

# Design process: transfer and transformation

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## ABSTRACT

This paper is drawn from research into the learning process provided by a design studio exercise where students are asked to design an extension for an iconic modernist building in Brazil. The design problem becomes an exercise in appropriate contextual response, not just to the specific site location, and local culture, but also to the architectural language and function of an existing modernist building.

The Modern movement saw in Brazil not just the rising of a talented group of young architects, committed to the design and aesthetics of the new movement, but also the development of a distinctive and unique architectural language. From the 1920s onwards the possibility for the legitimacy of any architectural work appeared to be found in the scope of the object and its specific situation, and no longer in some previous classical order. This is evidence, in the case of Brazil, of the importance attributed to the locality in pre-Brasília architecture and on the healthy relationship between form and technique.

Since 2007, the *Brazil Studio* design course at the Department of Architecture at Unitec New Zealand, has challenged students with ideas of adaptation, transformation, and appropriate responses to strong existing contexts. This paper investigates the learning process of transfer of knowledge through the analysis and transformation of a modernist masterpiece.

## INTRODUCTION

The design studio “Brazil Studio: A Cultural Connexion” was run each year from 2007-2009 as a 'vertical studio' of six weeks open to students in their third or fourth year of studies. Class sizes were limited to 20 students working in pairs with two design tutors. The project proposed the addition of a New Zealand Annex to existing art museums in three different Brazilian cities;

*“As part of a cultural exchange, and an economic agreement between the two countries, the Annex is to be a substantial structure designed to house a permanent New Zealand art collection, temporary exhibitions from the Asia-Pacific Region (art, architecture and design), studio spaces for workshops, a library/archive, a lecture theatre and services. In addition to the design of the Annex students also selected the art and its mode of display.”<sup>i</sup>*

The three buildings selected are chosen for their relevance to the genesis of Brazilian modernism, and the strong formal and cultural context they offer. All are currently being considered for extension or renovation programmes, as modern needs surpass the original design brief. The concept of a New Zealand art annex was used as a vehicle for students to begin design through analysis of both New Zealand and Brazilian cultural identity.

## I. PARADIGM SHIFT

The first decade of the 21<sup>st</sup> Century marks a paradigm shift for the human race: for the first time ever the world's urban population will surpass the rural population. By 2050, 69 percent of the world's population will be experiencing this urban phenomenon<sup>ii</sup>. The increase in population and building density, the growing demand for industrial and residential sites, the increasing scale of activity and the extension of the infrastructure required to support these new conditions all increase demands on the available space. Inevitably, as cities reach their physical expansion limits – especially as the standard-of-living the city desires is taken into account – and the available urban space is consumed, increasing pressure is placed on existing structures in and around the city fringe.

### A. Building Adaptation

In response to these demands the adaptive reuse or retrofitting of existing buildings is a logical and sustainable response. Increasingly, buildings are being renovated, upgraded, redeveloped and even recycled to adapt their old DNA to new programmes or new technologies. In some cases the adapted buildings are rich and iconic in their own right (Foster's refurbishment of the Reichstag in Berlin), while in others the new architecture rejuvenates an underused building, such as with Herzog & De Meuron's nuanced reanimation of the Bankside power station to create the renowned Tate Modern. Like a contemporary cover version of a classic song, reuse can reinterpret a building and give it new relevance and meaning.

## B. Museum Transformation

The latter part of the 20<sup>th</sup> Century saw a rapid shift in museum design away from the traditionally object-based galleries and exhibits to a more interactive, immersive and experiential 'attraction' (Mark and Szeemann 1999:7). Museums are pressured to align themselves with popular culture to be an experience, in competition not only with other museums but with all forms of entertainment. The challenge for architecture is to design museums, "that are neither dormitories nor entertainment centres, but instead laboratories for sensory appreciation and unrelenting rational, critical reflection" (Naredi-Rainer 2004:18).

## C. Cultural Translation

20<sup>th</sup> Century Brazilian architecture developed as a result of a complex cultural process, and Brazilian architects were essential contributors to the development of a unique and modern architectural language. The search for a national identity and the concept of artistic modernisation were evident amongst the artists and intellectuals who organised and took part in the Anthropophagic Movement (1922 São Paulo's Modern Art Week). The "Anthropophagics" (cannibalists) would "eat" all influences, digest, and throw out new things, freely creating their own art from the regurgitations of what they had taken from home and abroad.

