis year. This ambiguity and uncertainty is something that in my opinion, the successful physical designer must live with. "...Once you're in control, you stop learning."
Acknowledgements

Throughout the course of this thesis, there have been many people that have offered invaluable time, information, and encouragement which without, would have left me with a much greater burden. At this point I would like to acknowledge their participation in the development of my thesis project.

I would like to thank Robert Baxter, Assistant to the Vice President, Michael Wagoner, Director of Student Activities, John Gethur, Director of Physical Facilities, Ray Casati, Architect for Indiana University, and other members of the IUPUI Administrative Staff for their help in preparing the groundwork in the planning phases of this thesis. Their enthusiasm and interest made it very easy to get this thesis off the ground.

I would like to thank the Thesis Professors and in particular, Prof. Bob Fisher, for creating a learning framework in which I could pursue the development of my thesis. I have had contact with many other Architecture Schools and Faculty and am now more than ever convinced that the Thesis Faculty at Ball State University College of Architecture and Planning has as much depth and expertise as any other.

I cannot forget to thank the rest of my thesis studio, either. Most of us have been together for five years and I can think of no reason why I still bother to associate with them - except for the fact that they are
some of the best critics and certainly some
of my best friends.

Finally, without feelings of reservation
or necessity, I want to thank my Mother. Her
ever-present belief in me and in my abilities
has been a source of strength upon which
I have drawn and something I will cherish
now at the end of this thesis year and, forever.
STUDENT ACTIVITIES CENTER
INDIANA UNIVERSITY • PURDUE UNIVERSITY • INDIANAPOLIS

William E. Payne
Thesis 1980
Campus

INDIANA UNIVERSITY • PURDUE UNIVERSITY • INDIANA
The developmental process of this thesis encompassed four areas: Problem Definition, Schematics, Design Development, and Final Design. Although these phases spanned over three consecutive thesis studio (problem definition and schematics both fell under the first thesis studio), the transitions were more undefined than the apparent time sequence would suggest. A more accurate description of these transitions would be a period of time devoted to jury feedback analysis, synthesis, and incorporation into the evolving thesis.

Problem definition included development of Site Analysis, Facility Programming, and Building Type Analysis. A synopsis of the Site Analysis and Facility Programming have been included in the discussion of Design Process and all three studies are included, in their complete form, for reference in the appendix.

In the Schematic Phase of this project, the aforementioned studies were synthesized and developed into a set of concepts representing a proposed Student Activities Center. Tests of these concepts were also developed in the form of plans, sections, and elevations. Although the final design as it evolved was much different than the final schematic proposal, real concrete notions were developed which proved critical to the total design process.
The Design Development Phases involved a continued development of the student Activities Center. Schematic criticism was synthesized and introduced Baur into the design in a process of refining concepts and plans, sections, and elevations as well as materials usage, structure, and environmental systems.

The development of the Final Design Phase was devoted to further refinement of concepts and a more in-depth study of the facility in final presentation drawings.

Throughout the Design Process, the Student Activities Center was studied in sketch, model, final presentation drawings, and verbal description. The following portion of this book is devoted to the study of this process as an evolution of thought and drawing, chronologically ordered in the framework of three consecutive thesis studios.
Site analysis synopsis

Site selection:

The IUPUI Campus has a building program which adheres to the need for new facilities and is executed through a master plan developed by Edward Larabee Barnes. Consequently, a site has been proposed for the location of the future Student Activities Center. During the Site Analysis Study, the inadequacies of this location surfaced and I selected another site based upon conclusions and goals developed as a result of this study.

The original site was one which would allow the facility to be part of a continuous chain of buildings enclosing a contiguous set of quadrangles - the central concept of the Master Planning Scheme. In the context of the completed Master Plan, this location would position the Student Activities Center at the hub of circulation and physical facilities.

The weaknesses inherent this scheme were obvious. The facility would not be the focus of an urban campus when it would be turned away within one-half of a divided campus and, secondly, the hub or 'center of gravity' notion was totally dependent on a completed Master Plan.

