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Adjoint to Sydney’s CBD, Royal Botanic Gardens and Art Gallery of New South Wales, the Domain car park is a 3 level building inlaid in the terrain - with its ground level at the intersection corner of St Marys Road and Sir John Young Crescent, and with its roof level receiving the Domain Pitches.

Under the frame of Postproduction and Rethinking the Architecture Museum for the 21st Century based on the site at Domain Car Park, the research and design will be introduced in the following themes:

- Expressive structure in postproduction and enriched museum experience
- Architecture museum promoting experience economy
- Landscaping design and re-access Domain Pitches
Chapter One
Nicolas Bourriaud's Postproduction Theory

Nicolas Bourriaud in his art theoretical book Postproduction states:

“The artistic question is no longer what we can make as new, but how can we make do with what we have.”

The theoretical frame he established for artworks also applies to the field of architecture when transforming and adapting an existing building. Practically, considering sustainability in reconstruction, this can be interpreted by analysis of existing structural features for the sake of transformable architectural quality, such as form and experience.

Footnote:


Expressive Structure in Postproduction and Enriched Museum Experience |
**Existing Structural Features - Form**

The part has the most interesting architectural quality of the existing Domain Car Park is the external ramp on the eastern facade side.

There are generally three types of columns that form an inspiring archway, but currently undervalued and hidden behind fences for the use of storage.

The rationality of force distribution, the order of column placement and the sequential column geometry for bending moment bearing, established the “appropriation” in this research – which in Bourriaud’s opinion, the first step of postproduction.³
Expressive Structure in Postproduction and Enriched Museum Experience

Existing Structural Features - Experience

The diagrams illustrate an illusion perceived when investigating the different types of columns underneath the ramp of the Domain Car Park.

Standing close to the underneath of the archway, from a certain perspective, it’s hard to tell the ceiling height is actually dropping.

This illusional architectural experience provided by existing structural features is also valuable to the first step of postproduction - “appropriation”⁴, since it gives a starting point to design a playful spatial experience for architecture museum potentially by expressive engineering elements.

Footnote:
4. Ibid.
Accelerated Perspective Illusion Caused by Column Series Type Two

Elevation

Perspective

Accelerated Perspective Illusion Caused by Column Series Type Three

Elevation

Perspective
Bourriaud’s "Remix" in Greenberg’s View

Postproduction in this research and proposed design is not limited to recycling and repurposing existing structural elements, but more importantly, using existing structural features as an inspiration bank, where ideas could constantly be drawn from, to make the iterations for the “remix” – in Bourriaud’s word - based on existing.⁵

Architect Allan Greenberg, with his text and work presented on the First International Architecture Exhibition of the Venice Biennale in 1980, gives an idea of how to make iterations for the “remix” based on existing, that is looking into the past architectural tradition.

“...Structures that undergo constant changes with changing circumstances in society provides a series of expressive and functional solutions to architectural problems...A building should complement rather than contrast the pre-existing architectural tradition. The legacy of the past challenges us to create the architecture of our own time.”⁶

Footnote:
5. Bourriaud, Postproduction,17-34.
7. Ibid.
Allen Greenberg's drawing for the exhibition "La Via Novissima"

Image Source
Pre-existing Architectural Tradition from
Palazzo Spada Gallery

According to Greenberg’s view, the following research dates back to the “pre-existing architectural tradition in the past” of the observed structural features in the existing Domain Car Park that has architectural quality for a transformation. The intention is to initiate an answer to the question of how to make iterations for the “remix” based on existing structural features in terms of form and experience.

The image is an accelerated perspective, also known as forced perspective illusion, created by Francesco Borromini for the Palazzo Spada Gallery in Rome.

In an 8.60 meters long narrow space, the architect managed to give the perception of a corridor about 40 meters long. The frontal arch, 6 meters high and 3 meters wide, is reduced in the end to a height of 2 meters and a width of 1 meter.9

The statue at the end is about 0.8 meters tall, but the observer under the frontal arch will receive an illusion of a real person's height.10

Footnote:
8. Ibid.
10. Ibid.
11. Ibid.
Accelerated Perspective by Francesco Borromini, Palazzo Spada gallery in Rome
Image Source Online"
Expressive Structure in Postproduction and Enriched Museum Experience |

**Rules behind the Illusion of Accelerated Perspective**

As one type of the “pre-existing architectural tradition in the past”\(^{12}\), the proportion of form and the consequential illusional experience in Palazzo Spada Gallery relates well to the observed structural features in the existing Domain Car Park.

