architectural expressions

case study and design development of museum architecture

master's report
To my lovely parents
This report is presented to
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by
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My deepest love goes to my parents and my family. They support all my studies with love. My mother were with me when I did the final project and final presentation and greatly encouraged me to finish the study.

I have the pleasure to give all results of my study to the University of Arizona Museum of Art.
CHAPTER 1

Introduction: Architecture Expressions and Museum Architecture
GENERAL CONCEPTS

The art of architecture is different from other fine arts. The accomplishment of architecture is not only the individual process of the architects but also the practical construction with various materials according to client particular requirements. There are some contradictions among functions, contextual concerns and individual expressions. These aspects could be described as a "triangle". The following diagram represents the fundamental elements in architectural creation.

![Diagram](image-url)
At the core of the diagram lies aesthetics. Since the building exists in the environment, unlike other works of fine arts which could be exhibited separately, it must always be integrated with other environmental and historical elements. Once a building is formed, it becomes a component of spatial sequence in a larger stage (street and urban). To the building itself, it is a masterpiece; to the surroundings, it is a background as well.

Since the 1980's there has been an intense individualism in terms of self-expression and designer's signature. The tendency leads to "no general agreement on whether the responsibility of the architecture to the community, to the users of the building, to the client, or merely to himself." There are conflicts between individual expression and function as well as function and historical concern. How to deal with these conflicts in architectural design is a question of design methodologies. The art of "compromise" is always mentioned as a way to harmonize the conflicts.

In the 15th Century Roman architect Vitruvis coined the famous triad of *utilitas*, *firmitas*, and *venustas* of architecture. In the 17th Century, Sir Henry Wotton said in his book *The Elements of Architecture*: "In architecture as in all operative arts, the end is to build well. Good Buildings meet three conditions: "Commodity, Firmeness, and Delight." Wotton had more definition than the others who defined architecture as one kind of fine arts. The three conditions are inseparable. These principles have significant meaning up until nowadays.

**Historical Tradition and Background, Architects**

Since the 1970s, many architects have been striving to update and champion anew the lessons of the Modernist movement. Those who have theorized about the movement in writing its history have exalted its prophetic role, ideological charge, and utopian quality. But morality is not the only condition for overcoming the present; it is also the correlative of
its ignorance. Technology erodes the celebrating side of modern architecture without a renewal instead by decreeing its ultimate strength.

The architecture of Stirling has its origins in an analysis of the language of the Modern tradition. This involves an initial reductive ace—meaning disassembly. "Quotations" are a feature of Stirling's work and at the sight they take on an ironic aspect without, however, revealing the solution to their enigma. In attention they are probably neither ironic nor enigmatic but the result of reading the Modern tradition as "language". Tradition is a language; but what comes out of tradition is only words whose relationship with things is rewritten in a new text. In that way, tradition becomes illusion forever beyond reach. Faced with Stirling's forms, the spectator is expected to become aware of his own condition as an estranged individual. "Architecture thereby becomes the field in which is expressed a masochistic relationship between the architect and his own language." 3

Meier gets a sign of "imperfect perfection" 4 since he strives for a level of perfection which people are unlikely ever to achieve. He thinks that an architect should put as much creative energy as he can into a building and hope that intentions will be understood. He advocated "abstractive architecture". Abstraction allows architecture to express its own organizational and spatial consequences. It allows architecture to be what it needs to be. Meier considers himself as part of the continuation of Modern architecture.

During the 1970s and the 1980s, some architects have been seeking for a return to the traditional concept of architecture. Michael Graves abandoned the abstract Late-Modern approach, and introduced a new method of design with "figural elements" 5. He said "the Modern architecture undermined the poetic form in favor of non figural, abstract geometry..." 6. Graves uses a new figurative idiom to recover architecture as an expression of the "resonance of man and nature" 7. The Post modernism requests for meaning in general and Michael Graves' language in particular has an existential foundation. Michael Graves' works form part of the American tradition, and represent a significant
intent to the recovery of the traditional language and grammar in architecture.

**MUSEUM ARCHITECTURE**

The different styles and approaches visible in museum design reflect the diversity of architecture today. Patrons now seek unique buildings to encourage civic pride and attract attention. Art museums represent the changing course of architectural theory and design so pervasively that one could with some plausibility, illustrate the history of modern architecture. The tension between the typical and the particular that informs every architectural commission is vividly illuminated. The use of a uniform generic format is prompted by buildings highly specialized function of protecting and displaying works of art and by the desirability of signal as well as serving that function through the design.

Art museums are growing in terms of museum collections, public needs, and the development of technology. The design concept of museum architecture has been changing simultaneously. Museum architecture is the intersection which combines architecture, art, and culture, and we have to put art museums into this background. In terms of the groups of people concerned, it is the intersection of architects, curators, artists, and the public. Every group is seeking their own role in the museum. The architects, who are the organizers of museum space, have to rethink all the needs and ideas of the different groups of people and attempt to make a balance between the groups.

In the 1990s, we have entered the era of information technology. It is a multi-national-shared information system. "The base of physical structure" has been changed to "the base of information structure". These changes "break down" the architectural society, industrial society, and artistic society. For the visual arts, we are not only in physical reality, but also living with the simulation of the real environment --virtual reality.
New notions of aesthetic systems will of course change the old "Dynamic system". The art museums become a piece of art instead of merely a place for art because people now are so anxious about the physical experience of space which is offered by architecture. They will care more about what they experience in the exhibition than before, because they can get exact images from various visual media when necessary. People like to seek the vivid spatial experience between themselves and exhibits. Frank Lloyd Wright's Guggenheim Museum in New York City is famous for its ramp -- a unique spatial experience. It is so aggressive that nobody will forget it and will think it as a piece of art.

