PLANES IN ARCHITECTURE
AN ARCHITECTURAL THESIS 1986

by
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Thank You, Sincerely!

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ABSTRACT

This paper is the culmination of nine months of research and design, which has explored the nature of planar elements in architecture. The research has been limited to the development of what a plane is to a personal level. The dictionary definition of a plane is to be smooth, straight, homogenous, two dimensional in quality, etc... I define planar as any element in architecture that can be separated from its surroundings and analyzed individually. The planes we deal with in architecture are never homogenous. They are a composition of numerous materials or a layering of information and/or details.

This thesis also confronts the integration of the refinement and detailing of classical materials and technology with the economics, flexibility and elegance of modern materials and their technology. The use of architecturally historic elements is to develop a humanistic scale for the building and to create a link to the past.
THESIS POSITION

Architecture is created through the design and tessellation of planar elements in order to create a volume or space (whether it is street or hallway). These planes can be natural or built, existing or newly developed, real or perceived. The interaction of these planes, volumes and space begets Architecture.

Through this philosophy the interaction between new and old architectural vocabulary can be studied in order to create an architecture which is tied to the past and looking to the future, and therefore creating a sense of permanence.

With these ideas in mind, I chose a site which has an architecturally significant structure that has been compromised through time. I am proposing the restoration of this historic element and the development of a new structure to its north and west; placing emphasis on the interface between the two so that they are perceived as an architectural whole.

I intend to show that past and present can intermix in a functional and aesthetically pleasing manner. We need not and cannot ignore the past and still create a humanistic architecture. Man is also a thing of the past looking into the future.

Upon implementation of these ideas many questions had to be answered in order to continue the study and design of architecture purely as a planar element.

What is the purpose of this plane?
- Does there need to be a plane at all?
- How will this plane be used?
- Who are the users of this plane?

The implications of these ideas and questions are that in order to study architecture as a planar element many other issues must be dealt with first. Classical issues of function, massing, circulation, site analysis, etc. must be answered in order to continue the idea of designing wholistic architecture by looking at the individual pieces.

One can not design any element if its surrounding are not known. Architecture is no different. Therefore it is essential to this thesis that other issues of architectural design be solved first.

1- Develop concept.
2- Develop program.
3- Design massing.
4- Infill programmatic requirements.
5- Review concept.
6- Analysis: CONCEPT = MASSING?
   MASSING = PROGRAM?
   PROGRAM = CONCEPT?

Despite the fact that this approach is slow and inefficient, it has lead me to a better understanding of how important the planar elements are in architecture. They are the direct interface with the user. Rarely will a user confront the entire building. Most people interact with only a small piece of a building at any given time. Consequently, the manner in which these elements interact is critical to the development of architecture.
RESEARCH

The general research for this thesis began approximately six years ago when I began to seriously study architecture. At that time many questions came to mind, but the one which was and still is most important is, how to create architecture which is 'sympathetic' to human scale. Therefore I chose to limit the means by which this goal was to be accomplished to the study of planar elements in architecture.

Intuitively I had made many decisions as to whether a piece of architecture was good or bad. In developing my thesis I studied many buildings and eras in order to understand more clearly why I felt one design was superior to another. I looked at different scales of building design, everything from massing to lighting fixture details. Here are some of my conclusions.

Complexity in architecture is like candy: it's good but it must not be overdone to the point of confusion. Overriding all should be a simplicity which allows for the complexity of a design to be broken down into digestible pieces. An order should be developed which allows for understanding but also one that by it's own nature emphasizes the complexities that exist.

Out of all the complexities in architecture man is the most difficult to perceive accurately. In order to do this you must know what he is accustomed to or what his natural surroundings are. Knowing this allows for the designer to design the type of atmosphere he determines is needed. In order to create a calming atmosphere the design may emulate home or what the user wishes home was like. Therefore, to create an atmosphere that will excite, it should be uniquely different from the users 'normal or natural' surroundings. Human scale and its perception as such is also related to the individuals own perception. As stated by Walter Gropius, "In our technological society we must passionately emphasize that we are still a world of human beings and that man must stand in his natural surroundings as the center point of all planning and building".