The following diagrams reveal the formation of accelerated perspective illusions in Palazzo Spada Gallery.

Using the techniques of tilting the floor, contracting the angles between the elevations and reducing ceiling height simultaneously, a longer perspective view is achieved.

The grey space is what has been physically built in Palazzo Spada Gallery, while the red space is what people will perceive because of the visual tricks.

Along the journey, a series of changing illusional spaces will be perceived. The illusion will gradually morph into the real space until the viewer reaches the end of the corridor, where the illusion collapses into reality.

Footnote:

Formation of Accelerated Perspective Illusions in Palazzo Spada Gallery at V1
Expressive Structure in Postproduction and Enriched Museum Experience

Formation of Accelerated Perspective Illusions in Palazzo Spada Gallery at V2
Formation of Accelerated Perspective Illusions in Palazzo Spada Gallery at V3
Expressive Structure in Postproduction and Enriched Museum Experience

Formation of Accelerated Perspective Illusions in Palazzo Spada Gallery at V4
Superposition Map of the Illusional Journey in Palazzo Spada Gallery
Having analyzed the formation and basic rules of accelerated perspective illusions, from which inspirations were drawn to make, in Bourriaud’s words, the “Remix”.

A series of siteless prototype models were built to discuss different ways of illusion collapsing into reality, and thus different illusional architectural experience along the journey.

All the models in this series are constructed by a smooth mixture of both accelerated perspective and normal perspective views. With the special gauge ruler designed, a perfect illusional moment is obtained by looking through the peephole when the gauge ruler is placed right next to the model. By sliding the model along the gauge ruler towards one’s eye at the peephole, the illusional journey of walking through the built space is simulated.
Photos of the Observation in Siteless Prototype Model One
Siteless Prototype Model One explores a front and back relationship. The front is an accelerated perspective that projects one’s view to the back of space where there is no perspective acceleration.

The viewer will perceive an illusional continuous space at the start of the journey, but gradually realise a hidden space, the discontinuity, once walking in.
Formation of Accelerated Perspective Illusions in Siteless Prototype Model One
Making “Remix” – Siteless Prototype Model Two

Siteless Prototype Model Two explores a left and right relationship. The left is an accelerated perspective that is equivalent to the right which is the normal perspective.

The viewer will perceive an illusional symmetrical space at the start of the journey, but gradually realise two parallel spaces, the asymmetry, once walking in.
Study Model of Three Dimensional Distorsion for Perspective Acceleration in Siteless Prototype Model Two
Expressive Structure in Postproduction and Enriched Museum Experience

Photos of the Observation in Siteless Prototype Model Two
Formation of Accelerated Perspective Illusions in Siteless Prototype Model Two
Pre-existing Architectural Tradition from
the Olympic Theatre

Palazzo Spada Gallery is a great example to understand the basics of the rules for accelerated perspectives, while to design a playful spatial experience for architecture museum by accelerated perspectives might not be as simple as designing a corridor, instead, a combination of multiple accelerated perspective views from different angles might worth experimenting.

The Olympic Theatre in Vicenza is a masterpiece of this kind. it’s initially designed by Andrea Palladio and completed by his student Vincenzo Scamozzi. Behind the three openings of the proscenium, Palladio creates seven roads with accelerated perspective that add in huge urban depth to the scenic stage. 13

Scholars found there was a clear sign of Palladio taking influence from Sebastiano Serlio’s stage design concept of the interrelationship between the shape of the stage, positioning of audience and the field of vision.

Footnote:


Accelerated Perspective by Andrea Palladio, the Olympic Theatre in Vicenza
Image Source Online
Expressive Structure in Postproduction and Enriched Museum Experience

Footnote:


In particular, this research remodelled the Olympic Theatre digitally from Ottavio Bertotti Scamozzi’s survey drawings (1776) to test out the build-up of combined illusional views.

