Transparency and place:
A visitors' center in Sydney Australia.

By
Vassilios Kourvaras
Diploma of Architecture Engineering (1994)
National Technical University of Athens

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Signature of Author

Departement of Architecture
May 10, 1996

Certified by
William Lyman Porter
Professor of Architecture
Thesis Supervisor

Accepted by
Roy Strickland
Associate Professor of Architecture
Chairman, Department Committee on Graduate Students

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Andrew Scott
Associate Professor of Architecture

William Bruder
Visiting Professor of Architecture
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Abstract

An exploratory design project is used as a vehicle to understand and identify approaches towards the notion of “place” and more precisely “visiting a place”. The inquiry begins from the design challenge of an architectural competition for the design of a visitors’ center in Sydney Australia. The international design competition set by AIA, ASCA and DuPont Glass Industry, is asking for a building, addressed to visitors of Sydney, that represents the “Australian culture” and can provide general information on ways to explore the continent.

The design exploration navigates through several descriptions and approaches, on the city and the continent, conducted by a variety of intellectuals, writers, reporters, and Architects. The hints collected, enrich the design diary, and formulate the design process. “Transparency” is therefore used both as a means of looking through design as a tool of communication, research and representation, as well as a structural demand set by the competition. The design artifact navigates the design process towards the formulation of a specific proposal answering the primary demands; nevertheless in the research the focus is given on the experience of processing the design problem.

Structured in a series of episodes, the design diary that follows, incorporates the research into a series of manifested notes on the issue of architectural conception. Diagrams and drawings representing several stages of the design evolution, are combined with the manifested theoretical points, and arguments in the form of parallel stories.

Thesis Supervisor:
William Lyman Porter
Professor of Architecture
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Introduction.

The thesis explores Architectural design as a tool of looking at “place”. The target is to investigate the ways that the design process can establish a dialogue between the necessities of a building program and the demands of architectural design for expression of culture, history and identity in an international, multicultural environment.

The effort through this thesis is to relate the specific rather philosophical question of “how to see” and “get to know” a place, with the architectural expression of a building in a dense Metropolitan urban context. The process followed, incorporates several stages and methods of inquiry. Rather experimental as it is, certain times it manifests an exploratory character focusing on issues related to the design process as a mechanism of identifying questions about space evolution.

As a vehicle for this exploration an international design competition was selected. The competitors are asked to study the design of a center that visitors of Sydney have available on their access to the port, for their orientation and general information about the continent and the city of Sydney.

The competition demanded the use of laminated glass for major parts of the structure. Therefore the design exploration incorporated the tectonics and aesthetics of the material. “Transparency” is a notion representing not only the characteristic of the material demanded to be used, but also the way that references and notes are used through the design process towards the evolution of the design idea.

Structured in a series of Episodes, the text alternatively incorporates or rejects theoretical and design manifestations, that have influenced the compositional process. “Designing” is a “live” performance of theoretical arguments not always
fostered by their “author”. The architectural expression aims to be based on interpretations of theoretical points that generate creative mechanisms of design. These subjective interpretations, could be explained according to Deleuze’s theory of “rhizome” as trees of associations between design and references, or even further between visual and textual material. “Rhizome” for Deleuze is a “tree structured” filtering and uncoding of the information process, that unfolds and explains any mental perceptive process. According to Deleuze the process of understanding is a formulation of semantical trees that root the perceived “reality” to a tree of notions that build the mental scheme of this reality into our mind. Understanding and perceiving in this sense, can be completely subjective even for the most profound “reality”. The author, in the case of this thesis, is expecting the object of design to navigate the research through the process of the design evolution. The design process is the route of exploration, therefore at every stage of exploration, the focus is given on the implication that the research and reference has on the design artifact and the reverse.

References are used in order to introduce the place and its context. References of built projects and their tectonic and aesthetic logic, as well as remembrances, written memories and stories about Australia and Sydney, support the steps of the process. The theoretical framing of the process is also accompanied by explanatory diagrams. These diagrams give an overview of the transition between theory and design decisions. The flow of text is parallel to that of design and research. In the logic of a design diary, the research in this case is subjective and based on search for information, inspiration or influence that would transform the design, in a “rhizome” manner.
Episode 1

The decision to take a design competition for the vehicle of research would offer a concrete design problem, framed by a specific building program, urban setting and architectural demands. The “visitors’ center” competition was introducing the issue of a building that corresponds to a specific culture and serves as a “doorstep” to the Australian Continent. Therefore it was challenging in terms of identifying the links between the issue of “understanding and looking at a place” and the design expression, in the complexity, nonetheless specificity, of a “pragmatic” case.

The first episode introduces the design problem. The A.C.S.A Sydney visitors’ center competition’s guidelines and program requirements, in short, are the following:

1.1 The Design Challenge

The proposed design would host many international visitors and provide an experience in cultural education. Facilities will include: an orientation center for providing visitors and tourists information of local history; an informal lounge area; dining facilities; galleries for local art and exhibitions; retail areas for the sale of various national goods, as well as miscellaneous items of necessity; and a theater and lecture facility. An outdoor plaza area and pleasure cruise boat docking area is also required. Designers are challenged to incorporate new glass technology into a design demanding cultural expression while also calling for high security and superior resistance to Sydney’s often gale-strength winds. Due to its versatility, laminated glass with DuPont Butacite (r) has been incorporated in sites with safety requirements such as the pyramid of Louvre in Paris, and the Uffizi Galleries in Florence. Using this product as part of their design solutions, designers can take advantage of benefits such as sound control, design versatility, solar and weather damage control, and personal safety. This latter issue is
particularly critical in an area where security will be a primary concern. Environmental concerns must also be addressed as a part of the design solution.

**History of Laminated Glass**

The idea of laminated glass for safety originated in England early in this century when sheets of transparent celluloid plastic were cemented between two pieces of glass with balsam, which later led to an improved laminate of polyvinyl butyral (PVB) resin.

DuPont engineers adapted the company’s system for extruding sheets of cellulose acelate laminate to the production of PVB, and produced an interlayer called “Butacite”. These refinements in performance properties and aesthetic qualities of laminated safety glass have led the way to a variety of innovative architectural uses of glass.

Glass skylights, atriums, walls, roof floors, beams—now even covered walkway bridges and self-supporting all glass buildings—are among the creative applications for laminated glass found in both commercial and residential structures, as architects are turning more and more to laminated glass for its safety, energy efficiency, ultraviolet productions, acoustical isolation, and clarity.

**Safety features**

The recent bombing of the Murrah Federal Building in Oklahoma City provided grim evidence of the extensive damage explosives can cause. Overpressure—the exceptionally strong pressure generated by the blast in the Oklahoma City Bombing—was responsible for destroying countless glass windows. So strong was this force that no glass remained intact in buildings within two blocks of the epicenter of the blast.

With regard to safety and security, laminated glass offers an advantage unparalleled by other glazing materials. Laminated glass can withstand significant blasts. Although the glass may fracture, the interlayer between the sheets of glass holds them in place. Not only does this virtually eliminate the prospect of personal injury from broken shards of glass, it also offers additional protection
from the elements. Even when fractured, laminated glass can still offer protection from wind and rain.

Although the cost is likely to be more than tempered glass, the safety advantages of laminated glass can make a significant difference in today’s vulnerable society.

Program requirements.
Total square footage is at the discretion of the designer; however it must be a minimum of 30,000 square feet.