In studying the development of the Master Plan, it became clear that the originally proposed site for the Student Activities Center offered a much greater potential to an array of critical issues. This location on Michigan Street would allow the facility to truly become a focus for both
halves of the IUPUI Campus, act as an identity/arrival element for the majority of vehicles that enter IUPUI Campus via Michigan Street, and simultaneously buffer street traffic from a now truly pedestrian plaza - a plaza in line with the master concept of contiguous Quadrangles.
Site context evaluation/conclusions:

The Site Analysis study involved the in-depth study of environmental, psychological, climatic, and physical existing conditions present the Student Activities Center site and in its context at varied magnifications. The issues and conclusions of this study are most readily absorbed through the short, but thorough outline that appears below and in the following map. The more concrete issues of specific contextual materials, climatic conditions, and utility locations as well as the complete SITE ANALYSIS Study can be found in the appendix.

Scope: Indianapolis Standard Metropolitan Statistical Area

1. Economic climate is favorable, growth expected

2. 90%+ of IUPUI student body are commuters; 75% commute from within a 15 mile radius

3. "A region built for and dependent upon the automobile".

Scope: INDIANAPOLIS

1. IUPUI and circle represent the densest concentrations of people in downtown Indianapolis
2. IUPUI is composed of five separate campuses spread out in Indianapolis.

3. Many cultural, educational, and health facilities intersections with Indianapolis at IUPUI.

4. IUPUI Student Body...20,000 (present) 30,000 (expected by 1985)

**Scope:** IUPUI Campus

1. IUPUI is essentially two halves of a campus divided by Michigan Street.

2. Lack of an identifiable entry sequence into IUPUI.

**Scope:** Newer Academic Half of Campus

1. Strong Master Planning concepts.

2. Many parking lots; slowly being replaced by garages.

3. Service drive and access is located in pedestrian plaza.

**CONCLUSIONS/ GOALS:**

a.) Through the location and design of the Student Activities Center, strive to develop a focus and image for IUPUI.

b.) Work towards the development of a connection between the separate halves of the campus.

c.) Provide for a strong sequence of amenities in the new Pedestrian Plaza.

d.) Utilize all forces acting upon the site to the fullest positive extent.
Campus • site
INDIANA UNIVERSITY • PURDUE UNIVERSITY • INDIANAPOLIS
Campus • context

INDIANA UNIVERSITY • PURDUE UNIVERSITY • INDIANAPOLIS
Program synopsis

Introduction:

The program for the Student Activities Center models a traditional Student Union with the inclusion of some very unique functions. Through interviews with administrators at IUPUI, these needs became apparent. The inclusion of the Student Services Administration is congruous with the notion that a new facility should provide service as well as a relaxed atmosphere for the student. This function must be readily accessible and recognizable consistent in image with the whole facility, and be expressed in way that makes a distinction between service and activity.

The Student Activities Center must also include a generous and various supply of lounge and multi-use spaces to serve the needs of the 20,000+ student population. Similarly, several types of Food Services were programmed to accommodate the various dining needs of the users.

Also included in the program were cultural amenities such as a multi-use theatre art gallery and lending library, and exhibition spaces - functions necessary for the intersection of the community, the Adamadician and cultural programs at the Student Activities Center.

The scope of this program was developed with the goal in mind of a fully realized thesis project and was reflected in the depth of study of the individual functions and spacial requirements. It would be very
difficult or at best, a 'shot in the dark' to program a facility such as this without several contributors and references. These participants are recognized in the complete program found in the Appendix.

Finally, critical goals and objectives and a detailed special summary we've developed in this study. These are included in the program synopsis in annotated form and represent the final step in problem definition immediately preceding the design sequence.

Goals and Objectives:

1. Provide an atmosphere which facilitates spontaneous interaction between the academic community, itself, and Indianapolis community

2. Develop a strong focal point of relaxation, activity, and amenity at IUPUI

3. Provide a 'Living Room' for the IUPUI campus

4. Within the Student Activities Center, successfully address the multi-faceted student life at IUPUI: consumer, commuter, and scholar.

Spatial Summary:

Student Services Administration... 20,645
Student Organizations............... 6,375
Lounge/Study/Multi-purpose........ 16,650
Recreation........................ 6,005
Cultural Amenities.................. 15,210
Food Services..................... 13,090
Commercial...................... 11,350

Total Square Footage 72,485

Gross Square Footage 142,235
Introduction/Process:

The schematic phase consisted of a process in which issues and goals were synthesized into concepts which defined an actual facility. There seems to be two basic approaches by which a designer might accomplish this goal: two which I shall label convergent and divergent processes. The former is one in which several concepts are developed and a selection process then must occur in which the designer must choose the most adequate concept to continue developing. I chose to follow the latter in which I explored many different configurations of parts in the evolution of a primary concept. I endeavored to follow this process for several reasons: complexity of program, compactness of the site relative to the gross square footage, and my strong inclination towards this process from previous experience.