The result proves that along the ellipse of audience seats, at any viewer point designed, the audience could see at least a combined view of two roads on stage with accelerated perspective illusions.
Combined Illusional Views in Olympic Theatre
Making “Remix” – Siteless Prototype Model Three

Picking ideas from the combined views of accelerated perspective illusion presented in the Olympic Theatre, Siteless Prototype Model Three explores combined accelerated perspective views from different angles.

At the beginning of the illusional journey, the viewer will see three enclosed colonnades, which are actually composed of three accelerated perspective views on two distinctive levels with a smooth transition of projection. Gradually, the viewer will realise the two secondary colonnades are open spaces on a different level.
In addition, Siteless Prototype Model Three is designed to be viewed from both sides, while the illusional views from one side are completely hidden from the other. That is because they are designed within the illusional hidden space of each other.

In summary, following the principles established in the series of siteless prototype models, the illusional effect examined is guaranteed, while the scale and parameters from thereon to a built space are still open to adaptation to any site conditions and to specific architectural interpretations. The continual dialogue between spatial formulation and architectural intent will be discussed in more detail in Chapter Three.
Expressive Structure in Postproduction and Enriched Museum Experience

Photos of the Observation in Siteless Prototype Model Three - Front View
Expressive Structure in Postproduction and Enriched Museum Experience
Formation of Accelerated Perspective Illusions in Siteless Prototype Model Three - Back View
Chapter Two
The next question is – What type of architecture museum is in need? The answer might lie in potential audiences to the museum. They could be categorized into two groups. The first group is people studying and working in the architectural industry, and the second group is the rest of the public community. For the former group, an architectural museum for knowledge exchange and hands-on experiments is desired; for the latter group, participation experience is the core.
Architecture Realm

Researchers/Companies

- A place to build and test out architectural prototypes
- A place to experiment with new materials

Students

- A place to study with hands on fabrication experience

Local Artists

- A place to create and make with potential profits

Local Community

- What is architecture?

- What can I gain from it?
Architecture Museum
Promoting Experience Economy

The Proposed Programmes

Thus, a fabrication based architectural museum is proposed. In the museum, there will be a series of public accessible fabrication labs, including wood, metal, laser cutting, casting, CNC routers, 3D printing, and robot cutting workshops. During office hours, the museum will engage students, researchers and companies to build study prototypes; During after hours, staff will run workshops to engage the rest of the community and to encourage local artworks.

As a result, all the works produced in the museum will be put onto display for exhibitions, and at the same time, how professionals had been working on those works will be showcased to the public in live scenes. As an extra benefit, all the works on exhibition could potentially be sold back to the public in the gallery market. In turn, the gallery market will attract more people interested to be engaged.

In this way, the design will promote a positive cycle of “experience economy” of "engage – produce – display – sell".
Produce

- 3D Printing
- Laser Cutting
- Wood Workshop
- Metal Workshop
- Casting Room
- CNC and Robots Cutting

Sell

- Researchers/Companies
- Students
- Local Artist
- Local Community

Engage

- Main Hall for Assembly

Exhibit

- Proposed Cycle of Economy
The New Type of Architecture Museum

The proposed architecture museum design draws a comparison to the design of classic permanent theatre - the Olympic Theatre. Through experiments with a series of siteless prototype models, the illusional architectural experience given by accelerated perspective was formulated. According to the existing site condition for postproduction, illusional journeys can be mapped out to inform the design. Along the journey, exhibition works, fabrication process and the magic of space itself all contribute to a deeper understanding of architecture from the visitor point of view.

On the other hand, in the “comparison”, the proposed architecture museum challenges the way how classic theatre defines space for audience and performer. As a result, it calls for an idea for a switchable role when mapping out the illusional visual relationship between the professionals working in the field of architecture and the museum visitors.
Chapter Three
To design for an illusionary space like Palazzo Spada Gallery and the Olympic Theatre, it’s essential to know where the targeted viewers will come from and where they would potentially stay. Thus, the study of existing access condition of Domain Car Park was carried out to exam how the access facilities could be best preserved and how the new build within the threshold could be arranged for illusional museum experience from a postproduction point of view.