Public space

General Orientation area: approximately 4,000ft.
This area will be for general information about the Sydney area and should have an area of purchasing tickets for various tours and activities of cultural interest. Counter space and some seating are must be included.
Retail area: approximately 1,500ft.
General items as well as souvenir paraphernalia will be available here. In addition, consideration should be given to the sale of specialty goods particular to Australia.
Restaurant and Cafeteria Area:
approximately 7,500 ft.
Two restaurants will offer visitors a choice of casual dining or specialty cuisine. The facility for casual dining should seat approximately 200 visitors, the formal dining area should seat roughly 100. Two separate kitchens, service areas and restrooms are required.
Public Restrooms
2 at approximately 750sq.ft. each.
Small lounge and an area for tending to children are required.
Parking for 150 cars.
Cultural space

Gallery space
Approximately 10,000 sq.ft.
A minimum of four gallery spaces is needed. There may be divided as the designer sees fit and should accommodate exhibitions relevant to local art and history.

Two small Auditoriums,
approximately 4,000 sq.ft. total.
The auditoriums should seat approximately 200 people each, and have facilities for a variety of audio visual programs: dance/theater performances, movies, slide shows, lectures, e.t.c.

Library/Museum of local History:
approximately 4,000 sq.ft.
In addition to providing information about the city and the country’s history, the library would also serve as a resource center for students and visiting scholars. A small museum of artifacts and cultural items would provide visitors a condensed educational experience into Australian history and culture.

Outdoor space

Outdoor Plaza Area, approximately 2,500sq.ft.
This area would provide visitors with a pleasant outdoor space to sit and rest, eat a casual meal, and take in the scenic Darling Harbor. Covered areas, outdoor seating and detailed landscaping are appropriate here.

Boat docking area
Docking for approximately 25 pleasure and tour boats is required. Although this area need not to be directly adjacent to the facility, relatively comfortable access is necessary.
Administrative space

Office support and administrative space:
approximately 500 sq.ft.
Work stations for 2-4 secretarial/receptionist staff and a general storage area are needed.

Visitor seating and welcome space
approximately 150 sq.ft.
A small seating area and welcome space for guests and visitors is required.

Media center.
approximately 500 sq.ft.
A small area for media access is also required. This should include seating area for interviews with local celebrities and visitors. Camera and electrical equipment will need adequate space.

Director’s office:
approximately 200 sq.ft.
In addition to general work space, the director’s office would be used to greet dignitaries and distinguished visitors.

Maintenance Area:
approximately 200 sq.ft.

Support functions.
20% of the total square footage. This will include storage circulation and mechanical equipment.
Episode 2

2.1 Approaching the "place"

We call "place" the theoretical model that describes and explains certain aspects of the built environment in urban contexts within a given structure. The existing urban environment presents certain problems that cannot be undertaken with the traditional tools provided by architecture and design methods. The problems of the urban environment that we must deal with today are much more complex and cover other levels than those of merely designing an object. Thus the boundaries defining such disciplines as architecture and urban design must be widened according to those requirements.

This work can be articulated in the form of the following questions. 1. What is the nature of the structures that are able to articulate the notion of place?. What is the nature of those pertinent "places" where meaning is produced and made manifest?

When the built environment is conceived as a carrier of messages, every material object-its real appearance or its properties- become a sign; that is, in the process of communication it becomes something that designates something different from the designating thing. The fulfillment of this process requires the framework of a language to be accepted by both addresser and addressee, allowing the transmission of information about certain facts or thoughts or emotional states. In other words, in the process of communication, messages carried by the built environment are made according to the rules of the particular system of signs being used. 

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1 Diane Agrest: "architecture from without" page 12.
2.2. Design and culture

Design considered as both practice and a product, is in effect a closed system - not only to culture as a whole but also in relation to other cultural systems in such as literature, film, painting, philosophy, physics, geometry, etc. Properly defined, it is reductive, condensing and crystallizing general cultural notions within its own distinct parameters. Within the limits of this system, however, design constitutes a set of practices- architecture, urban design and industrial design with respect to certain normative theories. That is, it processes specific characteristics that distinguish it from all other cultural practices and that establish a boundary between what is design and what is not. This boundary produces a kind of closure that acts to preserve and separate the ideological identity of design. This closure however does not preclude a certain level of permeability toward other cultural systems-a permeability which nevertheless is controlled and regulated in a precise way.

Culture, on the other hand, is understood to be a system of social codes that permit information to enter the public domain by means of appropriate signs. As a whole, culture can be seen as a hierarchy of these codes, manifested through various texts.

The relationship between culture and design may then be stated as the mode by which design is articulated as one cultural system in relation to other cultural systems at the level of codes. The development of specific forms of articulation between design and other cultural systems\(^2\) can be seen as a dynamic process, the study of which opens up the problem of the production of meaning. The relationship between design and other cultural systems is heightened and intensified at certain moments in this process.

\(^2\) Although here design is not excluded from the notion of culture, the process of design is something distinct from the corresponding process of cultural creation.
In this episode the effort is to understand “place” in both geographical as well as cultural sense. Through various descriptions of the “place” both from local as well as from non Australian authors, a wide range of impressions from the “continent” is presented. Visiting Australia and Sydney as an artist, author, architect and journalist, offered a wide range of systems of understanding. Becoming the receiver of the descriptions that are already codified understandings of a specific place, the design corresponds to these interpretations, in the form of transitional associations.
2.3. Visiting the “Place”

“Big Banana and little Italy”

Multicultural planning and design in Australia.

What is the relationship between multicultural life and design? Australia as a multicultural society is a brave social experiment but this is insufficiently reflected either in its cultural life or in the design of public and private spaces.

What are the images that spring to mind when trying to evoke the identity of Australia as a place: the big red rock at the heart of the land asking to be climbed; pubs full of blonde, clean cut middle class, Anglo, macho youths, arms around one another’s shoulders, jockeying for a beer; sunburn farmers with wrinkles around their eyes scanning a vast agricultural horizon, not a tree in sight, just hectares of wheat or sheep conquering a flat, featureless landscape under a burning sun; limitless stretches of sandy beach rimmed with resort hotels, nightclubs, spas and casinos highway facilities for travelers in the form of massive replicas of Ned Kelly, Big Bananas, Big Marinos, Big Prawns, squatting by the highway offering a refreshment pause from somewhere to elsewhere. ³

These models of Australian cultural identity are being pedaled through advertising and tourism. Australians as gold miners, bush rangers, land grabbers, big banana/prawn/pineapple consumers, greedy people hungry for conquest. But what of the rich, invisible, spatial, cultural heritage of Australia’s more recent immigrant groups? When we talk of cultural planning and the urban environment how much do we think in terms of anything other than Anglo and American models?

³ Culture difference and the arts. Tamara Winikoff. Pg 130-132
Impressions of a continent
Australian public and private space, almost without exception, was designed on a British colonial model until the advent of international modernism in the twentieth century with its cultural source in urban America. The form of the city was shaped around a notion of public life which was established by migrants from Britain. The prevailing desire by older Australian settlers of British origin is still to quell any expression of cultural difference through assimilation. “When they come here they have to accept our ways.” Even with in the notion of multiculturalism is contained the implication of teeth gritting tolerance of cultural difference rather than the pleasure of a marketplace for trading ideas, skills, knowledge, experiences and feelings. This effectively obliterates behavioral patterns, rituals, customs, beliefs, and values which are dependent on and inspire the form of, these spatial arrangements. The public celebration of shared values and forms of expression is listed in the new country- a country which promised so much wealth and health and peace.