The critical issue from the outset was primary circulation. The Master Plan called for new structures to be developed along their major circulation - a concept where this circulation reflected a rectilinear branching-off of the second level corridor system.

The starting point for the schematic phase was thus a reflection of this notion whereby major functions and secondary circulation 'hung' from the corridor. This circulation was expressed externally as a node at it's connection to an existing second level bridge that spans Michigan Street. The corridor passed through the building 'sand-
wich' as a linear element, and reappeared at the west end of the building, and terminated onto the plaza, via a grand staircase located on axis with an existing basque.

The building functions were 'hung' at differing lengths to create a variety of massing as well as responding to movement on the ground plane of the plaza and on the north side facing Michigan Street. These functions were parted midway to accommodate a multi-use Commons. The space would not only function as the focus or 'living room' of the campus, but would respond to an axis developed to emphasize the connection between the library, plaza, student activities center, and eventual commercial development on the north side of Michigan Street.

The massing of the building also reflects a reaction to the regular volumes of the existing academic structures at IUPUI. Sloped vernacular forms were chosen to further emphasize the uniqueness of the Student Activities Center. For example, the atrium was naturally lit by a roof lantern reminiscent of vernacular Indiana forms.

Finally, the plaza was treated as a rehab notion where an existing 'sunken green' was modified and expanded with a complimentary geometry that defined outdoor activities as well as movement through the plaza and towards the Student Activities Center.

This process encompassed the second half of the 404 thesis studio and in the most optimum analysis, would represent a commitment towards a set of concepts which I could use to continue to develop the facility in the two subsequent thesis studios.
404

Schematic presentation
**Summation:**

Feedback and analysis following the 404 presentation helped me to gain insight towards the direction that I would take in the subsequent design development phases. The comments covered the spectrum of issues that I attempted to deal with in the presentation.

The most positive revolved around the branching notion of primary circulation. Room for development, though, could be found in the connection of the second level to the ground plane in the Commons.

Further analysis revealed that although the sloped forms of the individual functions were an exciting diversion from the existing campus architecture, the function-form relationship was somewhat arbitrary and required further investigation.

Problems also existed in the axis' set up for ground level circulation. In particular, the potential existed for exciting views through the Commons to either side of the facility - but the entry sequence to this axis on the north side of the Student Activities Center was located at too great a distance from the point of street-dressing to provide an easily accessible circulation axis.

The final analysis of this phase was one directed towards reconsideration of concepts and further evolution. This phase proved most valuable in the discovery of critical relationships in, and functioning of, a complex program on a real site.
Design development

PHASE ONE • 405

Introduction / process: 

Design Development was a process of simultaneous refinement of this actual facility design and the concepts - very much like the relationship between the text of a book and its footnote counterparts. I studied several varied massing schemes in the early days of the quarter - but found that the varied blocks of massing were working against the concept of a clear response to the plaza. The primary alteration in the concepts following 404 analysis then became an attempt to move towards the enclosure of a regular volume and develop the main circulation in a subtractive process. In the actual facility, this was realized by placing all functions under one roof and allowing these functions to move in and out of it's boundaries for individual expression.

The entry on the Michigan Street elevation was moved east to better respond to the crossing point at the street. This was reflected by moving the Theater against the east 'service wall' and allowing the curved back wall of the Theater House to express movement towards the entrance.

A serrated edge was developed to similarly express movement through the building, to the Commons Atrium, and onto the plaza and contiguous quadrangle. Thus, the Commons became the ultimate focus of the facility into which all circulation fed.

On the exterior of the building, a layering of floors and functions was developed to express individuality of these and
yet maintain the notion of a single volume. Vertical circulation was also expressed on
the exterior, not only as vertical organizing elements, but to add to the excitement of
moving through the facility.

In the 405 Mid-Term Presentation, the critical concept was composed of a recti-
linear volume which within, counterpoint geometries were developed to express function,
circulation, and space.
405
Mid-term presentation
Summation:

The 405 Mid-Term Presentation revealed a somewhat radical departure from the scheme developed in 404. Still, it maintained a vigorous response to the issues developed in the problem definition phase and in analysis. It was a much more successful response. The concept of a regular volume more simply and clearly enclosed the plaza to the south and the counterpoint geometry, allowing for movement into and out of this volume, tied the ground plane of the plaza areas more closely to the functions of the Student Activities Center.