The work of architects such as Oscar Niemeyer, Eduardo Alffonso Reidy and Lina Bo Bardi continued the explorations begun in 1920' and 1930s. Their work reflected the structural virtuosity of concrete, but beyond merely *béton brut*, these architects were able to use the material in ways that gave experimental dignity and ethics to their projects.

In Pevsner's 1961 address to the RIBA he described Niemeyer's buildings in the Pampulha district of Belo Horizonte – a casino, yacht club, dance hall, and chapel, all opened in 1942 – as having a provocative character with respect to the ruling values of postwar modernism.

*"...These are the earliest buildings that are emphatically no longer of the so-called International Style, and they are buildings that have force, that have power, that have a great deal of originality, but that are, emphatically, antirational."*  
(Pevsner 1961:230-40)

## II. STUDIO BRIEF

The Brazil Studio asked students to design an extension for an iconic modernist museum in Brazil. The design problem becomes an exercise in appropriate contextual response, not just to the specific site location, and local culture, but also to the architectural language and function of an existing modernist building.

The three museums selected were:

### A. 2007 Brazil Studio [1]

An extension to the Museu de Arte de São Paulo (MASP) located on Paulista Avenue in the centre of São Paulo city. Designed by Lina Bo Bardi and completed in

1968, this building is raised above the ground on four pillars, creating a 74m clear span beneath, responding to the land donor's condition that the view of the city be preserved. The building forms the urban boundary to the north of Trianon Parque, and the plaza created beneath the building enjoys a panoramic view over the old centre of São Paulo to the north-east (Fig. 1).



Fig. 1. Museu de Arte de São Paulo (MASP)  
(Source: Wikipedia Commons. Author: Fernando Dall'Acqua)

### B. 2008 Brazil Studio [2]

An extension to the Museu de Arte Moderna (MAM) Pampulha Complex, Belo Horizonte, Minas Gerais. Designed by Oscar Niemeyer in 1942 and originally conceived as a casino, this complex is considered by many to be his masterpiece, and a prototype for the design of the new capital, Brasília. As a building already subjected to one change of use, it was presented as a precedent for adaptation and reuse (Fig. 2).

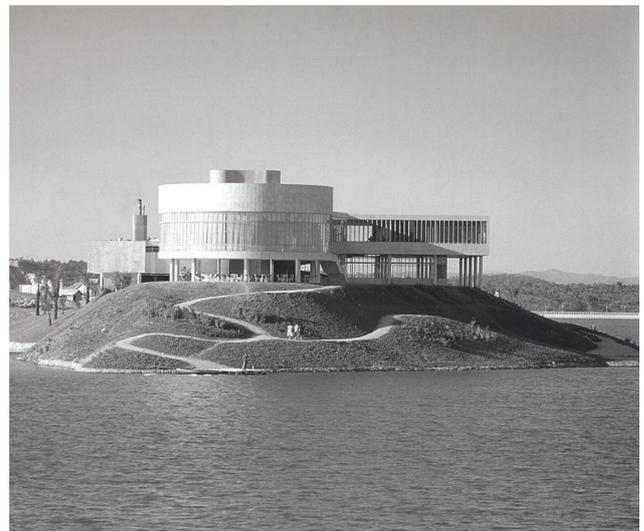


Fig. 2. Museu de Arte Moderna (MAM), Pampulha Complex.  
(Source: *Brazil's Modern Architecture*, Ed. Elisabetta Andreoli, Adrian Forty. Phaidon Press, London.)

### C. 2009 Brazil Studio [3]

An extension to the Museu de Arte Moderna (MAM) Rio de Janeiro, Flamengo Park. Designed by Affonso Reidy and completed in 1958 the building is suspended within concrete portal frames raising it five metres above

ground level to maintain views south from the city to Guanabara Bay. Part of a complex of three buildings, it sits at the north end of Flamengo Park surrounded by gardens planned by Burle Marx (Fig. 3).