So what spatial and physical evidence is there of migrant presence: the cultural identity of China, Italy, Greece, Vietnam, Lebanon, Chile to name but a few? The lack of detailed research on the subject is a demonstration of the prevailing attitude of myopia. Without this evidence it is difficult to distinguish common spatial and aesthetic characteristics because factors of ethnicity are only one determinant. It is important to resist the temptation to cite obvious and stereotypical examples which have become part of the folklore of prejudice. However, it is possible to indicate sites which would bear further investigation.
Impressions of a continent
“Experiences from Sydney”

“Sydney”

By Brian Kennedy

“Introduction to Sydney is to discover one of the most interesting and fast developing cities in the world. But to me it is something more personal. Since I first came to this city at the age of twelve, I have been round the world several times. I have lived in Athens, and London, visited New York, Tokyo and Los Angeles. But I keep coming back to Sydney. It lucks the intellectual stimulus of London the white fascinating perfection of Athens and the sheer exciting size of New York. But there is a warmth in the air a zing in the traffic and the thrill of riding a green wave to the beach that makes Sydney for me the best city in the World.

First impressions of Sydney depend very much on how you approach the city. My first glimpse of it was from the deck of the Monowai sailing from New Zealand. The sands of Manly gleamed like the promise of gold as we approached the Sydney Heads. A million photographs have made the Sydney Harbor bridge such a familiar symbol that I was not prepared to find it an unreal steel curve floating weightlessly above the bush of Bradley’s Head. The headland which obscured the bridge also concealed the coast. For the moment it even seemed to block our passage, but we rounded it and sailed towards the bridge itself. I remember thinking that the ship’s mast must surely collide with the bridge. Then at the last moment we sailed under with plenty of room to spare. I know how that the clearance is 170 feet.
General view of the site, and Circular Quay.
Sydney itself was a jangle of color and sounds- the little green ferry boats squealing against the wharf piles at Luna Park, and the incredible thunder of the red trains in the underground station at Wynyard. I envied the brash freedom of the news boys shouting their headlines as they jumped from the adventure of one tram to another selling their papers.

All that is a long time ago. The monowai no longer crossing the Tasman sea; she was sent to Hong Kong and scrapped nearly ten years ago. Conductors no longer cling for their lives to the sides of trams and shoot through like a Bondi tram is an obsolete expression. The trams are gone. The huge grinning mouth at the entrance to Luna Park is still there beside the bridge, but for me it is no longer the magic gateway to the thrills and terror of the big dipper. Sydney is now the workaday city where I live.

On summer nights looking across at the gemstones of the mercury vapor lamps reflected in the dark opal harbor, I can still feel the excitement of a boy from a small town dazzled by the city.

But I have grown up and so has Sydney. These days I find myself coming and going through Kingsford Smith international airport. Flying in over the desert of red tiled roofs, it is easy to believe the story, that pilots use the one blue roof in Mascot as a navigation beacon. Homecoming, a shattering mixture of anticipation and anticlimax at the best of times, is made even more traumatic in Sydney by the drive from the airport through the industrial wastes of Alexandria. The drive is, in fact, so dismal that when President Johnson visited Sydney he was ushered in by special route align the coast so that his first impressions of Sydney should not be the sulfurous smells of boiling down works and fertilizer plants.
First impressions make no impact on Sydneysiders. Most people born and bred here simply accept Sydney as the natural center of the earth. They accept without question that the sun is warmer, the beer colder and the harbor bluer than in any other city. Sydney is the chosen city, and Sydneysiders themselves were selected to show how mankind was meant to live. These articles of faith are soon adopted by most immigrants—for this is a city of immigrants—not only from Athens or, but those also from nearer at and: Dubbo, Adelaide, Rockhampton and Auckland. The bright hopes of Sydney attract refugees from the rest of Australasia like an invasion of Christmas beetles round an electric light.

Boldness and confidence are prevailing motifs in this city if two and a half million people. On the scale of world cities it ranks only twenty eighth sandwiched between Madrid and Manchester. It cannot really compete with the super cities of the world like London, New York and Tokyo. But in terms of creative imagination and lifestyle it can take on cities like Philadelphia and Detroit which are nearly twice the size. In the South Pacific Sydney is the Big Smoke. No other city can come near it for size or excitement. Melbourne, its nearest rival. is by comparison a dull English city of banks and churches with cold miserable withers and a muddy stream at its center instead of a magnificent harbor.

The miniature Manhattan of the Sydney skyline rises to meet you at Circular Quay, the ferry terry."
Impressions of a continent's cities and territories
2.4. Sydney, Australia's first city as seen today\textsuperscript{4}.

Is Sydney a spoilt city? Its magnificent natural setting has become a tender trap, and the city seems paralyzed with admiration for its famous Harbor which in the last sixty years has only been challenged by the Harbor bridge and the Opera house. The Harbor has always been the city's emblem, its “raison d'être” and its gravity center, it now appears to be a standing for the city itself. Sydney is reduced to a picturesque maritime image and seems to have given up architectural and urban ambitions, discouraged by the same powerful landscape formerly the catalyst of its evolution. It is said that, visiting Sydney, Ettore Sotcall, when asked for the nth time if he didn’t think the harbor sublime, abruptly answered: “I am sick of your beautiful harbor, where is your city?”

The founding of Sydney in 1788 imposed a colonial town to an Aboriginal site. Throughout the 19th century the early governor’s landscape vision gave way to a gradual densification of the old settlement which bequeathed to the 20th century an homogeneous, low, rather dense European type of city. The population shift from the central city area towards newly created suburbs began at the turn of the century and got into high gear after the second world war. After the abolition in 1957 of the law limiting construction height to 150 feet in the center, the City sprouted high rise office buildings on the downtown USA model which partly destroyed the still fragile Victorian urban fabric. The City is now mainly devoted to business and tourism, and its skyline displays a set of generally pretty mediocre buildings by local or pretty international architecture firms.\textsuperscript{5} The declining commercial activity of the harbor will soon see it become a leisure place only. Already favored by the dismantling in the late 50s of the tram ways network, expressways ruthlessly dominate a city divided in its center by midriffs of water and whose periphery is constantly expanding. Nevertheless the original landscape is still legible underneath a relatively even low density built cover.

\textsuperscript{4} Impressions about Sydney and Australia here are collected from L'Achitecture d'Aujourd'hui, "L'Australie”. Design of Sydney, Australia: Impressions of a continent.

\textsuperscript{5} Design of Sydney. pg 119.
Impressions of a continent
Sydney is anxiously questioning its future as a “world city” in a currently very recessed economic context. It must now fight on all fronts: the improvement of the city, the strategy for the Harbor and the reconversion of its industrial shores, the control of the suburban sprawl and the issues of public transports and denser housing. But visions of the future have difficulties in taking shape.6

In fact Sydney’s lack of coherence reflects the struggles and rivalries between the various instances responsible for its territory: Federal government, state government and the patchwork of local councils. With the existing system of public commissions government Architects design most public buildings and urban spaces without open consultations. The shareout of land and the private interests at stake leave a weak public sector little scope for action in many of the city’s sensitive or strategic sites. Circular quay East, for instance - the strip of land the runs around the west side of the botanical gardens, down to the Opera House - is a crucial site currently afflicted with five sinister office blocks belonging to a consortium of private owners, amongst which a big insurance company. For years now this consortium has been submitting to the Sydney city council and the public its successive architects’ proposals. The most recent episode of the saga was a contest by invitation between three teams. (A. Andersons, M Hopkins, A. Tzannes) organized jointly in October 1990 with the SCC. Didn’t a piece of land of such high profile deserve an open international competition, like the one that gave Australia its most famous building?