The objects and spaces
The word "museum" will often evoke a particular character of building, but rarely, however, a particular space organization. This is probably the case because museums and galleries of all kinds exist in a considerable array of buildings. Museums can be found in formal royal places, in old stables and disguised kitchens, in country houses, aboard ship, in preserved villages and of course in museum complexes of the past intended for quite different ideas of display. The museum building type is distinguished, not by well defined and characteristic arrangements which are able to exist within a number of different architectural enclosures. It is important to emphasize that two primary activities of any museum -- conservation and display -- are in a sense of contradictory and thus provide no immediate clues to building form. The conservation of objects would be much easier than their display and certainly more secured if they were kept in dark rooms at constant temperature and relatively low humidity.

Route
The typical museum experience is one of viewing images in sequence which is sensed by a walking observer meeting static objects. The way in which any sequence is controlled or free, is likely to alter our awareness of objects and especially their initial impact. The way in which space is related to space will therefore only suggest the route to be followed through the museum and, as a result, also influence the way in which objects can be arranged for display. Most museums require a hierarchy of subdivision, whether permanent or temporary, and the relationship
between spaces and the nature of the route will be dependent on the number of steps within that hierarchy.

**The building elements**
The elements which are commonly encountered are walls, screens, showcases, ceiling and floors. It is precisely these parts of an enclosure which make up the middle scale which will closely affect what we see when we look at the material put on view and its surrounding surfaces. It is also these elements that need the greatest consideration in terms of the specific and special requirements of the museum.

**Preservation and communication**
All museums are involved in preservation and communication and the two roles are often in conflict. Both are equally important and both make their impact on design. The kind of spaces in which they occur are akin to workshops and laboratories and these are rarely seen by the public. Light is a vital part of any design. Objects must be lit in a way that depends on their characteristics. The need is not just for light but for appropriate light. Audio-visual media may be used in order to interpret the actual objects being shown and introduce something which is impossible in house. The auditorium is often included in a museum program.

**METHODOLOGY**

Criteria for Case Study

*Contextual concerns*
Building form and site plan relationship with the existing environment, social and historical context of the city will be studied.

*Museum architecture (architectural functions)*
The building elements, circulation pattern, lighting system will be analyzed in the study.
Individual expressions

Graphic studies are to be applied to analyze designed spaces and spatial sequence, which could reflect architect individual expression and their concepts and solutions as well as the integrated elements in museum architecture. Aesthetic pursuits of the architects will be traced in the study.

Design development of the special case: the Program of Museum of Art Building University of Arizona Museum of Art

Design development and research for the special case: Program of Museum of Art Building University of Arizona Museum of Art, as well as the trail of the design and research process, are reported in Chapter 3.
Notes:

1. Witold Robczynsk: "The Art of the Building, or the Building of Art?"

2. Witold Robczynsk: "The Art of the Building, or the Building of Art?"


CHAPTER 2

Case Study of Museum Architecture in the Late 20th Century
PART ONE

Staatsgalerie New Building and Chamber Theater  
Stuttgart, Germany  
1977/83 James Stirling, Michael Wildford

In 1977, a competition was held specially for the design of the Staatsgalerie extension and the Chamber Theater. The jury had chosen Stirling's project whose architectural urban design concept are "alien" to the architecture of this part of Germany. Stirling organized forms, shapes and open spaces to produce a perfect integration into the existing fabric and a vivid spatial rhythm. Stirling offers a compositional method than masters compromise.

Contextual Concerns

I, Site layout and Town Planning

Objectives:
"To bring the public moving diagonally across the site into meaningful contact with the new building --neither Sub-dividing the site with the required new public footpath nor committing people to pass along the back of the building."1 The promenade passes at high level around the Sculpture Yard and down to the entrance then through the theater arch to the corner of Eugenstrasse.

"To continue a 3 meter high landscape terrace (town planning suggestion) along Konrad Aadenauerstrass and allow for a foot bridge across Engenstrass thus providing uninterrupted pedestrian flow. Directly off this terrace (car park under) are public entrance to the Gallery and Theater. This arrangement respects the historical relationship of public buildings facing a Mall (Konrad Adenauersasse)."2

Sitting of the Theater wing allows the possibility for a new urban square on Eugenstrasse.
"To reinforce the traditional relationship of buildings to street by retaining all existing buildings on Urbanstrasse and Eugenstrasse so maintaining the street character of this area."3

II. Typologies of the Spatial sequence

The old gallery (1937) is neo-classical, and U-shaped in plan. There is a semi-circular drive to the entrance and at the center of the courtyard was a classical urn, replaced in the 19th century by a man on a horse. The new building is also U-shaped and instead of the semi-circular drive there is a circular courtyard. The man on the horse reiterated by a taxi drop off pavilion with banner, also on the axis of the plan. The historic contextual elements are strongly reflected in the extension building design.

*Shape Analysis of the Building's Plan*
The entrance terrace

Turning to the left or right, to the ramp or stairs, people come up through the branches of the trees to the entrance terrace. Here is a grand and more tranquil urban space. Alternative ways are offered: either people can turn to the left and be led to be round the sloping sinuous wall to the entrance of the museum itself, or they can go right to the bottom of the ramp, from which the public route rises away from this public terrace. The circular space is both private and public. It is called: “a drum”. People can be pursuing around the drum in the way which is simultaneously stage and promenade. The users are actors on a stage. The space contains both environmental and mysterious meanings. It is dually coded.