Perception is the key word. Many architects today are using new materials in their designs which are foreign to the community around them. This can create architecture which is foreign to its context and this may or may not be the designers intent. Also with the use of new materials consideration should be taken to determine whether or not the building will be perceived as being permanent (in a time when even cars are becoming disposable will architecture join the ranks). The perception of architecture as permanent is deeply imbedded into society and with this comes security (back to the time when man lived in a cave). Therefore the continuation of these ideas is very important. Man must be able to project a future in which he and things of his time will not be forgotten.
THESIS ARGUMENTS

This thesis was the study of planar elements in architecture. Throughout the thesis the questions of 'what is a plane' and 'what defines a plane' have been asked. One might as well ask 'What is architecture?' The plane can be analyzed from the perspective of its origin. It can be generated from a point, a series of points, a line (either straight or curved) or from the combination of these items. The perception of what is a plane is as individualistic as people are different. A book is a good example, one person may perceive it as a plane itself while another may consider it to be numerous small planes (pages) that create the larger plane (book). In this thesis I choose to look at the existing building as a single plane even though it contains many different planes within its volume. The relationship of this plane to others on the street showed the development of a vista down Washington Street (adjacent to the south side of the site), which will be reinforced by the addition of this project to the area. The further development of this vista along with the planed development of Michigan Street as a shopping/restaurant strip should create a focal point for the redevelopment of the downtown area.

"Architecture is not an isolated or autonomous medium; it is actively engaged by the social, the discipline and which encompasses it. Though grounded in the time and place of its making, architecture is capable of reshaping the cultural matrix from which it rises. A vital architecture is one that resonates with that culture. It is behind this resonance, not reference to some locus left behind or yet found, which gives architecture its power."

-Carol J. Burns/ Robert Taylor
Perspecta 21

The contextual concerns aided in the development of the buildings massing. The sloping of the two towers away from the streets allows for the preservation of an established height of eight stories. This height will also reinforce a cascading of the building massing down Washington Street. The perception of the building from street level will appear to be only eight stories. Also the sloping of the apartment patio walls will control the occupants view concentrating it towards the river (east) and newly developing area downtown (south).
The North Facade shows an interaction of limestone panels on the lower levels and reflective glass above is an attempt to reduce the scale of the building on the alley side. The entry on the north side appears to be dwarfed in the elevation drawing. The actual perception of this facade, however, is limited by the distance at which it can be viewed. Consequently, the entry verses the overall mass of the facade will be unperceivable.

In conclusion, the development of architecture through the use of planar elements allows for an analysis of design concerns at all design levels. Inherent to this method of design is the development of individual can exceed the development of the overall project. Caution should be taken to insure the development of a design which is coherent and wholistic.

The development of the building interior was developed so that the east and south interior facades were symmetrical in nature in order to stress the two main circulation axes. The southern interior facade’s design intent was emulate a porch or portico leading to the main restaurant. The corners of this facade, which were derived from the flooring pattern, extend the full height of the main display space implying large columns. The flooring pattern is octagonal shaped. The octagon was chosen because of its inherent ability to stress both axial and diagonal patterns at the same time. The extrusion of the balconies was done to break up the overhead horizontal plane and to add variety to the vertical planes on the north and west side of the display area. These extrusions also allowed for the development of display nitches along the circulation paths. The display nitches will also act(10,15),(991,984) as seating areas for small groups or individuals. The large screen T.V., located at the northeast corner of the forth floor, can also be seen from these locations. This screen will be used for showing of old movies, current events taking place in the city, or as part of the current display occupying the building.

The success of the complex, as a public amenity, will depend on the ability of the administrators to bring in displays and activities which will maintain public interest in visiting the building and downtown area in general. Other factors which will help to maintain a moderate level of activity and insure success are the presence of the senior citizens club, shops, restaurants, apartments and offices.
<table>
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<th>PROGRAM</th>
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<tr>
<td>APARTMENTS</td>
<td>27 units</td>
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<tr>
<td>OFFICES/APARTMENTS</td>
<td>40,000 s.f. (approx.)</td>
</tr>
<tr>
<td>RETAIL/RESTAURANT</td>
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<tr>
<td>CIVIC/DISPLAY AREA</td>
<td>6,500 s.f. (approx.)</td>
</tr>
<tr>
<td>RETIREMENT CLUB</td>
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SITE ANALYSIS / CONTEXT

The site is located in the heart of the ‘dense development zone’ of South Bend, Indiana. It is located at the northwest corner of Washington Street and Michigan Street which is the numerical center of town. This area was once fully developed but is now barren from excessive demolition. On the southeast corner of the site exists a neo-classical bank building built in the 1920's.

To the west of the site is the JMS Building which was recently restored and is a registered historic building. On the same block to the north are a number of 1 1/2 story shops and restaurant.

Contextually, the site is important in the overall development of the downtown area. Washington Street creates a vista toward the river which terminates at the Century Center designed by Phillip Johnson. This vista will be reinforced by the addition of this project to the area. A cascading effect will develop starting at the west end with the 24 story Valley American Bank Building, located at Main Street, flowing down Washington Street and ending at the St. Joe River. Most important is the development of the east side of the site located on Michigan Street. Michigan Street is being developed as an urban retail/office strip along a four block corridor. Existing usable structures along the four block section account for less than 60% of the usable street frontage.