On the Harbor front (Darling Harbor, Walsh Bay, Sydney Cove, Pyrmont..) the SCC’s powers are cropped by several State government controlled bodies. The decline of the port activities has left large chunks of the shoreline vacant, mostly west of the Harbor Bridge in areas where high real estate values have made the lust for land all the more acute. The obsolete buildings still standing there (built 1880-1920) rank among the most remarkable in all of Sydney: Brick warehouses, huge timber sheds - the “fingerwharves” built on stilts perpendicularly to the quays, where wool bales were stored before being shipped. In Darling Harbor

6 L’Architecture d’Aujourd’hui. “Australie”
close to the new leisure center warehouses await their reconversion into luxury hotels. Nearby, in Walsh Bay, several fingerwharves have already been turned into theaters and restaurants the most successful rehabilitation was carried out in 1985 for the Sydney Dance and Theater Companies. But more ambitious projects are now on the boards: a huge redefinition of the shoreline including new housing what the central city needs most. There again, the usual architect/developer package rules but nothing has been approved yet. East of the city, Wooloomooloo has long been threatened by developers and their marina type schemes, but fortunately its beautiful 400 meters fingerwharf, one of the longest timber buildings in the world, recently escaped demolition by a hair’s breadth. What’s to be done with it?

The authorities seem to expect festive pretexts to provide them with opportunities to invest in the urbanism of their city, but the very aims of this type of event jeopardize the nature and the location of the initiatives. In 1988, for instance, when Sydney and Australia celebrated their 200 Th. birthday, the Bicentenary celebrations spawned a host of schemes in the City, concentrated around the harbor. For the most part they have left an architecture of circumstance calculated for its commercial profitability and re use by tourism. The year 2000 Olympic games, for which Sydney made a bid recently, were similarly entrusted with an urbanistic mission and the architects were asked to propose new models for suburban housing via the competition for the village, therefore dubbed “Housing Competition”.

As in the other Australian cities, the issue of Suburbia and densification is tricky and controversial. Sydney is three times less dense as London. Sydney’s landscape and climate led to an eagerly promoted image of easy going and wide open city where everyone can have a share of natural scenery, but the disparity between the privileged Harbourfront residential areas and the dreary suburbia continuously sprawling westward is striking. Inspite of timid attempts to convince the public of the necessity of a more rational land use the dominant dreamer of domestic model remains the detached house. Little collective housing other than

7 The Design of Sydney. pg 116.
social is being built in Sydney today, and this issue has in fact set Sydney architects at odds.⁸

More agree that suburbia is a costly whim and a waste of this natural landscape Sydneysiders are precisely so fond of; but for most of them the individual house is the cornerstone of Australian identity, and domestic architecture is most of the time the main commission available for interesting architectural practices. Some architects even seem at ease with an almost exclusive production of variations on the single house. Among these, some like Murcutt crusade against the local council’s regulations encouraging mimetic historicism for new buildings and strive to promote environmentally conscious designs; others like Leplastrier, put forward decentralized small scale and ecologically aware solutions to the problems of infrastructure generated by suburbanization.

Architects like Myers or Thalis and Cantril have a more urban approach and reject the preference of many architectural and academic circles for solutions imported from America. In their recent projects they have expressed their wish so see their city move towards urban civilization and give up the pioneer’s mentality, which has turned the land into a mosaic of individual interests, for an overall vision by which Sydney, without negating its specific landscape, would revert to its lost tradition of European city.⁹

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⁸ Culture and difference. Planning in Australia
⁹ Australian Architecture since 1960. L’Architecture d’Aujourd’hui “Australie”.
3.1.1 Connectivity and memories.
In this episode, the research expands in the fields of structural and aesthetic expression of the composition. There is an effort to “translate” the tensions and complexity of the site and the problem to a creative mechanism.

Processing the design problem.

It is not evident how things started. Nevertheless it looks as if the process began from the exploration of the site. The site geometry, as a very strong influence, was placed in the first exploratory sketches. Illuminating the characteristics of the geometry would offer a deeper understanding, therefore a comprehensive first reflection on the context of the site. Nevertheless preoccupation and stereotypes design wise, are always present as the first images appear. Geometric forms that relate to the necessities for light, view and easy access are manipulated in a sequence of steps that tend to abstract the problem, meanwhile justify the existence of any major design decision. The more the exploration was progressing the more the contradiction of the composition demands were becoming evident. The manifest of Robert Venturi, was at this point open ground for interpretation and design translation, setting an instance of the transition between theory and design in a radical manner.¹⁰

¹⁰ Venturi’s manifest of complexity and contradiction was selected during the first geometric exploration of the city’s and site’s tectonics.
Contextual diagramming
Geometric Exploration
I like complexity and contradiction in architecture. I do not like the incoherence or arbitrariness of incompetent architecture nor the precious irricacies of picturesqueness or expressionism. Instead, I speak of a complex and contradictory architecture based on the richness and ambiguity of modern experience, including that experience which is inherent in art. Everywhere, except in architecture, complexity and contradiction have been acknowledged, from Godel's proof of ultimate inconsistency in mathematics to T.S Eliot's analysis of "difficult" poetry and Joseph Albers' definition of the paradoxical quality of painting.

But Architecture is necessarily complex and contradictory in its very inclusion of the traditional Vitruvian elements of commodity, fitness, and delight. And today the wants of program, structure, mechanical equipment and expression, even in single buildings in single contexts, are diverse and conflicting in ways previously unimaginable. The increasing dimension and scale of architecture in urban and regional planning add to the difficulties. I welcome the problems and exploit the uncertainties. By embracing contradiction as well as complexity, I aim for vitality as well as validity.

Architects can no longer afford to be intimidated by the puritanically moral language or orthodox modern architecture. I like elements which are hybrid rather than "pure", compromising rather than "clean", distorted rather than "straight forward", ambiguous rather than that articulated perverse rather as well as impersonal, boring as well as interesting, conventional rather than
designed, accommodating rather than excluding redundant rather than simple, vestigial as well as innovating, inconsistent and equivocal rather than direct and clear. I am for messy vitality over obvious unity. I include the non sequitur and proclaim the duality
I am for richness of meaning rather than clarity of meaning; for the implicit function as well as the explicit function. I prefer “both-and” to “either-or”, black and white and sometimes gray, to black or white. A valid architecture evokes many levels of meaning and combinations of focus: its space and its elements become readable and workable in several ways at once.
But an architecture of complexity and contradiction has a special obligation toward the whole: its truth must be in its totality or its implications at totality. It must embody the difficult unity of inclusion rather than the easy unity of exclusion. More is not less.

Accommodations and the limitations of order.
The conventional element.

A valid order accommodates the circumstantial contradictions of a complex reality. It accommodates as well as imposes. It thereby admits “control and spontaneity”, correctness and ease improvisation within the whole. It tolerates qualifications and compromise. There are no fixed laws in architecture, but not everything will work in a building or a city. He must determine what must be made to work and what it is possible to compromise with, what will give in, where and how. He does not ignore or exclude inconsistencies of program and structure within the order.