Fig. 3. (MAM) Rio de Janeiro.  
(Source: Wikipedia Commons. Author: Imagens AMB)

### III. TEACHING PROGRAMME

The six week paper was broken into three separate exercises. The first was a one week long research component. Split into three groups the class completed the following tasks;

- Preparation of site and building plans, elevations and sections.
- Research of the site and city, and the construction of a 1:1000 scale model for design proposals.
- Research of three precedents of museum extensions, covering both international and local examples.

#### A. Exercise 1 - Research

In addition to familiarising students with the selected building and its locale, this first exercise exposed students to the strategies used when assembling a site and the architectural/tectonic components used when designing the building. The research also identified architectural qualities such as structural logic, planning, texture and materiality that were representative of Brazilian design culture at the time of construction.

Suggested precedents included Steven Holl's Nelson-Atkins Art Museum in Kansas City, Missouri, Rafael Moneo's extension to the Prado Museum in Madrid, Spain, and Daniel Libeskind's Jewish Museum in Berlin, Germany. Precedent studies were used to explain contemporary approaches to museum design, the aforementioned change taking place in the design of museums and galleries, and the phenomenon of a building's inability to evolve as the conventions of its programme changes.

The outcomes of the first exercise were presented to the rest of the class for discussion.

#### B. Exercise 2 – Art Collection 'Curation'

From week two students formed pairs for the rest of the paper. Their second exercise was to select a collection of New Zealand art for exhibition in the proposed annex. Students were to curate their 'collections' in a coherent way, beginning by identifying common salient features. The goal of both exercises was to assemble a body of information, specifically related to cultural identity and derived from the artistic and architectural expression of the two cultures. This background research was then used as a generator for concept design.

#### C. Exercise 3 – Design

The remainder of the paper was formatted around 'desk crits' with students meeting twice weekly with tutors to discuss progress. An interim crit was held at week four with all students participating.

Concept design work was built on two lines of investigation; site planning and the relationship of the proposed annex to the existing building, and analysis of graphic/architectural forms and motifs from exercises one and two. Students often began by directly imitating elements from their collections. This was discouraged in favour of further abstraction, often by moving from drawing into model making, or undertaking analysis of architectural qualities (tectonic assembly, materiality etc.) rather than graphic sources. Numerous projects developed a narrative, using a journey through the building to arrange the programme. These schemes were particularly revealing, identifying commonalities between Brazil and New Zealand that related to their shared experiences of colonialism and its effect on tribal peoples.

### IV. PROPOSALS

In July 2009, an exhibition was held at Unitec Department of Architecture showing work from Brazil Studio 2007-2009. This coincided with the *Latin American Architecture & Cities Workshop*, also hosted at Unitec and featuring Professor Roberto Segre (Professor of Architecture & Urbanism at the Federal University of Rio de Janeiro) as guest speaker (Fig. 4).



Fig. 4. Brazil Studio exhibition opening, 18 July 2009.

The exhibition presented the studios as a complete body of work – a trilogy, enabling comparison of approaches and methodologies from the years 2007-2009.

Here we present one example from each year:

*A. Brazil Studio [1], São Paulo 2007 (students Clinton Weaver & Wilhelm Schaafhausen)*

This project identified qualities in the existing MASP building, and proposed a similarly massed building sited directly opposite in Trianon Parque. Clad in timber, the proposed Annex spoke of traditional New Zealand construction, balancing the signature Brazilian *béton brut* detailing opposite. The success of this approach lay not only in complementing the existing building, but strengthening key elements of its design; particularly its gravity-defying form and the framed view over the city from the park (Fig. 5-6).

*“...to capture the elemental essence of lightness and weight, of passage and stillness, and translate this into a tectonic architectural experience. To recognise the MASP building in mass and proportion, and to capture, frame and enhance the connection through from Trianon Park.”*

Clinton Weaver & Wilhelm Schaafhausen



Fig. 5. Paulista Avenue, with Trianon Parque at right.



Fig. 6. View from Trianon Parque, Paulista Avenue beyond.

*B. Brazil Studio [2], Pampulha 2008 (Rachel Dawkins & Charlotte Brennan)*

This project responded to the existing building as a result of volumetric analysis and deconstruction. The

addition matches the exact size and proportion of the former gambling room, but is rotated 90 degrees to create a vertical element balancing the strong horizontals in Niemeyer's building (Fig. 7-8).

