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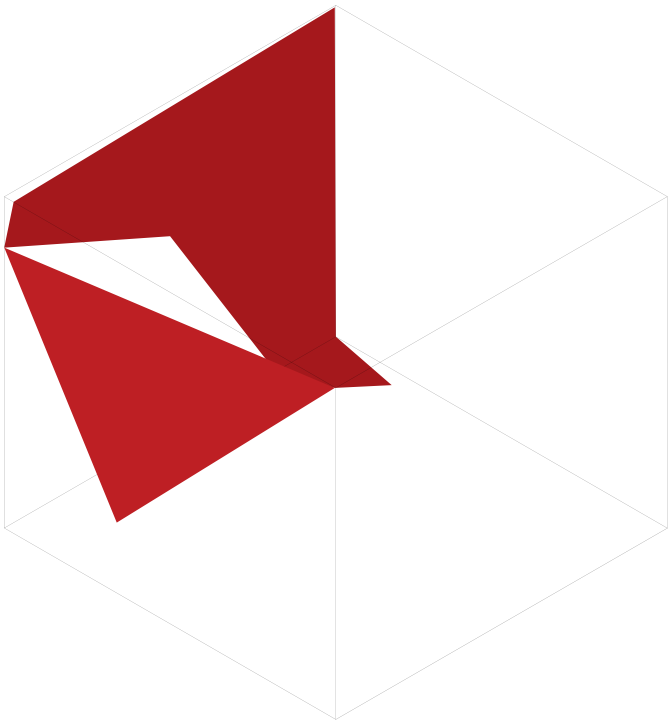

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Art in the Presence of Architecture— the Balance of Power MONA—A Case Study

Adrian Spinks

Abstract: This paper explains the rationale and methodologies that emerged throughout the Exhibition Design process at the Museum of Old and New Art (MONA). It describes the need to adopt a new way of thinking and find new ways of achieving an outcome for a set of complex problems that resulted from the need to bring the art, the antiquities, and the building together. The Museum posed unique challenges to be solved in the exhibition design. It required not just new processes for project management but also the invention of new tools for the design task. Since it opened in January 2011, the response to MONA, from both public and critics, has been overwhelmingly positive. Reviews highlight the notion that it is possible to create an atmosphere that is interesting and engaging from both an architectural and exhibition design perspective. Our initial assumption that architecture and content are equally important seems to have been vindicated.

Keywords: Exhibition design, MONA, architecture and design, new museums, display case design, virtual 3D models

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Art in the Presence of Architecture — the Balance of Power MONA—A Case Study

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Introduction

In 2011, Australia's largest private museum opened in Hobart, Tasmania. The Museum of Old and New Art (MONA) broke the mould for international museum design. Everything about the museum, from the architecture to the exhibition design, has re-imagined not just the way art and artefacts are displayed, but also how audiences engage with these in the gallery spaces. The distinct features of the museum, which include a complex architectural structure and floor-plan; darkened walls, a diverse and seemingly un-related collection, no interpretive wall labels and no linear path for the visitor to follow, have challenged notions of what a museum should look like, and how a visitor should experience its space and content.

Today, the completed museum conceals the challenges involved in working on a venture that has taken everyone, from the project team to the museum visitor, into a new paradigm of working with and experiencing art. As MONA's Exhibition Designer, during the initial development phase of the museum, it was my role to bring together the different components that would transform the raw physicality of the building into an immersive experience for the visitor. The core challenge for me was to strike a balance between the defining elements that make up MONA—the architecture, art and antiquities. In this paper I will describe the processes and strategies I undertook to achieve this goal, which included: applying specialised lighting; designing and fabricating unique display cases; developing a real-time gaming visualisation model; and creating individual display solutions for contemporary artworks and antiquities.

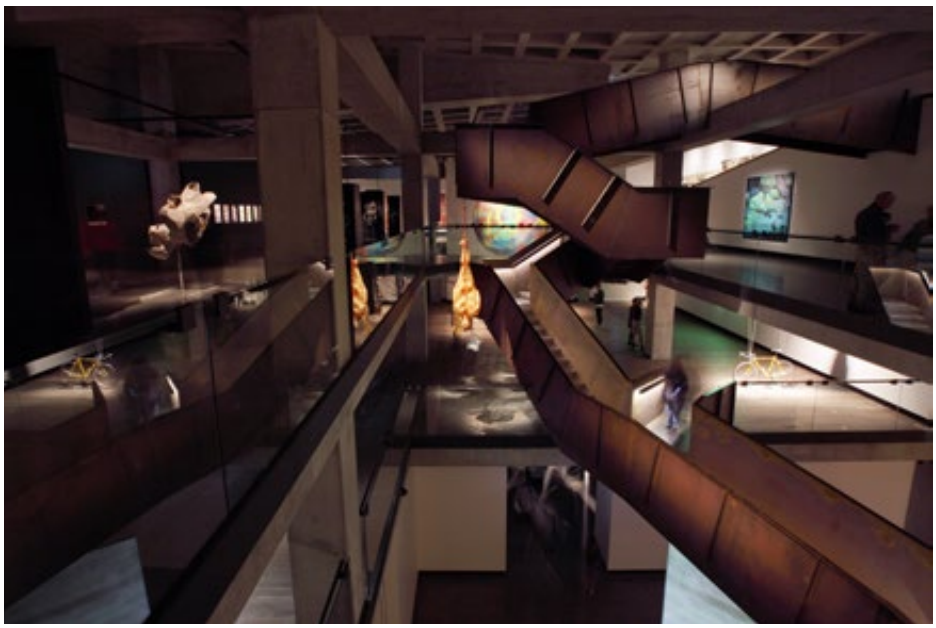

Fig. 1. MONA, Basement level 1, 2011. Photo: Leigh Carmichael.