Due to the fact that the site is buried under the terrain, daylight access will be a key problem. The only possible daylight from building facades is from the east. Hence, opening up daylight access by glass facade on daylight exposure side will be prioritized when considering new access.
Human access to the current Domain Car park is divided by car access from the frontal ramp and pedestrian access through stairs and elevators connected directly from rooftop Domain Pitches.

Level one as a transportation level between level two and ground floor is made strategically special in terms of access, especially for the featuring express walkway from the site to the city centre.
Major Access on Existing Level Two Plan

Pedestrian Access
(Express Walkway)

Major Access on Existing Level One Plan

Car Access

Pedestrian Access

Pedestrian Access

Car Access

Car Access

Car Access

Car Access
Another key problem for transforming the current Domain Car Park into an architecture museum is the low ceiling height. Current clear ceiling height is only 2.2 meters. Merging levels becomes a necessity.

The following diagrams summarize typical treatments to the existing structural condition with consideration on daylight in the proposed design.
Typical Treatments to the Existing – Short Section 1:200:

A. Retained soil / Domain Pitches

B. Existing retaining wall

C. New concrete arches help to support soil roof with Sydney sandstone cladding

D. Existing waffle slab

E. Existing concrete column with drop panels clad with precast lightweight concrete to cover structural strengthening reinforcement

F. A Covered Patio to open up daylight access and improve ventilation

G. Cantilevered slab edge to cover the Patio with required structural backspan

H. Existing concrete column preserved as sculptural item in Sunken Garden

Proposed Structural and Daylighting Concept

0 0.5 1 2m
Having analysed that Level one is the most special level where people from all directions will converge to. The final design proposed two lookouts (V2, V3) on existing level one where existing access facilities will lead people to, and where else existing slabs on level one and level two are demolished to increase internal ceiling height up to existing roof level. Columns remained at where critical. The northern side is opened up as a new pedestrian main entrance to the museum (V1).

The two major spaces – Main Assembly Hall for architectural prototype assembly and the Lobby to the museum - is centred on the visual axis created by the lookout points defined.

Applying the illusionary rules experimented in Siteless Prototype Model One, the Lobby zone and the Main Assembly Hall is designed to be perceived as a continuous space by museum visitors arriving from V1, whose perspective vanishing point is being accelerated onto Lookout V2 in the Main Assembly Hall.
Analyse Formation of Accelerated Perspective Illusions on Axonometric Diagram
A sense of “theatre” is constructed – where the audience arrives from V1 realise Main Assembly Hall as the “stage”. On the “stage”, professionals working in the field of architecture is demonstrating what they believe is architecture in live “scenes”. At the centre and far back of the “stage”, stands the overlooking “improvised performers” who are another two groups of the museum visitors from Lookout V2 and V3.

For visitor group from V1, on their illusionary journey to find out an illusional hidden “apron” – the Covered Patio and the Museum Retails (for details of illusional rules and experience build-up, refer to Siteless Prototype Model One), a series of “secondary stages” on both sides of view will be realised. On the left-hand side, through the exhibition spaces, illusion draws up onto preserved featuring structures outside, while on the right-hand side, through the window, professionals working in the 3D Printing Room, Laser Cutting Room, and Metal Workshop can be seen. (for details of illusional rules and experience build-up, refer to Siteless Prototype Model Three)
As a transition zone, Sunken Gardens release accelerated perspectival vista viewed from the interior to the exterior and link the museum with its neighbouring context, the sloping Domain Pitches. The series of Sunken Gardens scattered in between secondary exhibition spaces are designed for free public access as an extension to a new Public Plaza area in front of the preserved featuring car park ramp. The Public Plaza and the Sunken Gardens will be occupied by public events, such as a weekend gallery market on occasions.
Museum Design Process and Realisation

Visual Axis

Assembly Hall

Covered Patio

Lobby

Visual Axis

Casting Room

Lounge

Ceramics Workshop

Exhibition/Gallery Market 4

Sunken Garden

Exhibition/Gallery Market 3

Analyse Formation of Accelerated Perspective Illusions on Axonometric Diagram
Cantilevering over the Main Assembly Hall, the lookout V2 provides visitors with a view probing into the “stage”, to have a close observation of how professionals work on large architectural prototypes.