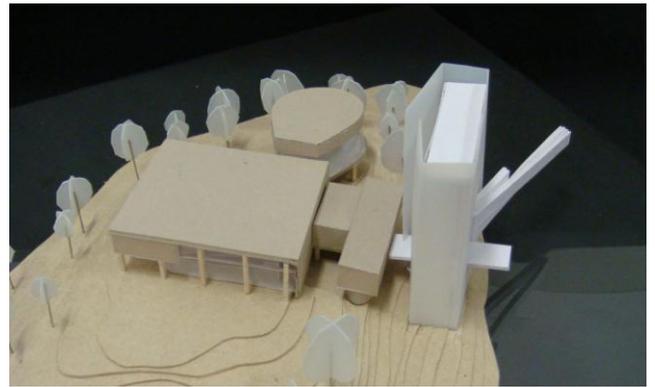


Fig. 7. Aerial view, proposed art annex at right.

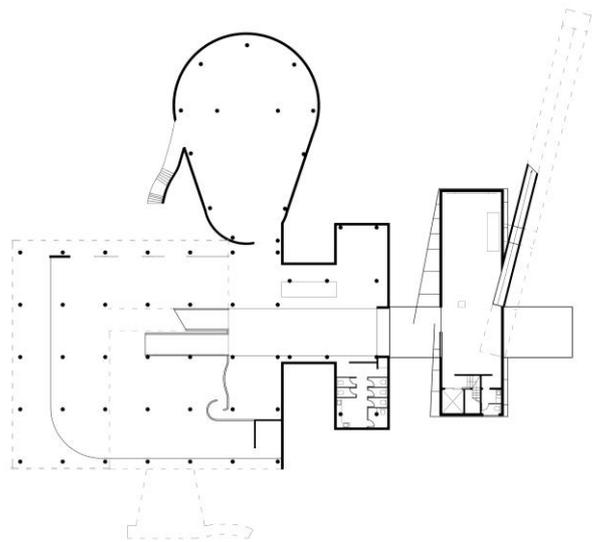


Fig. 8. Ground floor plan with the proposed annex at right.

This parti required an entirely different circulation strategy for the new building. The project answered this by inverting Niemeyer's approach; the internal ramp of the gambling hall – a gesture typical of Brazilian Modernism – is exposed on the exterior of the new building, evoking the bold forms of Bo Bardi's Sesc Pompeia and Niemeyer's Ibirapuera Park.

*C. Brazil Studio [3], Rio de Janeiro 2009 (John Talivaa & Martin Leung-Wai)*

This project exemplifies the narrative approach to site assembly. The concept of 'journey' was explored, discussing migration and colonialism in a Pacific context. The scribing of this metaphor onto the site was a guiding principle as the design evolved (Fig 9).



Fig. 9. Early site analysis model.

The early site model explored a number of different routes across and through the site. An entry axis started at the pedestrian overbridge – linking the historic city centre with Flamengo Park – slowly descends below ground to run directly under the entry to MAM, and continues into the proposed Annex. The axis terminates beneath a raised timber element representing a Waka (traditional Maori canoe), gesturing to Guanabara Bay.



Fig. 10. Aerial view looking north, Annex addition in foreground.

## V. FINDINGS

Design studio is the central focus of the architectural curriculum, and the most appropriate forum in which to conduct design education research. Over the last three years 62 students have participated in the Brazil Studio, in increasing numbers each year. Discussions with students at the end of each studio provided informal feedback to shape the studio for each following year, and a formal interview was conducted in May 2010 with participants

from 2008-2009. Four questions were prepared with a view to assess whether the objectives of the Brazil Studio were met. In particular these were issues of adaptation, responses to context, and transfer of knowledge. The questions were;

- 1) Why did you participate in the Brazil Studio project?
- 2) How did your knowledge and appreciation of Brazilian and New Zealand culture develop as a result of this project?
- 3) Was your architectural ideology or design process influenced as a result of this paper, and if so, how?
- 4) Describe your design responses in terms of their site and cultural specificity.