Mies: “create order out of the desperate confusion of our time”.
Kahn: “By order I do not mean orderliness”
"Should we not resist bemoaning confusion? Should we not look for meaning in complexities and contradictions of our times and acknowledge the limitations of systems? These I think are the two justifications for breaking order: the recognition of variety and confusion inside and outside, in program and environment, indeed at all levels of experience; and the ultimate limitation of all orders composed by man. When circumstances defy order, order should bend or break: anomalies and uncertainties give validity to architecture."
The thought at that point was to understand the geometry that created the site, so that the tensions within it, can be accessible and manipulative. In the traces of the urban tissue the effort was given to understand the power of folding the space in between the urban grid as a sequence of tectonic and visual situations. Structured blocks reflect the historic continuity of the urban evolvement and support the perspectives for the future expansion.

The grid although several times artificial, in terms of the original situation, generated a catalytic precedent for the architectural expression of the city. The downtown’s plan, the ground plan more precisely, functioned as the generator of a sequence of “architectural reactions” that either followed or transformed the geometrical boundaries set by the city grid. The natural wateredge on the other hand gets redefined many times either with strong presence such as the wharves, or through milder redefinition such as the promenade along the waterfront. In respect to the previous, the site of the competition is located at the most transitional point. Transition expands from dense to less dense places and from references to the place’s history to abstraction and displacement of it.

Although the site used to be a hill in the long past, the natural ground contours of the Quay are nowadays “eliminated” by the presence of the Bridge. The bridge has become the point of reference for the place and the new “scape” has been formed as a remembrance encompassing it. Viewpoints, references, transportational functions of the city are all influencing the geometrical configuration of the site, therefore the range of compositional arrangements. Gestures in the site are deriving from these arrangements, and their existence is crucial for the design exploration.

In short the history of the site has as follows:
3.1.3 Circular quay. The image of the city

No visitor to circular Quay in 1987 could fail to notice the extensive and frenetic building activity around the waterfront as this major New south Wales Government bicentennial project approaches the unalterable deadline of January 1988. Tourists, commuters and office workers look bemused as they wander through this construction site while opera patrons appear incongruous in their evening finery among sheet piling and earth moving machines.

To understand why so much attention should be lavished upon this relatively compact section of the Sydney waterfront, it is necessary to examine the evolution of Circular Quay from a tree fringed bay to the front door of Australia’s largest and most imageful metropolis.

Evolution

Prior to European settlement, what is known today as Circular Quay was a predominantly natural environment with an Aboriginal presence. The cove, a drowned river valley formed in post glacial times, is enclosed by ridges to the east and west, giving protection from unpleasant winds. This sheltered space had a favorable micro climate for a varied plant community, especially near the fresh water stream, later to be known as the Tank Stream. Wet gully flora, probably characterized by cabbage tree palms, Lilly pilli and climbing plants, forming a dense canopy, gave way to more open forest and woodland of eucalyptus and angophora along the sandstone ridges. On the foreshore may have grown mangroves and casuarinas between the rocky outcrops.

1788.

The presence of fresh water, sheltered anchorage and good prospects for defense led to Sydney Cove being chosen for settlement by captain Philip and the First Fleet. Philip divided the settlement into two areas: east of the Tank stream for

11 Collection of information both from “Design of Sydney”, and “Sydney, from settlement to city”. 

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official residences and female convicts, the western side for male convicts, guards hospital and storehouses.

Under Philip a plan was prepared for the town of Sydney, with uniform allotments and streets 200 feet wide. However, implementation of the plan did not materialize and his intentions were quickly disregarded after his departure.

As the settlement developed, indigenous vegetation was rapidly cleared, gardens planted and exotic species such as Norfolk Island pines, bamboo and European trees were introduced.

1810

Governor Macquarie and his architect do the first steps in transforming the penal settlement. "Picturesque architectural elements are placed in the natural landscape with works at Dawes Point, Fort Macquarie and the construction of the Government house stables.

1837

Large scale reclamation projects are done with thousands of convicts working for the changes. Street layout and changes on the pattern of the quay with infilments are taking place.

1880

Connection with the railway network. Terminal for the railway first constructed at Darling harbor.

1885

The head of the cove is becoming very busy, trying to satisfy the increasing need for space for the steam boat network. New wharves are built and the city, that was a estimated to host 300000 residents, changes image

1900-1915

Public works and proposals for changes in the refinement and restructure of the city and the waterfront.

1915

Harbor bridge is proposed along with a series of transportation projects for the city of Sydney.

1924

Harbor bridge begins and continues until 1932 when it is finally completed.

1930’s and 40’s
Limited activity related to construction of the Quay, more related to the formation and slight alterations of the existing terminals and railway stations.

1950’s
High-rise development of the downtown area and the waterfront. revival of the privately financed construction.

1957
Sydney Opera House competition held. First prize won by Jorn Utzon.

1962
Architectural proposals for low cost housing in the Rocks areas.

1970’s
Problems with the completion of the Opera House and major difficulties in completing related public works such as Parking spaces.

1980’s
Changes and redevelopment of surrounding streets and buildings. Rearrangements and reconfigurations of the waterfront promenade and development of resort and recreation.

Nevertheless the description that follows eventhough it’s written in the past, represents the image of the place today.

“this is called The Rocks. It is a spot where all the riffraff of the colony have congregated from time immemorial. the surface you may observe is so abrupt and uneven, and covered with great masses of loose rock, that it would take a hundred thousand pounds to fit it for business purposes. though from its situation a the very face of the shore all round, it really is the most valuable quarter of the whole town for mercantile purposes.”
Study of the post-piazza concept
Phase 2

3.2.1. Geometry and form.

Starting from the geometry, the site has characteristics that embed the geometrical configurations of the city grid and the wateredge. Although heavily transformed, the relation of the site geometry to the landscape configuration remains apparent. Functioning as a barrier for the visual connection, the bridge transforms the place as it disconnects the views and continuities, though re-establishes a “back” for the site.

The diagonal is the most dominant axes. It penetrates the site as the shortest way to walk through, referring to the city grid as well.

On the other hand the tectonics of the neighboring Opera House has been essential for the evolution of the scheme. A podium, on which the Opera shell is founded was an essential memory for the design evolution. As the Opera house was erected, a first base was created, higher from the sea and ground level, in which garage and auxiliary spaces were located. The building scape created, reminded of a “finding” waiting for the magnificent cell, to cover it. This memory was very strong for Sydney and Australia, as the process of construction lasted for a long time.
Studies of the crystalline structure
3.2.2. The Opera House: A story of adventure.

Jorn Utzon’s 1957 Sydney Opera House is Australia’s one great architectural work of the modern era. Yet the architect who was forced to resign in 1966 has never visited his completed building.

Certainly the subsequent fitting out work, by three local architects, “is an awful mess”\(^{12}\). Eagerly accepting Utzon’s commission, while abandoning his developed designs for the auditoria, glass walls and finishes, this now forgotten partnership want only misinterpreted Utzon’s monumental base with its beautiful tiled vaults. However all is not lost: Jorn Utzon’s masterpiece has outlasted its improves and with extensive refitting now due, there is much popular support for this new work to follow Utzon’s finished design drawings now held in the Sydney’s Mitchell Library.

Utzon’s project would not have been built at all without then Premier J J Cahill’s determination to begin construction immediately, well before the schematic competition designs had been fully documented and his brilliant strategy of appointing Utzon as architect under a specific act of parliament. Utzon’s original design, using monolithic parabolic shells to contain the auditoriums, proved difficult to define architecturally and too heavy as an institute structure. At the suggestion of Leslie Martin and Eero Saarinen, both assessors of the competition, Utzon had agreed to Ove Arup being appointed as structural engineer.