Lookout V2 delivers visitors from the express walkway and the Domain Pitches to the centre of the “stage” without knowing themselves being the “improvised performers” and their reflection after observation being the “improvised performance” for visitor group from V1.

Meanwhile, multiple accelerated perspective views for visitor group from V2 are designed referencing the illusion formation tested out in Siteless Prototype Model Three.
Museum Design Process and Realisation

Analyse Formation of Accelerated Perspective Illusions on Axonometric Diagram
At the “backstage” positions the Lookout V3, where visitors are coming from the preserved featuring ramp. On the lookout, the design replicates the experience in Siteless Prototype Model Two to enrich the spatial realisation experience on the seemingly symmetrical views over CNC/Robot Cutting Lab on the left and views over Wood Workshop on the right.

At the end of the Lookout V3, a holistic view is gained to the “stage” – the Main Assembly Hall, the “apron” – the Covered Patio and the Museum Retails, and the “audience seats” – the Primary Exhibition Space and the Lobby.

However, walking back from the end of Lookout V3 will bring this understanding to a new level - a completely different walkthrough experience when there is no illusion build up.
Museum Design Process and Realisation

Interior Materiality and Lighting Schedule

New Arch and Wall Clad with Sydney Sandstone

Polished Concrete Flooring - Treatment to Existing

New Off Form Concrete Wall

Exposed Concrete Ceiling - Treatment to Existing
Laminated low Iron Glass with UV-absorbing Coating, Anti-reflective Coating and Architectural Curtain

Performance Cone - provide balance between horizontal and vertical illuminance, daylight and artificial lighting

Flexible Homogenous Wall Lighting - for illumination of vertical walls

Decorative Toughened Ceramic Fritted Glass

LED Projector – for high levels of contrast and a more "theatre-like" experience

Corten Steel Window and Door Frame
Museum Design Process and Realisation
Proposed Ground Floor Plan 1:500

- Metal Workshop
- Material Storage
- Laser Cut Room
- Material Storage
- 3D Printing Room
- Loading Dock / Canopy Over
- Exhibition / Gallery Market 2
- Exhibition / Gallery Market 1
- Sunken Garden
- Primary Exhibition Space and Lobby
- Office
- Existing Ramp
- Entrance Room
Summary – The New Scheme – Mapping Illusions

By considering the existing site condition and the relations between different participant groups, the proposed design integrates participants into a nested illusion mapping.

In the mapping, the story between architecture and people is told by perfect illusional moments. They showcase architectural works on exhibition and their fabrication process by professionals. Moreover, visitors coming from one entry including their reflections of seeing one illusional moment, in the meantime, are also being part of the perfect illusional moment of the others coming from a different entry. The dialogue between architecture and people is mutual and live.

The proposed design explores not only perfect illusional moments but also the illusional journey. Walking around the museum becomes a rich realisation experience between the illusional space and the true built in reality. The experience gained with time spending in the museum tells the story of each illusional space, and the views, scenes, activities it could bring and how differently they all change when the illusion finally collapses into the reality.
Axonometric Drawing with Circulation and Zoning of the Proposed Design

Production in House: Architectural Fabrication Labs = 6600 sqm

Main Hall for Large Scale Experimental Architectural Prototype Assembly = 1470 sqm

Primary Exhibition Space and Lobby = 2500 sqm

Secondary Exhibition Space/Gallery Market in Sunken Gardens = 2650 sqm

Covered Patio, Museum Bookshop and Cafe = 950 sqm

Landscaping Fitting into the Terrain of Domain Pitches/Public Plaza Connecting with Existing Featuring Structure

Circulation of Museum Public Visitors
Circulation of Researchers/Professionals/Students
Existing Rooftop Condition

The rooftop of Domain Car Park is currently occupied by a full-size football court, a netball court and two touch ball courts. From observation, however, only a few are engaged with this vast green area per site visit. It brings the question of – How effective are the outdoor sport courts in engaging people in the middle of CBD?
Potential Design Problems

The ineffectiveness might come from the excessive number of outdoor sport courts in the nearby suburbs. The map highlights outdoor sport courts with similar settings as Domain Pitches in neighbouring suburbs of Glebe, Camperdown, Surry Hills, Redfern, Alexandria, Erskineville and Moore Park.