Responses to the first question explained the increasing numbers taking the studio each year. Many students gained an interest in Brazilian Modernism as a result of Unitec's study trip of Brazil in 2005, and the elective lecture course (Arch6701: Tropical Modernism) offered annually since. This relatively new elective course increased interest in the Brazilian Modernism, feeding the popularity of the companion studio project. Specifically, students were attracted to the strength of the existing architectural gestures and the challenges that designing an addition presented:

*"I wanted to see what I could do with such a powerful building... it's quite difficult to give your input, and not take over this kind of building."*

2009 student Rizqa Samaai

For 2008 student Rachel Dawkins, the paper stood out because of, *"...the way that it was actually making you think about what New Zealand architecture is."*

This was an expected outcome suggesting the studio format is successful at clearly articulating the design challenges of cultural connection and identity, and also symbiotically supporting the material introduced by the Tropical Modernism elective.

From further discussion, three key areas emerged, which can be summarised as:

### A. Art Collection 'Curation'

The research exercise of 'curating' a collection of New Zealand artwork had varying success as a 'generator of concept design', but was influential in other ways. It was seen by all students as relevant in some form; generating graphic references into the language of the building, creating an understanding of the perception of New Zealand culture outside New Zealand, or simply setting physical parameters to spaces to display specific works of art. In the case of the latter, this steered students away from preconceived 'generic' museum formats, to spaces designed specifically for their chosen works of art.

*“You had to think, within your project, how you wanted New Zealand and New Zealand culture to be represented.”*

2008 student Rachel Dawkins

Those students who felt the exercise did not significantly influence their schemes, still agreed with its goals but suggested cultural identity could also be explored in a more directed fashion, perhaps comparing the two countries across similar periods of art, music, history or architecture. The studio course usually began with two short lectures on Brazilian modernism and the architecture of the selected building. These could be expanded in future to address these suggestions in a more directed way.

### *B. Pair Work*

Students unanimously agreed their experiences of pair work were the most valuable aspect of the paper. This was the first time they had worked in this way during their degree. Unitec architecture students represent a broad spectrum of nationalities and cultural backgrounds, and as a result there were many international pairings; indeed in some pairs neither partner was of New Zealand origin. The curation exercise was seen by these groups as an effective way to develop a common starting point from which to begin the exercise. For cross-cultural pairs there was thoughtful reflection on cultural identity, while all groups - regardless of origin - found the pair format encouraged higher levels of accomplishment. This was due to the need to negotiate scheme outcomes with a partner. Students observed strong parallels between the cross-cultural objective of the design studio, and the similar development of their design ideology as pairs.

### *C. The Building*

The 'strength' of the existing Brazilian buildings generated clear design responses from students. Students commented that when their conceptual thinking was encouraged away from purely formal or visual directions, they were forced to examine other properties to which they could respond:

*“With Brazil [Studio] we really took note of how the movement was, the circulation, the levels, the views, the light; and we took what the intentions were of that building and tried to still honour them, while creating something that would complement it.”*

2008 student Rachel Dawkins

Some pairs responded to the site context with gestures equally as assertive as the existing buildings; grafting and interpenetrating to join the new and old - but the majority chose to site their projects away from the existing building, responding with varying degrees of opposition; to height, to spatial arrangement and to massing.

*“...you learn to just see what your architecture is doing to the surroundings... It was such a close relationship: our buildings were practically one. You learn to have your own standing, have your own architecture that talks for itself; but respects what you're working with.”*

2009 student Rizqa Samaai

## VI. CONCLUSIONS

The group format conformed to our expectations as a successful method for students to better interrogate and resolve their proposals, and aligns with previous research. The 'first layer' of discussion that pair or group work allows encourages debate much earlier than when working individually.

Projects such as the Brazil Studio are used to develop three core skills in our students. First, by working in an imitative fashion on acknowledged masterworks a knowledge transfer occurs, with students improving their abilities in spatial composition and planning. Second, their design responses to these buildings recognise the transformation such institutional buildings face. Lastly, the notion of identity in architecture is cultivated. As buildings evolve, the dilemma of how to adapt a building without eroding its iconography is explored.

## ACKNOWLEDGMENTS

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## ENDNOTES

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- <sup>ii</sup> Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2006 Revision and World Urbanization Prospects: The 2007 Revision, <http://esa.un.org/unup>, Monday, October 12, 2009; 7:41:01 AM.