Promenade

The conceptual origin of the design seems to derive from two programmatic requirements: 1) to establish a route across the site; 2) to assemble the diverse cultural fragments comprising such a complex into a unified whole with clear identity. The geometric shape helps to make a concentrated core of the complex. But it is mysterious enough that core is a void. Stirling “locks” his building into its context by repeating the enclosing massing of the existing gallery, and extending this theme to accommodate the slope. The diagonal route across the site is demonstrated in Stirling’s conceptual sketch. By having contact with, but no access to, the central court, the route increases both readings of finality and transience and the tension between immutable permanence and rotation. Its circularity is reinforced by the ramp that ascends around one side. This route enters the “drum” at its mid point, the straight, curve, straight path decisively accentuating the axis.

Stirling’s Sketch of the Concept of Promenade

(source: James Stirling, Academy Editions/St. Martin’s Press, 1982)
Design Elements in Museum Architecture

I, Entrance
The twisting wall of glass acts a scoop or net to trawl the visitors. The resting on the lower terrace is locked into and participates in the upper level. The entrance space is fluid and directional to ease the visitors from the entry pavilion to the elevator, interior ramp, staircase and auditorium.
II, The galleries

The visiting route in the galleries is rational and decisive. All the galleries are arranged around the upper level terrace which is connected with the cured wall of the "drum". The objective of the arrangement is "to achieve a chronological journey" through the history of painting and sculpture, either with a journey from 'present to past' beginning in the new building or a journey from 'past to present' beginning in the old building.

Inside the galleries, the cool gray light, the white walls, the warm unobtrusive wood floors all allow the artworks to speak for themselves. The ceiling of the rooms is a flat surface of diffusing glass, allowing passage of shadowless nature light - similar to the existing Staatsgaleries but more rationalized. The light filters down through the grided translucent coiling, as 'through-water'. But almost in all the rooms, there is another light which can be glimpsed through the great windows that look out onto the upper terrace.

People can walk out through these windows to enjoy the terrace and its dramatic world. Beside the regular visiting route, people get the freedom to linger on the terrace around the rotunda's wall. On the lower level, people can take the downward ramp next to the grand stair or the upward one under the winding path to reach the gallery for temporary exhibitions to the left of the entrance hall.
Individual Expressions

In discussion, Stirling said he was sick and tired of the boring, meaningless, non-committed, faceless flexibility and openness of the 'present architecture'. His work is not traditional, and conceptually new and fascinating. With the contextual concerns, he had created the unique spatial sequence in his design. Besides the basic U-shaped typology, he added alien components to the building. The twisting glass wall, the rotunda and curved ramp etc., those are organized in both logical and mysteries ways. Unlike the classical building, the central rotunda of this building is void. James Stirling used his own vocabulary to emphasize the center. He has compromised between history and present; function and form; context and alienation.

The glazed canopies that defines the entrance zone ironically reverse the traditional masonry, repeating the elegant open transparency of the propylaeum. External walls are veneered with the natural or reconstructed stone, with similar paving to Terrace. They remind the traditional architecture, Fresh colored steel is coexisting with the masonry. They show the complexity and contradiction in the late 20th century's architecture.
The alien components are organized with and without the axis in a creative way.
Conclusion

James Stirling applied typical "U"-shaped gallery pattern with the circulation system linking the two ends of the "U" shape in this case. This solution works efficiently in terms of museum function. The center space offers unique spatial experience to the public and the identity of building itself.

(see appendix on next pages for more building information)
"frontalising axiality"

(source: James Stirling, Academy Editions/St. Martin's Press, 1982)

"building to street"

(source: James Stirling, Academy Editions/St. Martin's Press, 1982)
1. View into circular garden
2. Upper and lower terraces
3. Public footpath

(source: James Stirling, Buildings and Projects, Introduction by Colin Rowe, Rizzoli, 1984)
1. New Schlemmer Gallery
2. Theatre ramp
3. Theatre lobby
4. Galleries

(source: *James Stirling, Buildings and Projects*, Introduction by Colin Rowe, Rizzoli, 1984)
PART TWO

The High Museum of Art Atlanta, Georgia 1980/83  Richard Meier & partners, Architects

Contextual Concerns

The Atlanta Museum is a entirely new building which responds to the typological and contextual aspects of the museum program. The city's progressive building tradition as well as its role as a developing cultural center strongly influenced the design. The building site is at junction of Peachtree Street and Sixteen Street, about two miles from downtown. The building is adjacent to both the Atlanta Memorial Arts Center which is the current focus of the city's cultural center and the First Presbyterian Church on Peachtree Street. The location places the museum at an very important position for Atlanta's future development and within a pedestrian-oriented neighborhood with good transportation access.

In the center of the building, there are several quadrants. The interior space of quadrants becomes a monumental atrium, the lobby and ceremonial center of the museum. The building faces both Peachtree Street and the Manorl Arts Center. It is set back from the street to allow the green space in front to be preserved. The entry is carved out of the building volume at the corner of the site adjacent to the Memorial Arts Center, because the corner facing the Peachtree street is beautiful for its treed landscape. The diagonal ramp leads people to access the building and emphasizes the 45-degree axis of the building. The ramp takes people past a screen wall and a portico in to the main level of the building.
Museum Architecture

Four cubic volumes around the central space represent the four main functional parts of museum architecture. One cubic volume at a 60-degree angle to the main bulding which is passed on the left part of the entry ramp is a two hundred seat auditorium. It is arranged as separate from the main body of the building for reasons of access and security, but by its location it also reinforces the entry axis. People can enter the volume at end of the ramp through a neck between itself and a convex wall, and exit it by way of a ramp running reverse along the ingoing ramp, forming a continuous circulation loop.