The main criticism of this scheme revolved around the geometry of the functions within the initial volume. The relationship between the curvilinear elements and serrated edges were at best ambiguous and required further study. Likewise, this relationship, when reflected in the elevations, needed further study of the proportions and development of a clearer expression.

In plan, the served and service functions were correctly placed, but the zoning of circulation required further study to clearly define these functions and their relationships.

In general, the scheme was successful and seemed to be on a positive direction of evolution. What would be required was further study and clarification of the facility and concepts.
Design development

PHASE TWO • 405

Introduction / process:

The most critical decisions in this phase of development were the choice of materials and refinement of the primary concept. The success of the concept of a rectangular volume and counterpoint geometries moving within it would be complete upon the realization of the actual construction and materials.

In the refinement of plans and elevations, it became clear that the subtracting and refining of the counterpoint geometries was analogous to a carving process. This was the primary generator of the facility evolved for the 405 final presentation. The Student Activities Center would be a brick volume in which portions would be carved away to express entry and create exterior activity links within the context of the plaza.

Several other critical issues that have surfaced during mid-term analysis were also dealt with in this period of development. The serrations were dropped in favor of the curvilinear forms which not only responded to the curved forms of the IUPUI Law Schook, but were a much cleaner subtraction of volume. This in turn allowed for a simpler material vocabulary in dealing with the carved layers. The brick exterior moved within the confines of the rectilinear volume to maintain a consistent composition in elevation and a refinement of the layering concept.
A zoning system for ordering primary and secondary circulation was also refined. Where required on lower levels, corridors would originate at nodal points of the primary Atrium circulation and service smaller offices located beyond. This secondary circulation was completed (as well as the atrium circulation) in the form of a ring at the fourth level.

Refinement of the structural grid into a regular bay system also took place. This made possible the most economical use of a waffle slab and column structure. This structural system would cover the fire separation requirements and when possible and desirable, it could be left unexposed as a durable and vigorous ceiling plane.

As in the previous development milestone, the refinement of the primary concept of a carved volume was critical in the evolution of this project.
405
Final presentation
Summation.

In the analysis of this phase of development, there were few critical problems to be found in the evolution of the primary concept - rather, comment pointed towards further refinement of what was already a well-functioning design.

The refinement of circulation zoning was successful. A weak link remained in the handling of circulation in the Commons space. The Commons was implicitly programmed as an open space in which the controlling notion was spontaneous movement and gathering. The scale of furniture and trees was appropriate to this space - but suggested a main lounge atmosphere.
The plaza contained all of the essential elements that had been programmed to insure an exciting sequence of outdoor spaces. The inconsistency of the geometry still required further refinement.

Likewise, the projecting roof forms that housed the Atrium 'lantern' and environmental systems equipment, through study and refinement, could become consistent with the curvilinear geometry below.

It was also clear through analysis that the zoning of environmental systems was underdeveloped relative to the rest of the project and would require some study.

I believe that at this point, I considered this thesis to be highly successful, and looked forward to the remaining thesis studio so that I could 'turn the crank' once more.
Design Development

Phase Three • 406

Introduction/Process:

The final phase of Design Development required a relatively quick evaluation and action on the 405 presentation and the execution of the final presentation drawings. As stated before, I had looked forward to the opportunity to further evolve the project to as complete a form as possible. It is at this point that I recalled a most valuable lesson: The concept in itself and in reality are most valid at the point at which they reflect each other most completely. In essence, the notion of a carved volume was only as successful as it's counterpart, the Student Activities Center, expresses this concept.

This lesson led me to direct my efforts towards further evaluation and refinement of this relationship. Thus, a need evolved for a third material. The volume was actually a shell that, at specific points, lay carved open to expose the functions and activities of the Student Activities Center. This shell became a system of pre-cast concrete panels that not only could express more efficiently it's ability to be carved, but responded to the existing campus architectural materials in a unique fashion.

The underlying materials were expressed in brick or glass - the brick also responded to materials usage in surrounding facilities. This three material vocabulary allowed the layering of surfaces to become a consistent system waive maintaining a comfortable fit within the campus context. The interior
of Commons Atrium also responded to this vocabulary with brick and glass flowing into generous in the Atrium.

The Commons circulation was simplified to allow for spontaneous gathering and movement. The alignment of stairs moving toward the plaza provided a focus in this direction and the use and placement of trees was critical to accomplish a smooth scale transition into the four storey Commons space.