These factors along with climatic factors led to many design decisions. Other influences stem from living and working in this community for over 10 years. The downtown, typical of many communities its size (120,000), was abandon in the late 70's and now an attempt is being made by the community to re-establish it as a office/retail area. The heavy industry which brought prosperity to the community is no longer here, therefore the success of this revitalization could determine much greater things for the community.

The materials used for the project will be an intergradation of brick, stone, concrete and glass curtain walls. The use of these materials will help to integrate historic buildings in the surrounding context with the recently completed 1st Source Center by Helmit Jann, located to the sites south.

The edges of the building should reinforce the infrastructure of the downtown by strongly fronting the street and its intersections in particular. A barren appearance in the downtown area has developed because of the demolition of numerous buildings. Aiding in this appearance has been a growing trend not to build to the intersections.
SCHEMATIC DESIGN

Planes. What are planes? How do they work? How do they differ? There are numerous answers to these questions. In the initial stages of this project I chose to look at each facade as its own individual plane and designed it as an artist would a layout for a painting. This was appropriate in that the vertical planes were the focus of the design. The general area had been subdivided in accordance with some basic usage ideas; e.g., separation of the living areas from the community/shopping area by using the office space as a horizontal buffer to allow for privacy.

The general massing of the building could have been generated a number of ways. It could have erupted from within the existing building leaving nothing but a historical facade dominated by the new building or it could have been placed adjacent to the existing structure creating the same effect. However, due to contextual concerns, (reinforcement of the corner, creation of a vista toward the river, building mass relationships, etc.) Perception of the building mass also influenced its shape. The intent of the design was to have an appearance of an eight story building in order to continue a familiar skyline in the city while increasing the population density in that area of town.

In a time when you hear "can't build them like that anymore" it seems that the scenario of historic buildings being abutted to contemporary buildings will be frequent. The statement quoted above illustrates a predicament we face. No we can’t build them like they use to, but even if we could would that be an appropriate response. Do we emulate the existing building or design a compatible mate? The decision to keep the existing historical structure was twofold. First of all the historical nature of the site deemed it appropriate that a historical building be left on the site as a marker of its past. The site used to be an area of activity and gathering (trading post, post office, bank) which justifies the additional project proposal. Secondly the presence of the historical building allows for the ability to test its integration with a new development.

The other major design consideration at this stage was the question of human scale. First of all it had to be defined. I chose to define it as the relationship of man’s cone of vision with respect to the built form. At a given distance, does the building engulf all of the viewers cone of vision? With this in mind I placed constraints on the building form by determining the maximum allowable height that would not exceed the 60 degree cone of vision while looking forward at distances of 10(mid-sidewalk), 20(edge of sidewalk) and 100 (across the street) feet.
DESIGN DEVELOPMENT

In order for further advance in the project an analysis of the direction and its vehicle was necessary. Could a plane be independently designed and then injected into place and still be an interrelated piece of the building? The key word here being 'place'. If the design is truly independent then how can it have a 'place'. The answer was very simple. It can not. Without knowing its context and designing within its constraints this piece or plane falls short of being architecture. Therefore I began the process of integrating these pieces into a more wholistic design.

The main entry ,located on the east edge of the site, was a combination of ideas about what an entry should offer. One of the major resolutions was that there should be a place that strongly stated "this is the front door". Also there should be an area of transition from the street to the entry. An example of this is the transition provided by a cascade of steps from a monumental building to the street or the small garden area in front of a brownstone apartment. Intrigue is another issue that should be considered; however, its development is more difficult for intrigue for one could be mundane to another.

This returned me to the original thesis and the hope that the study and design of planar elements would give insight to this dilemma and it did. When an advertising group studies the success of a t.v. commercial one thing they look at is the amount of eye movement of the viewer. Architectural intrigue is very similar there must be something there to look at or wonder about(not to be confused with wander about). If the design is to simple or nonrevealing interest will fade quickly or worse never develop. Movement both apparent and real, surface textures and undulation, the interplay of light and form, and people; these are factors which can help in the creation of intriguing architecture. PEOPLE?! Yes, even though we do not design the people we can design where they will sit, if they can be seen while sitting, do they know they can be seen, what they see while sitting. These ideas also apply to walking, working, standing, etc...

The presence of a historically significant building on the site required special consideration. The materials used and the manner in which they were used was important to the development of this project. The decision to use concrete columns covered with glazing was an attempt to reduce the scale of the structure while still emphasizing it. The facade was faced with limestone panels and smoked glazing to unite past and present materials. The facade design was an integration of concern for solar shading and the emulation of the historical facade.
NORTHWEST INTERIOR AXONOMETRIC
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Monograph of the Work of McKim, Mead & White

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Perspective Massing Study

Multiple planes allow for expanded space at interior causing intrusion, while still taking form.
WEST

INTERIOR ELEVATIONS

SOUTH
PENDIMENT SKETCH
SECTION SKETCH