Central space
At the end of the exterior ramp, there is a piano-curved entry and reception area through which people pass into the four-story atrium. Ramped circulation and gallery spaces surround it, making it the fixed point for referencing the movement of people and the around galleries.
By separating vertical circulation and gallery space, Meier has been able to maintain the idea of the referent central space filled with light. In Atlanta, the separation of ramp circulation and gallery spaces overcomes the problems in Guggenheim in which the sloping floors, ceilings and walls make people uncomfortable. The atrium walls have windows which admit natural light and offer framed views of the city, while the galleries can receive both natural and artificial light depending on the requirement of the art works displayed.

**Galleries and services**
The galleries are organized in a rational way to provide multiple serial exhibitions and cross-references, intimate and large-scale viewing accommodating the diverse needs of collection, and glimpses across the atrium from one space in to another. So they are multiple functional spaces. “Exhibition spaces are so arranged that one can look across the atrium from one gallery to another, it is therefore possible to see a work of art within a gallery close up, or, coming around over ramp, to see it again from a different perspective.” (Architect’s Statement 5) Off the ground-floor court is the service area and staff spaces. The counterclockwise ramp circulation to the upper floor takes people chronologically through the history of art. On the floor below the main entry level, is the educational spaces including junior galleries, lecture rooms, workshops, department offices.

**Lighting**
'The building is intended both to contain and to reflect light, and in this way to express the museum's purpose as a place of enlightenment and the center of the city's cultural life'. (Architect’s Statement 6) A large skylight over the atrium and seven pyramidal skylights over the upper-level exhibition areas bring controlled natural light into the movement spaces. The general and specific level of illumination in exhibition areas are offered by artificial lights.

**Circulation**
The quarter-circular interior ramp connects all levels and permits large numbers of visitors to circulate.
Systematic Analysis

Individual Expressions

Spatial sequence
"The Design of the High Museum developed as a series of architectonic responses to the context in the broadest sense, understood to include not only functional, programmatic, and typological concerns, but also the physical, social and historical context in the city". (Architect's Statement 7) In the design of the High Museum, Meier used abstract and geometrical elements to create the architectural form which is: "an urban and cultural symbol", and with "the self-consciously progressive tradition of the city of Atlanta". 8

The entry pavilion, exterior ramp, screen wall and portico make up the spatial sequence that implies the main axis. These contextual elements are both a symbolic gesture connecting the building to the street and city, and a "foil", to the quarter-circular interior ramp which is the building's chief formal and circulatory element. The entry ramp penetrating into the center of the building disturbs the classical four-square symmetry of the plan, setting in a set of more exciting geometry which successively reflect the architectural order. At the end of the ramp, there is a piano-curved element—the main entry and reception area. This is the distinct architectural element of Richard Meier which gives people a striking impression with its geometrical character.
Pattern of Organization

Elevations

Structural frame and slab and reinforced concrete system is shown on elevation. Decoration depends on the nature of structure. On the exterior, a granite base enclosing the support facilities, forms a datum for the porcelain-enampled steel panels above. The grid system, eroded corners, frame works, transparent and opaque surface, in terms of the vocabulary of 'white architecture' can be seen on elevations. (see next page for components of elevation)
Components of Elevation

- Skylights
- Frames
- Erosions
- Opaque walls with grid
- Transparent glazing with grid
- Strap window in pino-curved line
- Carved space
- Different sizes of windows

Sketch of a building elevation with labeled components.
Conclusion

The center space lit by natural light impresses most of the visitors. It is a still reference point for all the visiting movement. The circulation ramp offers chronological spatial experience of the museum.

(see appendix on next pages for more building information)
Volumes of the Building
Entry level plan

PART THREE

The Historical Center of Industry and Labor, Youngstown, Ohio 1986
Michael Graves

The Historical Center of Industry and Labor is a branch facility of the Ohio Historical Society devoted to the study and preservation of the industrial history of the Mahoning River Valley.

Contextual Concerns

The three level building occupies a steeply sloping site located between the University and the steel mills along the Mahoning River. The site is facing downtown of Youngstown to the south and St. Columbia Cathedral to the north. The building establishes a sympathetic contextual relationship with the cathedral because of their similar colors and axial alignment in plan.

Michael Graves demonstrated his contextual concerns in a neo-classical language of architecture. He exploited this historical vocabulary in the design.

The spatial sequence is organized in the way of axial alignment. Like the forms of Roman architecture, the plan is symmetrical with the central rotunda. To access the building, people need to pass the hierarchic layerings of the space along the main axis (from the entry plaza to the exhibition lobby, museum exhibition hall), subordinate parts, such as classroom, services, staircase, sit at the both flanks of the main axis.
The Classical Pattern of Organization

The building's elements represent forms typical of the American industrial landscape. Graves understands the lessons of past. He emphasized the historical character of his architecture. The architectural form is "namable objects" in the sense of things that we recognize and remember. His language is inspired by ancient Roman architecture and by extremely potent images of 19th century's industrial examples. It comprises dome and cylinder which remind people of historical architectural elements. The limited window size and brick veneer texture give the image of masonry structure in classical architecture. The middle entrance and the volume of central rotunda emphasize the "figural forms" of Graves' historical concerns. Steel roof structure is imitating the wood truss structure in 19th century's industrial architecture.
View from West Commerce Street

Figural Elements
Architectural Functions

Graves' architecture discards the abstract form inherent in modern architecture without losing concern for the function of the building. The building contains a museum which has exhibitions specific to the industrial history of the area, particularly the steel industry. A research center, achieves and classrooms are included. A Gorge Segal sculpture of steel machinery and workers, replicas of railroad, and various industrial artifacts are located in the garden.

Unlike the typical art museums, this center is a specific museum of history of industry, the architectural function is relatively simple. The routing of exhibitions is just as the same as the main axis on the first level. The multi-function classroom is located to the west of the main axis. The upper level of the building are the research center as the semi-public spaces. In terms of architectural functions, every part of the building is arranged in a rational sequence. We can see the harmony between architecture forms and functions.