The environmental systems were zoned as part of two service cores which included the fire stair towers. From this location, service originated for all facility spaces. The service ducts left exposed or concealed depending on the individual space requirements.

The ground plane of the plaza was re-developed to reflect natural and spontaneous movement outside, while simultaneously responding to the curvilinear geometry of the facility, as it moved through the shell and into the Commons Atrium.

Other refinements in this final presentation included the structuring of the Atrium balconies, redefinition of the roof forms, fenestrative systems ordering, and location of waiting and crossing amenities on Michigan Street.
406

Final presentation
STUDENT ACTIVITIES CENTER
INDIANA UNIVERSITY • PURDUE UNIVERSITY • INDIANAPOLIS

William E. Payne
Thesis 1980

CONCEPT DIAGRAMS

CIRCULATION

STRUCTURE

SITE

ENVIRONMENTAL SYSTEMS
Conclusion

Documenting the process of developing my Architectural Thesis is complete. I feel that my summation of the Final Design is adequately covered in the introduction to this final phase. An appropriate summation might be more objectively considered in the future.

Understanding the total process of this thesis is something on which I will comment upon. It has been a year of learning and growing as a designer and as a human being. I have been exposed to a multitude of information, decision-making, and design of which, if not as great in importance, has been as great in magnitude relative to any other project I have endeavored to undertake.

I have seen more than my share of sleepless nights, rolls of trash paper, and junk-food meals. I have experienced the ultimate feelings of frustration as well as the selfish pride of accomplishment. I have tortured the patience of myself, my colleagues, and my friends.

I have learned a great deal about Architecture, my design process, and myself.

I now know a sense of achievement, greater than I have previously encountered.

I will do it all again if but to learn just a little more.
Site analysis

Introduction:

This site analysis consists of two investigations: The rationalization of a selection of a site for the new Student Union and the graphic and literal recording of critical issues and pragmatic realities in the context of the selected site.

The option existed to work with a site based on IUPUI's and Edward L. Barnes' Master Planning Concepts. Through interviews and research, inadequacies appeared in my mind concerning the already determined site.

Therefore, I selected a site that was once to be the location for this facility. It is my belief that this site is more appropriate for a new Student Union. The facility can respond to critical issues at various levels more completely at this location and still work as an integral component of the current master plan.
IUPUI is located in the Indianapolis Standard Metropolitan Statistical Area or Region 8 as defined by the Committee for Higher Education of the State of Indiana - 1.1 million or 1/5 of the state's population as of 1970. The population is growing at a rate of 8.9% per decade and by 1980, will be growing at a rate of 12.9% per decade. The region's economic climate is favorable and growth in this area is also expected. As a result, IUPUI follows a policy of planning for distinctive regional and community needs.

Historically, Indianapolis has been a crossroads for railway and highway networks. The vast interstate system reinforces and gives form to suburban expansion. From the vantage point of the passenger, Indianapolis Standard Metropolitan Statistical area is "a region built for and dependent upon the automobile."

This is an especially significant factor that this thesis must deal with for 90+% of IUPUI's student body are commuters. 75% of these live within 15 miles of campus (which includes most of Marion County), but only 12% live less than 3 miles away. A remaining 25% are dispersed throughout the ISMSA and other regions. IUPUI is an urban campus that reflects and reinforces the regional character.
City Context:

IUPUI and downtown Indianapolis, i.e., the circle and context represent the densest populations in Marion County. This twin-focus is reinforced by the national movement of people between these two areas. However, unlike the circle and monument, IUPUI does not yet have a focus or "identity" but rather, is a mixture or urban collegiate images that are unified only by their proximity. To emphasize this point further, in addition to the main campus, there are four IUPUI campuses dispersed in north and northeast Indianapolis.

There are many intersections that exist between IUPUI and Indianapolis, e.g., I.U. Law School/Government Facilities, I.U. Med. Center/Regional Health Facilities, and Cultural Resources/Entertainment, Library, etc. to name only a few. Although IUPUI is centrally located relative to these amenities, the vehicular traffic presents a conflict. The academic world should be insulated from outside pressure and yet, the urban campus should be open to the public.

IUPUI is one of the youngest urban universities in the nation and is destined to soon become one of the largest. Conservative projections show the student body growing to a number of 30,000 by 1985. Current enrollment is approximately 20,000. IUPUI will continue to grow and function as an important cultural center in the city of Indianapolis.

*These will eventually be internalized into the main campus as times and finances permit.