Nearby Outdoor Sport Courts:
A. Sydney Park
B. The University of Sydney
C. Erskineville Oval
D. Wentworth Park
E. Alexandria Park
F. Prince Alfred Park
G. Redfern Park
H. Hyde Park
I. Royal Botanic Gardens
J. The Domain Pitches
K. Moore Park
Another reason might be the fast-paced lifestyle in CBD makes it hard to gather the right number of people at the right duration of time for a game. Diving into the demographics of potential engagers and the most likely time of engaging, it comes to the question of – How to make the Rooftop of the site fit into the mood of Domain Pitches and meanwhile making this area as a whole more accessible and enjoyable to the majority which are singles and travellers, professionals and young families for the most of time?

Comparison of the Level of Engagement:

A. The Domain Pitches, Sydney, Australia

B. Moesgaard Museum, Aarhus, Denmark
The Proposed Rooftop Design

Accelerated perspective is a powerful concept to inform a design from inside out. Looking at the roofscape design at a larger scale, the proposed design intends to create a strip of public activated area to emphasize on the geographical and visual connectivity to the Finger Wharf and the nearby parks.

Following the slope of the Domain Pitches, the roof of secondary gallery space slopes down to the existing ramp taking visitors down to the new Public Plaza on the street level of Sir John Young Crescent. The Sunken Gardens scattered in between secondary gallery spaces provide a soft transition from the Public Plaza to the Museum.
Landscaping Design and Re-access Domain Pitches

- Public Plaza on Street Level
- St Marys Road
- Skylight
- The Domain Pitches
- Elevator to the Museum
- Landscaping Fitting into the Terrain of Domain Pitches
- Existing Bridge to Cook + Phillip Park
- Existing Ramp
- Sunken Garden
- Skylight
- Landscaping Fitting into the Terrain of Domain Pitches
- Public Plaza on Street Level
Browsing reviews of Domain Pitches gives an idea of what people truly love about the area the most. The diagram is a summary of keywords people mention when talking about Domain Pitches. The size of words directly indicates its recurring frequency. In general, people love to enjoy the sunshine and to do daily exercises here.

As the second half of the answer to the design question pointed out from the beginning of this Chapter, the proposed rooftop design addresses the public’s wish by turning it into a unique recreational area and viewing platform for the public to chase the sunshine.

*Photo of Physical Model in Context 1:1000*
Sit down

Soak up the Sun

Get away from the busy city

Relax

Work out

Open area

Kids roam around

Public events

Review of the Domain Pitches
Landscaping Design and Re-access Domain Pitches
Landscaping Design and Re-access Domain Pitches

Concrete Buttress
Concrete Anchor
Silicone Sealant
Aluminium Sub-head
Aluminium Head Transom
Glazing Gasket
Architectural Laminated Glass

Outside
Aluminium Mullion
Aluminium Sill Transom
Aluminium Sub-sill
Silicone Sealant

Typical Exterior Dichroic Glazing System detail 1:10
**Architectural Laminated Glass**

**Gold-Blue Dichroic Film**
- In Transmission (Shown): Yellow - Magenta - Blue
- In Reflection: Gold (straight) - Blue (angle)
- Reflection Visible: 89%
- Transmission Visible: 11%
- Transmitted Energy: 56%
- Reflected Energy: 29%
- Absorbed Energy: 15%
- TSER: 39%
- SHGC: 0.61

**Copper-Bronze Dichroic Film**
- In Transmission (Shown): Magenta - Blue - Aqua
- In Reflection: Copper (straight) - Bronze (angle)
- Reflection Visible: 29%
- Transmission Visible: 71%
- Transmitted Energy: 55%
- Reflected Energy: 29%
- Absorbed Energy: 17%
- TSER: 41%
- SHGC: 0.59
Landscaping Design and Re-access Domain Pitches
Bibliography