As it happened Utzon designed both the vault geometry and fabrication technique. After several years experimentation he discovered ideas of both mass production and generative architectural design using repetitive but indefinitely variable architectural elements perfected a millennium earlier in China, In Peking, he met Danish sinologists conversant with the Sung building manuals Ying Tsao Fah Shih, and turned his original competitions sketches into a design of simple, repeating components. In this he is, of course, very much of the sixties, when it

\(^{12}\) Information and characterization come from Architecture D’Aujourd’hui.”Australie”. See references for more information.
was still reasonable to believe, along with Prove, in the architectural possibilities of mass production, but parts from his contemporaries with his parallel reflections upon ancient architecture. Using both he was able to make one of those fantastic and all too rare leaps in Architectural conception. Arup himself persuaded his partners of the brilliance Utzon’s new, easily fabricated solution using spherical geometry and a constant radius to produce sequential ribbed vaults upon the already constructed monolithic auditoria platform in Sydney.
Opera House

Daytime view from the Northwest

Nighttime view from the Southeast
Sydney Opera House during Construction.

Completed view
Studies of the crystalline structure
Utzon continued his search for new architectural systems. Glazing was now developed as a series of modular plywood and glass components capable of being hung from any vault so fit, by simply following the existing curvature. Just like, Utzon enthused, the albatross wing in Schulthess’s stop frame photograph, which was subsequently reproduced to accompany Gedion’s famous essay in Zodiac 14. Utzon’s passionate nature analogies in part inherited from Wright, from he had met at Taliesin West- were now strengthened by the Middle Kingdom’s perfection of an architecture constructed with simple mass produced components.

Cladding vaults, using glazed and unglazed Swedish tile, were set upon diagonally gridded chevrons, that in turn echo their precast ribs beneath as a most perfect realization of Utzon’s “civilization of mass production” into Architecture. Using twelve simple precast “tile tids”, Utzon was able to cover his vast assembly without resorting to unpredictable site crafts. By setting whole, glazed tiles surrounded by cut, unglazed tiles Utzon made a pattern of whites, like snow and ice upon his spheroid vaults, that made both their means of constriction legible in the finished building and provided a perfect counterpoint to Sydney’s always dramatic harbourside landscape of water, sun and cloud.

At any time on any day, or night, the tiled vaults on their awesome, platform “the sails” of Jorn Utzon’s Sydney Opera House, heighten one’s perception of just what architecture can be, to an event only matched in our times by his wily mentor’s Breton Hat so tenderly held on the hill above Ronchamp.

Auspiciously, Utzon had spent all his prize on just one Corbu tapestry, never believing that these far away Australians would actually build his design. Except of the ground plan, drawn with cast shadows to emphasize the archaic elegance of the twin auditoria carved into the base platform, Utzon’s competition drawings were deceptively understated and showed a monolithic platform clad in Sydney sandstone, hung in huge horizontal slabs. This platform was, as Utzon explained, inspired by his studies of pre-Columbian sites such as Monte Alban and Sydney
Harbour’s sandstone headlands. By concealing the theater workshops and rehearsal rooms within this device, Utzon was able to dramatically portray the site as a reconstructed headland platform which the visitor ascends to experience an intense spatial liberation that was, he believed, also sought by the ancient Americans on their platforms above the low horizons of the tropical forests.

However Utzon’s new passion for rational mass production prevailed and sandstone, always subject to the vagaries of geological time, was rejected in favor of reconstructed granite panels pegged with bronze lugs to the existing concrete sub structure. In order to utilize his massive folded plate beam through supporting the main staircase, a perfect horizontal, with rainwater being carried away by the beams as gutters. The flatness of Utzon’s platform is certainly astonishing and absolutely modern in its reinterpretation of an archaic idea.

To further dramatize these monumental surfaces Utzon intended to invite Asger Jorn to make what he called “colored objects” to stand in counterpoise thereon, South foyer entrance canopies with their cantilevered folded plate sinusoidal geometry were, as a complement to Jorn’s creation’s, to be covered in circular, highly glazed black tiles, so as to be as Utzon says it so beautifully: “like dolphins rising from the sea surface”. Now covered by an imbecile later adaptation of the horizontal podium slabs, these ravishing forms could now easily be recovered during a program to complete the Sydney Opera House to Utzon’s original designs.

Completed designs for the Major (concert) and minor (opera) Halls show Utzon’s new perception of architecture to have been highly developed by the middle sixties. Before his forced departure in March 1966, all the auditoria acoustic ceilings had been designed, and their mass production technologies perfected. Utzon’s project has inspired the innovative Australian manufacturer Ralph Symonds to develop a new type of plywood, capable of being fabricated in sheets 15 by 2.7 meters and complete with bronze, lead or aluminum laminates if required. Full scale mock ups of prefabricated plywood acoustic ceiling, glass wall and corridor elements were subsequently set up in the Symonds workshops.
Utzon was assuming such specially developed technology would be welcomed by his client authorities, particularly as his acoustic engineer, Joachim Nutsch, had determined by laboratory testing the excellent acoustic performance of Utzon’s large sheet plywood ceilings for the two halls.

Unfortunately, real politics prevailed and Utzon was forced to either modify his now developed designs, thus prejudicing Nutsch, to suit already available plywood sheet sizes or abandon the project. This is really what it came down to: sharing the cake among the local building supply industry, under the transparent disguise of so-called “open” tendering. Utzon’s successful use of specially developed Swedish tiles on the vaults and the inability of Australian producers to match his demanding prototype specifications had regrettably generated bitter opposition in Sydney.

Aware of his predicament Utzon argued for his specially fabricated plywood acoustic ceiling system using structural data prepared for the Symonds by renowned Sydney engineer Peter Miller. This design idea, whereby radial segmental plywood beams are articulated to follow precise acoustic criteria, enabled Utzon to shape his halls entirely within Nutsch’s predicted sound envelopes.

Again the Ying Tsao Fah Shih provided Utzon with a theoretical pattern for his major and minor halls. In place of the inevitably transient embellishment of contemporary auditoria he devised a scheme of radial and concentric color cylinders integral with the acoustic hall profiles.

Utzon explained that the simple repeating color sequences shown in his Sung manuals to signify a particular building type, while still retaining its humble origins (temple and barn are constructed from similarly colored spatial elements) was the ultimate synthesis he so much wanted to make with the two halls. More akin to billowing clouds, which he so frequently sketched to illustrate his idea for the Sydney Opera House Utzon’s auditoria designs are indeed oriental in their fecund magnificence.
Of course entrenched provincialism won the day. A change of government, with new alliances between capital and patronage, now placed Utzon in an untenable position. Short of money, with his client many months in arrears Utzon was forced to close his Sydney office, dismiss his architectural team and leave the country, never to return. Local opposition to his forced resignation without a fair hearing gathered force. Following his impassioned speech to a special meeting of the Royal Australian Institute of Architects at Sydney Town Hall, Utzon witnessed the use of a secret ballot to determine popular support for his return rejected in favor of a show of hands from a thoroughly intimidated audience of salaried architects and their principles.
Phase 3

"Holmes Rolston puts the point thus: "every culture has its place in some natural region, however much that region had been devastated and leveled into a scene of sites. Culture, that last fastness of the collective ego, reconnects, despite itself, with a wild realm of natural places. In order to sustain and renew itself, it must touch base with the wild earth from which it arises." 13

The notion of the "primitive garden" that arose through the creation of roof terraces meant the untouched pure earth that the first settlers found. This memory that originated the culture of Australia that we know today, led to the idea of incorporating the landscape as a major presence in the architectural composition. Inclining the land offered a section that formulated spaces viewing the harbor and protecting from the vivid civic life. On the other hand it created "view decks" and pleasant promenades that were formed around the form of this complex.