First floor plan

Second floor plan

**Individual Expressions**

Michael Graves did approach the building not only in terms of functions, hoping that might generate a form, but also by means of language, which makes the solution generally comprehensible as part of a tradition. Graves has abandoned the abstract forms of modern architecture and introduced a new method of working with "figural elements"—concrete forms in terms of "Post-Modern" architecture.

Graves compromised his design of constituted figural parts, using the elements like "words". His method is more flexible and allows for more varied and individual solutions than classical grammar. The demand for "a generally understood language" 10 is easily seen in his architecture.

On the elevations, the building consists of a vocabulary that combines the vertical three-part divisions with an over-all unity of form as well as a dominant main entrance in the middle. The means employed are figural elements, such as massive block, central cylinders, cones of chimneys, tower of staircases, square windows, cornice and buttress. These emphasized elements are clearly recognizable.

**Conclusion**

This case is a very simple form of museum. The intent is to use historical architectural elements as a language.

(see appendix on next pages for more building information)
Notes:


CHAPTER 3

Program of Museum of Art Building
University of Arizona Museum of Art
PART ONE

Introduction

The Program of Museum of Art Building University of Arizona Museum of Art is prepared for the University of Arizona. This program has been chosen to be part of the research of Architectural Expressions in Museum Architecture as the Master's Report. The research begins with the literature study and ends with the special design case: Museum of Art Building University of Arizona Museum of Art, in order to explore the process of architectural thinking and designing. This program is developed as an experiment in touch with one kind of museum architecture. The trail of literature study, case study, and design development is recorded as a series of architectural thinking and designing progress.

The purpose of developing this program is to study the design and design communication by The Conceptual Design Development of Museum of Art Building University of Arizona Museum of Art, in terms of contextual concerns, museum functions, and individual expressions. The program is to question and confirm the concepts growing up in the design process. Design communication process has been explored to collect information, to communicate with the client as well as the instructors. The administration of the University of Arizona Museum of Art is treated as a client to be cooperating in the work. Assistant Director Lee Karpiscak of the University of Arizona Museum of Art has been chosen to be the representative of the client and a museum consultant.

The program is part of the fulfillment of my Degree: Master of Architecture. All results of this study is to be contributed to the University of Arizona Museum of Art and to benefit the students' design problem in the College of Architecture, University of Arizona.
PART TWO

Programming

The program of Museum of Art Building University of Arizona Museum of Art is based on the Short-Term Needs which were projected by the Facilities Program Report Proposed Museum of Art Building University of Arizona Museum of Art 1. "Short term" means the amount of space that would be appropriate to accommodate the kind of expansion in collections, programs, and staff that might reasonably be expected in the next 10 years (since 1992), based on the established goals of the museum and on the past growth experience. This amount of space is to be designed and to be built at this time to accommodate the natural growth of the museum in an efficient manner over the next few years.

This program resulted in a total gross area projection of almost 100,000 gross square feet, or approximately four times the size of the existing facilities.

Site and Site Analysis

The proposed building site of Museum of Art Building is two blocks to the northwest of the University of Arizona campus, between Park Avenue and Santa Rita Avenue, and Helen Street and Mabel Street (see Site Diagram). For the Short-Term phase, this program is just going to plan the west block of the proposed site area by the university. The east block is considered as the Long-term phase for future development.

This site is separated by the major traffic roadway: Speedway Boulevard. The huge-volume parking structure sits on the corner of Speedway Boulevard and Park Avenue. Visual identification of the new building of the Museum of Art is reduced due to above reasons. The axial access to
the new museum building and signs which indicate its location are essential for its identity.

The existing Museum of Art, College of Fine Arts, College of Architecture and Center for Creative Photography form the Fine Arts Complex of the University of Arizona. The Museum of Art Building is considered as an additional part of the Fine Arts Complex. A geographical relationship between the site and the existing Fine Arts Complex as well as the major part of the University of Arizona campus (south to Speedway Boulevard) should be emphasized properly. The Speedway Underpass provides protected pedestrian access to the site from the Fine Arts Complex and the major part of campus. This underpass access should be considered as the major access to the site.

I. Site Overview

The western half of the proposed site (see Site Diagram) is the site for Short-Term Needs. This area will be defined as "the institutional area" by the University authority. The existing buildings on site are mostly apartments, houses, and some houses used as university offices. Most of these have low architectural quality and will be turned down away while the construction of the Museum of Art. Some of the University office houses are tasty Old Spanish Colony style residences, so that they are considered to be preserved as historical in some opinions. Park Avenue is the high traffic street along the site. Vehicle access for visitors will be from Park Avenue. The main pedestrian access from campus will be from the University parking structure which includes staff and visitor parking services on Helen Street; Speedway underpass leads people from major part of campus to the north campus. Occasional access from adjacent streets is necessary. The connections from the site to the University of Arizona campus and city center are Park Avenue, Helen Street, and Fremont Ave. Mabel Street is a less traffic street than Park Avenue, so that it could be used as a service road to the site. Once the construction is finished, Mabel Street will be the temporary edge between the University and adjacent residential neighborhood for quite a long period. This edge
still needs to be modest so as not to bother the residential area too much. The spatial configuration of the new building of Museum of Art is relatively open to Park Avenue and Helen Street as "welcome space" for the public and relatively open to Fremont Avenue to be facing the future expansion of the Museum.

II, Site Analysis

(see diagrams on next pages)
EXISTING ZONING
ACCESS TO THE SITE

APARTMENTS

MABEL ST.

SERVICE

PEDESTRIAN ACCESS
ROUTE FROM
CAMPUS

HELEN ST.