What is the point of "creating a new symbol for the Australian Culture"?

In the contradictory demand of the competition to create a "new symbol" on the opposite side of the most well known architectural achievement in the world, the Opera House, the answer was given through the question itself. The use of laminated glass sets the frame for the solution. A glass structure through its transparency would provide a viewpoint for the downtown Sydney and its major monuments such as the Opera House or the suspended bridge. The geometry of the solution should provide a port for the visitors to sail in or out, a protected nevertheless open enclosure, that corresponded to the necessities of a public

13 Going Wild in the Land. pg 263, "wild places", getting back into place, Edward S. Casey.
building and a piece in the puzzle of the urban fabric. The need for further investigation of the “glass” demand was evident at this stage.

3.3.1 “Transparency” and glass structures.

“Transparency” is something more than a simple characteristic of the material. Representing “modernity”, glass through its uses in the Crystal palace or Mies’s pavilions, has radically changed the relation of open and closed, as well as public and private. Transparency, translucidy are qualities that emphasize the distinction between the structural elements and the glass skin. In this sense the structural integrity of the building becomes dominant. The sophistication that the tectonics of glass structure has accomplished, is also evident in Sydney Opera house itself. The glass walls are magnificent examples of the capacities of the glass technology.

Sydney Opera Glass walls

The great Exhibition building of 1851 in Hyde Park, London, later to be known as the Crystal Palace when it was moved to Sydenham the following year, showed for the first time large scale use of prefabricated parts and the emergence of glass as a building element. Built in 17 week, 18392 panes of glass were fixed in one week by 80 men, 108 panes or 367 ft 6 in of glazing being done by one of the glaziers in a single day. This building was the fulfillment of years of development by Joseph Paxton, who had been a builder of glass structures for more than 20 years.

The glass used was blown in cylinders approximately 10 in. in diameter and 49 in. long. Each cylinder was cut to provide three panes 10 in. wide and one thirteenth of an inch thick. By this method, chance Bros made 63,800 panes in the last fortnight of January 1851. In all, a glass area of 900,000 sq.ft. was covered. This was increased by a further 750,000 sq.ft. when the building was moved.

Paxton, always concerned with the structural use of glass, patented the ridge and furrow principle of glazing, a structural system that grew out of a functional need for getting the maximum amount of benefit from the sun in his earlier conservatory buildings. This principle was also used to great extent in other glass

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14 Sydney Opera Glass walls, Ove Arup’s publication was an essential reference for this part of the thesis.
structures such as railway stations. Among these Paxton’s proposed, but unbuilt, Great Victorian Way 1865, described as a “Grand Girdle Railway and Boulevard Under Glass”, 11 and a half miles long encircling metropolitan London. These ideas for line structures clad in a skin of glass would certainly have appealed to later architects such as Walter Gropius and Mies van der Rohe. For it was Mies who found, in glass, principles that impose new solutions, and who produced in 1920 projects for glass skyscrapers. Joern Utzon also recognized the possibilities of the use of glass. The Sydney Opera House is a both building and controversy. The structural design investigations into the glass walls were commenced in 1961. The Architect’s requirements were as follows: The glass walls throughout the Opera House are to be read as one family; that is, similar structural layouts are to be adopted in all cases.

2. The structure shall be as “clean” as possible. Additional bracing structure over and above that required for carrying the glass shall be kept to a minimum, if not eliminated.

3. The concept of continuous thin mullion fins must be maintained throughout the glass wall structure including the roof.

4. Below the roof there should be as little visual obstruction as possible.

5. The density of the glass walling and of the acoustic ceiling within are interdependent. Together they must provide adequate sound insulation against external noise for the interior of the auditoria.

6. The mullion frames should, as far as possible, be constructed of a series of constant-section units, jointed together to make a continuously varying shape across the width of the glass.

Numerous structural schemes employing different materials were considered, including the use of glass structural members to resist vertical and lateral loads at the bottom connection of the glass walls to the podium. Since the mullions were to be externally exposed to a large degree, light materials with high resistance to corrosion were considered. The choice eventually lay between aluminum and laminated timber beams. The engineers favored the use of laminated timber.
Sydney Opera glass walls. (Constructed version)
In the case of the visitors' center, the folding of the transparent layered skin reforms the relation of inside and outside, reversing the question of symbolic presence to that of apprehensive observance.

Crystals were a major influence in the design process as a structural grid and aesthetic expression. Their structural dynamism and natural simplicity was an important reference for the formation of the tectonics of the building's composition. Linear displacements of prismatic shapes formed the "wire frames" of the solution. Intersecting folded geometries derived from this series of displacements, accommodated important circulation crossroads and programmatic. Nevertheless the "glass skin" was a field open for more exploration. As Jean Nouvel states in the following manifestation, "glass, light and transparency enable you to play on the senses amidst a scenography." This scenography is to be seen in the following sequence of images and text.

3.3.2 Jean Nouvel and ideologies related to light, glass structures, and the form of architecture.

"Our age might well be the age of enlightenment. It discovered electricity and it also hailed in fantastic inventions, notably in the field of glazed products. Low and behold, matter and light, and the ways of treating transitions between interior and exterior can be approached in a radically new way. Electric light has overshot its role as a substitute for natural light and now diffuses signs and messages in advertising and television, with the entire range of communication and information techniques. Hail the vocabulary revolution. But the paradox is that modern Architecture remains rooted in a classical perception of light: one that wants shadow, preferably set at 45. I am amused to note that whenever our perception of the city at night is infused by a new poetry, sensibilities evolve because of this new perception."
"We have to pay attention to the cultural, technical and emotional world of our age. We are constantly fed by imagery from cinema, theater, shows, and television. In nights sports and show places indescribable sensations blend and weave: we should let them impregnate us. They belong to a substratum that is our own: it would be absurd to let it away or have nothing to do with it. If the history of the Architecture is not summed up in the preceding paragraphs, it is precisely because the cultural, technical and emotional potential of any age is subject to change.

Imagination is intimately linked to our information system and there in lies our modernity. This does not mean that our work is simply a matter of transcribing images and sensations as perceived or experienced in our contemporary state. Nowadays we have to think out a building for day and night, in sunlight, fog and rain ask ourselves how it react visually in terms of reflections, backlighting and material, and not simply in terms of pure spatiality in the geometric sense. What is more, we are bound to design buildings whose image will be a factor working for identity and promotion, and because of this we have to employ expressive means, some of which are complex."

"Transparency makes me laugh at least it does when I hear the term bandied here and there. For my part, I 've never been concerned with designing a glass skin that simply shows what's inside, a cellophane rapper that allows the eye to pass through. Transparency is more a phenomenon that enables inclusion, in other words reading in depth. The real question is to know what you're going to put behind the glazing. Glass, light and transparency enable you to play on the senses amidst a scenography, to use unexpected technical and cultural material, to reinject into architecture the substratum that carries us."
Study Models of the composition
It is not just space alone that qualifies architecture.
Dimensions and form are not the only things that enable the perception of a place. There is also the manner in which space is lit, and also the way in which the walls is qualified. Space in the geometric sense is a parameter that is losing speed. A parallelepiped can just as well be a masterpiece as a superflop. Traditionally proportions, links and the expression of structure induce a reading of space. This is no longer enough. Our age has raised the question of the two-dimensional. Just because something happens on one plane does not mean that it isn’t architectural or spatial. If it is far enough away thanks to light, whatever is perceived in our plane can give the same impressions in two dimensions as it would in three. The play of filters, plate glass, sifters, screen printing and colors can completely transform the nature of a given space. These effects are a far cry from the neoclassical attitude.