PARKING GARAGE @ SPEEDWAY

RESIDENTIAL AREA

RESIDENTIAL AREA

10/11/93
PEDESTRIAN

Residents and children use the road much more than public.

Major pedestrian traffic between residential area and campus area (the future museum area and campus area).

Bicycle traffic.

Sub-major pedestrian traffic.

Cross traffic from the main garage of campus.
VEHICULAR ACCESS

MAJOR TRAFFIC FROM CAMPUS TO THE NORTH

TRAFFIC AMONG GARAGE, THE BLOCKS AND U OF A OFFICES STOP SIGN

SUB TRAFFIC

STOP SIGN

PARK AVE.

MABEL STR.

HELEN STR.

PARKING GARAGE

SUB TRAFFIC

STOP SIGN

TO THE NORTH

U OF A OFFICE

STREET
VIEW FORM THE SITE

VIEW TO THE RESIDENTIAL AREA
VIEW TO THE HEIGHTS COMPLEX
VIEW TO THE REPENTAL HOUSES
VIEW TO THE CAMPUS LARGE SCALE BUILDING
VIEW TO THE GARAGE

10/18/93
VIEW TO THE SITE

A: MAJOR VIEW TO THE SITE FROM CAMPUS & PARK ST.
B: MAJOR VIEW TO THE SITE FROM CAMPUS AND PEDESTRIAN
C: VIEW FROM PEDESTRIAN ROUTE
D: FROM VEHICULAR PARK AVE
E: FROM NEIGHBORHOOD

10/18/93
EXISTING HOUSE STYLE ANALYSIS

This one is more modern than the others.
Architectural form is similar. "Blind" windows and doors make the relations with the other houses' scale and form.

12

Typical residential house in the area.
One story structure with slight yellow wall & red shingle roof. Arched wood frame window -- history?

1227

Entry with porch and left above looks like Renaissance style.

1233
SPATIAL SEQUENCE

MUSEUM AREA

SERVICE ACCESS

PRESERVED HOUSES

PEDESTRIAN ACCESS AREA

PUBLIC FLOW FROM CITY

PUBLIC FLOW FROM PARKING STRUCTURE

PUBLIC FLOW FROM CAMPUS
Summary of Space Requirements of Museum of Art Building

University museums are basically similar to civic museums in most ways, but there are some important differences. University museums must accommodate formal undergraduate and graduate instructional programs as well as the other public functions. The educational requirements often translate into more space needs for library, classrooms, seminar rooms, study galleries, work space for student interns, and a collection study room.

"A clear identity is crucial to the success of any art museum." The new museum facility is to be a free standing building in a recognizable architectural form so that the Museum can develop the kind of separate identity that will be essential to the fulfillment of its mission. Museum architecture is the intersection which combines architecture, art, and culture. Besides the basic functions of museum architecture, art museums are not only buildings for art, but also signs of art, spatial experience of art.

With good facilities the museum will be more attractive to serious collectors who are the main source of new acquisitions. The existing museum has an excellent collection but can exhibit only a small portion of it at any given time. The new museum should be built to encourage the growing collection and the development of the museum itself.

The projections in this study reflect a series of thoughtful professional judgments about both size and quality of the existing collection, the potential for collection growth, the size and quality of anticipated traveling exhibitions, instructional programs, general public school out reach programs, and other related factors.

The goal of the program is to house the Museum of Art's excellent collection and programs in a facility of comparable quality.
### Program summary

**Categories**

<table>
<thead>
<tr>
<th>Category</th>
<th>Short-term needs (square feet)</th>
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<tbody>
<tr>
<td>Visitor services</td>
<td>11,319</td>
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<tr>
<td>Galleries and gallery support</td>
<td>39,365</td>
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<td>Educational facilities</td>
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<td>Administration/curatorial</td>
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<td>Collections management</td>
<td>18,785</td>
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</table>

**Total museum spaces**

| Total museum spaces            | 86,467                         |

**Mechanical/electrical equipment**

| Mechanical/electrical equipment | 6,917                          |

**Total net usable and support**

| Total net usable and support   | 93,384                         |

**Walls, stairs, elevators, shafts and structure**

| Walls, stairs, elevators, shafts and structure | 6,053                          |

**Total gross square feet**

| Total gross square feet         | 99,437                         |

### Site Considerations

<table>
<thead>
<tr>
<th>Site Considerations</th>
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</thead>
<tbody>
<tr>
<td>Sculpture garden</td>
<td>10,000</td>
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<tr>
<td>Visitor accessible parking (30 spaces)</td>
<td>12,000</td>
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<td>General visitor parking (in University parking system)</td>
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<tr>
<td>Bus parking (3 spaces)</td>
<td>2,700</td>
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<tr>
<td>Staff parking (in university parking system)</td>
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Service

<table>
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<th>Service</th>
<th>Quantity</th>
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<tr>
<td>truck access</td>
<td>1,200</td>
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<tr>
<td>Service vehicle parking (4 spaces)</td>
<td>1,200</td>
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<tr>
<td>Dumpsters</td>
<td>150</td>
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Space requirement description

**Visitor services**

In the existing Museum of Art building, there is no memorable central orientation space and no coat room. The galleries and public spaces are undistinguished and generally lack a clear sense of spatial organization. The central atrium space in the program should be oriented for multi-purpose spatial needs. **The main public lobby and atrium** as a spatial sequence will provide an orienting experience and a key to public understanding and enjoyment of the museum. It will be serving as the central point of public access not only for the galleries but also for the cafe, gift shop, and meeting room. Equally, it will provide an appropriate setting for the elegant and festive occasions celebrating temporary exhibition openings and for other major social events that are crucial to public awareness and support for the continuing growth and development of the museum. The atrium and public lobby space is to be lit partially by skylights to share the natural light resource.

**The coat and parcel checkroom and general information desk** is the control point of public access to the building as well as public exit of the building. It should the beginning and ending point of the public circulation.
The public elevator is to be located in this general area and should be a readily available option to all museum visitors besides using the ramp and staircase.

The gift shop will be a very important function in the museum, providing visitors with the opportunity to take home souvenirs of their museum experiences, providing a commercial outlet for objects that are educational and consistent with the goals and objective of income of the museum and providing an important source of revenue for the museum. It should be close to the major visitor's route and to the beginning and ending point of circulation.

A cafe will be serving visitors as a resting, chatting, meeting and viewing area. It should have nice lighting and viewing conditions.

The auditorium will be a separate building unit from the major building. It could be used as an orientation area and other multi-purposes and could be open beyond the museum's regular hours. This unit will have a sloped floor to accommodate fixed seating for 200 with stage and projector equipment. Considering the construction phases, the auditorium could be built in a later phase without interrupting the main museum functions.

Galleries

These should be a series of spaces specifically designed for a variety of exhibitions. There should be an easy movement between the galleries and public lobby in such a way that the visitors in the galleries can gain the art-viewing experience and can easily move back to the spaces to enjoy the physical and visual relief without losing their routing direction.
Temporary exhibition galleries will be for the exhibition of works on a short term basis for special shows, either traveling or organized by the museum staff, devoted to a particular subject or theme. These spaces should be easily reached from the atrium right after the orientation without passing lots of other spaces.

Permanent collection galleries will be installed with a wide variety of objects from the permanent collections or borrowed on long term loan. The galleries may be arranged as a time line sequence by the museum staff.

Study gallery will be used in connection with art history and other art classes. It could be closed separately to the public while the classes is in session.

Children's gallery will be an interpretive gallery providing a series of lively and entertaining educational experiences concerning the art of various historical periods or principles of artistic technique or aesthetic appreciation. It should be close to the public lobby and have easy access from the entry.

Educational facilities

These facilities are used to support the educational programs of the museum. The spaces include a multi-purpose room and docent/volunteer and outreach support rooms.

Administrative and curatorial staff offices

This group of spaces consists of the receptionist, offices and secretarial work areas for the director, administrative staff, curatorial staff and related conference rooms, kitchenette, copy center and other service areas.
A library functions much like any small academic library with reading/reference room and stack room. It will be used primarily by the curatorial staff for research and study, but also will be used by scholars, students, and interested public.

Collections management spaces

These are the art-related behind-the-scene spaces that house the core of the collection and accommodate the special exhibitions aspect of the operation of the museum. This group of spaces includes all of the staff functions related to shipping and receiving of temporary exhibitions, individual collections objects, collections management (registration, photography, and conservation); processing the large numbers of crates of museum objects and supporting materials involved in special exhibitions; design and construction of these special exhibitions. These spaces should offer comfortable work conditions and easy access to exhibitions incoming, outgoing, staging, holding and storage flow.

Collections storerooms are the spaces to protect and store the collections. These spaces should maximize the potential for good security and climate control while providing for good staff accessibility.

General staff offices and workrooms

These are non-art related spaces involved in general building maintenance operations including shipping and receiving, security, and storage of all of the general
supplies, equipment, and paraphernalia required to maintain a professional museum operation.

Museum Spaces, Accessibility Analysis, and Adjacency Analysis
(see diagrams on next pages)
museum spaces and accessibility analysis
<table>
<thead>
<tr>
<th>SPACE</th>
<th>1</th>
<th>2</th>
<th>3</th>
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</table>

- **SPACE 1**: Public Access Facilities
- **SPACE 2**: Educational Facilities
- **SPACE 3**: Administrative & Curatorial Offices
- **SPACE 4**: Collection Management
- **SPACE 5**: General Staff/Mech. & Elect.
- **SPACE 6**: Galleries

**adjacency analysis**
PART THREE

Project History

Stage I
Experience the space and download the program
By studying the program, original design elements began to evolve: volumes, access, functional units... All these elements were downloaded from the program.

Site layout with building volumes, center, courtyard, plaza
Building configuration: there is not a circulation pattern yet
Stage II
Precepts
Spatial sequence, spatial layers, circulation pattern are studied in this stage. Basic "U"-shaped gallery type is applied from the result of study. Center space is emphasized as the key point of spatial organization.

Site model
PARKING ON SIDE

NEW MUSEUM AREA

PEDESTRIAN BRIDGE

ART STUDY AREA

PROTECTED PEDESTRIAN

SPEEDWAY UNDERPASSES

BRIDGES ACROSS STREET

SIGNWORK & FUNCTIONAL SPACE FOR PEDESTRIAN ACCESS
RELATIONSHIP

NEW BLOCKS OF BUILDING

BREAK DOWN

PRESERVED HOUSES

RESIDENTIAL HOUSES

LANDSCAPE

TRANSITION

OUTDOOR INDOOR

COMBINATION OF PLANTS & SCULPTURES
CENTER: SCULPTURE GARDEN?
GALLERY CIRCULATION
MAJOR VISITING ROUTING
CURVED TRANSPORTATION AREA:
To soften south-east edge of building
To connect two buds of "U" shaped gallery block
To welcome people from main pedestrian flow.