Nouvel’s buildings are known to us for their innovation and experimentation, their daring simplicity meanwhile with a deep sophistication. Some of them such as the Opera de Lyon, the Cartier building in Paris, l’ Institute du monde Arabe, have been major stations in the postmodern period of Architecture. Setting new rules in the ways they treat materials, light and the urban context, they’ve been a leading realized manifest of the recent architectural era.

Referring to the crystalline structures’ tectonics and architecture, the geometry the freedom and linearity of natural crystals. Folding the “transparent” skin, gives spaces that depending on the program, either emphasize the importance of the views and programmatic uses of the interior, or focus on the presence of the exterior monuments.

“Folding” prismatic structures are evolved in order to elaborate the expression of the program and relate to the complexity and “artificiality” of the surroundings. In
that sense the building-structure is left as a crystalline observatory of the surroundings. The city and its complex everyday changes, reflect best the “fluidity” and nonstop Australian culture and Sydney’s urban life. Looking at it, is then the most important stage between uncovering the past and discovering the future.

As far as the program is concerned, there is an effort to overlay the functional demands, in a circulation spine of loops that give the chance of experiencing the entity of the complex. The loops are forcing the “passenger” to see through the glazed walls and roofs, to all possible directions. To do so artificial “canyons” are created, where light comes from above, through the prismatic skylights. Steel and wooden frames in their least possible presence, are structuring the spine of the prisms, relating on the same time to naval architecture.

**Phase 4**

3.4.1 The concepts derived from the process.

In respect to the program’s demands for cultural activities and exhibition spaces, the building is layered accordingly along the three sides of the site, shaping a public piazza and a marina, forming loops of experiences in the interior. The design expression follows three basic principles / concepts.
Visitors' center in Sydney Australia
From the bridge.
Concept 1. Urban Context, Views, references to the neighboring historical sites. Open public space.

Relation to the Urban context. It was essential for the building as a part of the city organism, to engage the extended civic functions of the site. In that respect a civic piazza is created, as the entrance court of the complex and a continuation of the promenade along the water front. This piazza hosts the open space of one of the restaurants, as well as the marina for the small boats. The piazza is an open exhibition space and hosts live performances. The entrance to the building is either through the piazza or the civic park hosted on the terrace of the complex. In order to relate the piazza and the building’s parts to the surroundings, the scheme of the building engages the shape of a small port in a concave manner. The cove frames the views and refers on one hand to the past condition of the site and on the other to the geometry of the viewpoints and pedestrian circulation patterns. The bridge and the Sydney Opera House function as the most important structural as well as visual references of the building.
Concept 2: "Land" scaping and "building" scaping.

The incorporation of the landscape, and the natural element to the building program was also a major goal for the design solution. The composition, following the decision of the city council, maintains the zone along the waterfront as a green recreational space, and preserves the row of storage buildings as an Australian historic neighborhood. In section the building’s effort is to incorporate a discrete presence towards the historical neighboring structures, and relate to the layer of the water and the Park under the bridge. Towards this goal, the terraces of the building form an inclined continuation of the green spaces neighboring to the site. The variation of vegetation is also referred to the neighboring condition. Closer to the park and under the bridge, the existing trees are maintained, whereas other qualities of vegetation are found on the other sides of the complex, such as desert vegetation and waterlands’ vegetation. The park can be experienced either on the way to enter the building, or on a promenade along the waterfront. The glass front of the building functions as the transparent transition zone between the water element, that riches the inside of the building, and the sky.
Concept 3: Crystalline prisms.

The Glass was an essential element for the architectural expression of the building and the formulation of the previous two major concepts. The idea was to create a “crystalline” park, that gives access to the building. The Glass walls and skylights operate as generators of geometric shapes with references to the crystal prisms found in nature. Prisms that emphasize directions in views and refer to the programmatic needs of the building, such as the entrance points, or the gallery spaces. The DuPont laminated glass with tinted and PVB interlayer offers the opportunity to control the heat gain, and the UV rays from overheating or destroying the interior. The strength and stability of DuPont laminated Glass offers the chance to use it as a floor element at the Crystalline mezzanine of the orientation area and gallery space. The DuPont Glass is also used for the Green house created (on top of the auditoriums) to celebrate the presence of the Park on the terrace of the building. The frame that holds the glass is a steel and cable system that responds to the basic needs for support of the structure. Wooden Shading elements are also in the interior of the building facades that face the east and west.
**Energy and environment issues.**

The building complex is formed from the glass crystalline structure and the “gardens’ retaining walls”. The crystalline forms function both as skylight sources and energy collectors. As the sun rises from the north, the “garden” protects the interior of the building, and especially the exhibition areas. In order to protect the interior from the west and east sun exposure, a shading “curtain” structure is formed in the inside part of the building facing these orientations. Wooded panels as seen in the diagrams are the vertical elements to pursue this function. Laminated glass offers the chance of controlling the heat in the inside of the building. Nevertheless the “chimney effect” that appears because of the extend of the glass structure, is responded by the use of specially controlled ventilation openings on the vertical sides of the prismatic skylights. The green house that is created above the auditoria, relates to the effects of the “passive solar” condition, forming a continuation of the “garden” on the inside of the building.
Energy and environment control diagrams
The extended view of the glass shows a detail that can move at either end of the glass rod. The glass is maintained in place should movement cause the glass to lose tension. Rods, that support the glass are held together by stainless steel rods just 1/4 in. in diameter.
Glass structure details.
Reflections

Designing a building complex for visitors of a continent, was a “boomerang” challenge. On the one hand the identification of the multicolorfull culture of Australia was a challenge for transmitting specific continental cultural connotations in the design idea. On the other, the significant location of the site, necessitated a strategy, that corresponded to the civic environment and restricted the possiblities for Architectural expressionisms. The answer given was a design exploration of the problem, in correspondence to a theoretical investigation that reveals unknown sites of the “place”. “Design is the “missile” thrown to hit the target”, as in the case of a Boomerang. Did it hit the target?

The effort through the design process was to explore issues that relate to architecture as a vehicle for approaching and introducing a “place”. Design here was not only a means of “representing”, it was a geometric process of identifying urban and architectural issues, related to the problem of “understanding a place.”

The context of a “place”, such as that of the Australian continent was the ground for exploring Architectural design capacities. These capacities permitted the design object to evolve parallel to the research stories and in close association with the semantical tree that corresponded each design step to a theoretical point.

The importance of the context of the place, was crucial for the evolvement of the design object.

“Transparency”, as a demand set by the competition, was a mechanism to understand and qualify geometrical attributes in the design process but also redefining the process as well. “Transparency” was the attribute of Architectural design process to perform design as an Urban, Landscape, and Building exploration. The process of exploration was expanded all through the scales from the cityscale, to construction detailing. The design composition, strives to be a civic object more than a building, in the sense that it formulated a design response to the context of the city through the layout of the program.

It was an instance of the exploratory journey in the, vast, world of design, a manifest of authentic interpretations, about architectural synthesis in the contemporary metropolis.
Study models
Bibliography, References


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Images and plans

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