FREE FLOWING SPACE:
Main public lobby, visitor's service, reflecting multi-purpose of people;
Open to the campus, neighborhood, as well as future museum site indicating the center.
Stage III
Design concept development

From the precepts, architectural form configuration and spatial sequence have been developed and adjusted. Public circulation system is studied particularly. Contextual concerns, museum functions, individual expressions for the identity of the building are the major clues of the design thinking. Compromise among different groups of design elements has been made and updated. In this stage, the design project keeps adding and combining design elements which are responsible to the precepts.
Site model
Third floor plan

Dome: an emphasize center
Front part study model
Front part study model
Front part study model
Front part spatial study: first floor plan

Front part spatial study: second floor plan
Volume Study Model:
The façade on Park Avenue is considered as in lack of identity, see the design documents for the final solution.
Volume Study Model
PART FOUR

Design Statement

1. To provide "a clear identity" and the expressible spatial experience of the Museum of Art, the design refers to the attempts of three dimensional expressions in architectural form. The intent is to discover aesthetic values of both exterior and interior spaces.

Since we are in the "era of communication", the Museum of Art is not only the place for art but also a piece of art which offers a physical experience. As the art of space, architecture ought to express three dimensional information by its own language. The language includes all construction elements, and the information expresses meanings which the design pursues in terms of contextual concerns, functional solutions, and aesthetic values. The circulation, lighting, and spatial qualities of the design are intended to encourage people to experience the art of three-dimensional space (architecture) as well as the art displayed. architecture is not merely the background for art, it is a piece of art.

2. The design of the Museum of Art is to develop as a series of architectonic responses to the context of the University of Arizona campus as well as the City of Tucson. The project location is at the edge of the University and in the middle of the City of Tucson. The new building of the Museum of Art is still considered as the additional part of the University's Fine Arts Complex, and the major entry to the building is connected to the existing Speedway underpass which is a protected pedestrian way between the site and the University's Fine arts Complex. The second entry is designed for the visitors from Park Avenue drop-off area through the opening gate under the diagonal transportation corridor. In front of these two entries, there is the "welcome space" which will be an
amphitheater or display plaza. The space is considered as an intermediate urban space between this building and its surroundings.

3. The entry box is located at the beginning of the interior ramp so that all the circulation begins and ends at one control point which is check-in or check-out counter. The circulation system is obvious to be recognized at this point. The convex curved ramp circulates to the second floor galleries and takes one roughly more or less chronologically in art history through the museum spaces. Besides the three-dimensional spatial experience, time experience is introduced by the movement on the ramp. An elevator and stairs provide alternative means of circulation.

The curved ramp circulation and galleries surround the atrium, which is the fixed point of reference for movement around the ramp and galleries, and functionally is a concourse and reception area for the museum.

4. The gallery pattern is a typical “U”-shaped form. Two ends of the “U” shape are linked by a circulation corridor. “U”-shaped circulation will efficiently prevent back tracks in visitor’s routing.

The “U”-shaped galleries provide continuous 50’ wide exhibition spaces for different kinds of display. The grid is changed to 45 degree at back side of the “U” shape in order to obtain 70’ x 70’ exhibition spaces for the maximum flexibility of exhibit installations.

All the gallery spaces could share the filtered and softened natural light from the glass block roof in the atrium.

Sculpture garden and sculpture terrace as exterior spaces provide alternate visiting routes. The curved second level sculpture terrace
is designed as a spatial extension of the curved ramp, and ties up the front part and the rear part of the building.

Administrative, and other support facilities of the museum locates to the north side of galleries with a courtyard space (sculpture garden) between them.

5. From the viewpoint of urban communication, Museum of Art is facing different kinds of architectural scales. It should respond to its context. The volumes of the new building breaks down gradually from west to east as a result. One-story glazing coffee lounge ends up the down-going spatial sequence of volumes and keeps a friendly dialogue to the reserved three residential-scaled houses and the its neighborhood.
PART FIVE

Form Configuration Analysis

(see diagrams on next pages)
"U" shape: A typical gallery pattern
TWISTED GRID:
The center part of the grid is twisted by 45° to gain more display space.
"CIRCULATION CORRIDOR":
To link the two ends of the "W" shape with each other, diagonal way of the corridor volume facing the major street corner and welcome people from campus.

Cut open to allow people going through.
LOBBY SPACE: CURVED WALL SHOWING THE IDENTITY OF THE SPACE
CURVED RAMP SHOWING THE MAJOR VERTICAL CIRCULATION METHOD
Front parts of the building: pulled out from the major volumes to identify the entries.
CENTER SPACE: COVERED BY GLASS BLOCKS
ROOF TERRACE

SCULPTURE GARDEN

REAR PARTS OF THE BUILDING
OFFERING WORK SPACES FOR
MUSEUM OPERATION
SCULPTURE TERRACE:
AS THE EXTENDED PART OF THE RAMP, CURVED WALL TYPING UP THE DIFFERENT BUILDING VOLUMES AND GIVING IDENTIFIED FAÇADE TO PARK AVENUE AND THE CITY.
COFFEE LOUNGE.

ONE-STORY

VOLUME BREAKING

DOWN THE HEIGHTS

OF THE BUILDING

EXISTS AND KEEPING

SPATIAL RELATION-

SHIP TO THE

PRESERVED

EXISTING HOUSES

AND NEIGHBORHOOD
PART SIX

Design Documents: the Conceptual Design of Museum of Art Building University of Arizona Museum of Art
View from Speedway Underpass
1st floor plan
limited accessibility

sculpture
galleries
corridor

function unit organization
public circulation diagram at 1st floor
public circulation diagram at 2nd floor

color point

major public flow
optional routing flow
bus and taxi dropoff

legend
security ring diagram at 1st floor

legend

ring-1: open to public, controlled by front control point (front counter)
ring-2: open to faculty, students and art related or interested public
ring-3: limited accessibility, open to museum staff and members ship only
ring-4: collection storage area, high secured area, open to authorized persons only

note: all third floor is under ring-3.
security ring diagram at 2nd floor
Notes:


BIBLIOGRAPHY

Wild Rybczynsk: "The Art of Building, or the Building of Art?".