Gaining an understanding

To understand the fundamental ideas that shaped MONA, it is important to first gain insight into the attitude of the museum's owner and creator, David Walsh. His perception of the grandiosity and elitism of orthodox museums is captured in this quote:

> Most public galleries and museums, and most temples, churches, synagogues, mosques etc. are built to make the visitor feel small in the presence of greatness. You walk up vast flights of stairs, through giant porticos into geometric structures built on the largest scale that the pilfered wealth of kings, popes or presidents can afford. All this seems to be designed to inculcate a sense of inferiority, to prepare you for the instilling of faith. (Walsh, 2010, p.4)

Walsh's intention for MONA stands in opposition to this. One of his main tenets in conceptualising MONA was: 'We don't want to tell you what to think of us'. (Walsh, D. 2010, p. 4). It was this desire to break from the traditional museum design and intent that informed the design brief that architect Nonda Katsalidis worked with in designing MONA. Taking a clear departure from the overblown entrances of the world's 'great museums' the structure of MONA is below ground, cut into the banks of the Derwent River. Its entry is through a pre-existing heritage-listed 1958 modernist building (known as the Courtyard House),[1] with little reference to its function as an entry to a 9,500 square-metre museum below. Visitors who arrive by road see only a small fraction of the building when approaching the museum. Their expectations of encountering a grand museum facade are challenged when arriving in the middle of a tennis court directly opposite the museum's mirrored entry.

When I commenced work on the project in May 2006 the excavation of approximately 35,000 cubic metres of sandstone had begun and the overall design concept for the building was well developed through extensive dialogue between Walsh and Nonda Katsalidis.

Applying my skills as an Exhibition Designer required a methodical and pragmatic approach to understanding the project. There were three main areas I set out to explore: understanding the building design; gaining a first-hand global perspective on the project, and obtaining a brief for MONA's curatorial and exhibition development.

Figure 2. MONA forecourt, 2013.

It was difficult to achieve an understanding through 2D plans and elevations due to the architectural complexity of the building. As a better reference Walsh asked me to build a 1:50 scale model of the entire Museum. I engaged a team of architectural students from the University of Tasmania and together we built an accurate demountable 3D model. The model was extremely effective in revealing the extraordinary nature of the building and the relationships between its various spaces. It became clear that the building did not fit the traditional museum mould. The interior structures were bold and the spaces were not confined to four-walled independent interconnecting galleries that are typical in most large art galleries.

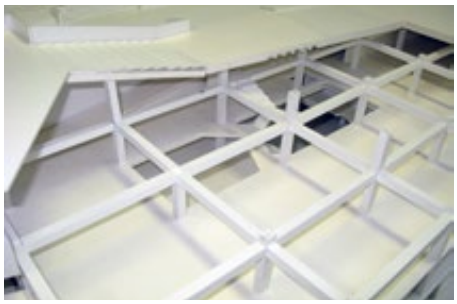

Figure 3. MONA architectural model, 2008.

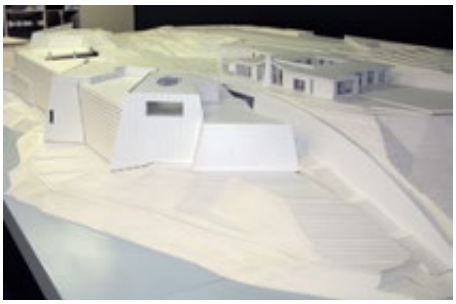

Figure 4. MONA architectural model, 2008.

The uniqueness of MONA's design was further reinforced for me after a survey of international museums. In 2006 I travelled to locations in America and Japan, and in 2007 to London and Paris. From the museums I visited my general impression was that, for the most part, both museum architecture and exhibition design were homogenous. For example, architecturally, many of the museums I encountered seemed to fall into the imposing, self-aggrandising categories Walsh wanted to avoid. Similarly, exhibition design followed the largely unchallenged tradition of white cube interconnecting gallery spaces, setting a fixed route for the visitor. Audio tours, the strategic placements of works, and an ordered use of signage and interpretive labels reinforced this prescribed path. Even though this was the general pattern, I was able to make some useful observations from some of the museums I visited. For example, the de Young Museum, San Francisco, designed by Herzog & de Meuron, stood out as having some architectural similarities with MONA, and it also featured interesting exhibition elements. Their building utilizes basic natural materials including copper, stone, wood and glass. It is clad in a perforated copper, which oxidises over time and eventually blends in with its surroundings. MONA's Cor-Ten steel cladding is also designed to oxidise and age over time.

The de Young's entry is through a horizontal slot in the building's façade (see fig. 5), which is more understated than traditional museum architecture. The display strategies used in the African art gallery contrast the white cube approach used in de Young's contemporary art spaces. For example, the display cases housing the African Art collection (see fig. 6) are magnificently bold, and their timber finish is synergistic with the architectural environment.

Figure 5. De Young, entry, San Francisco, 2006.

Figure 6. De Young, African gallery, San Francisco, 2006.

These observations were useful references as the creative process at MONA unfolded. Ultimately the inspiration was to come from the nature of the project itself.

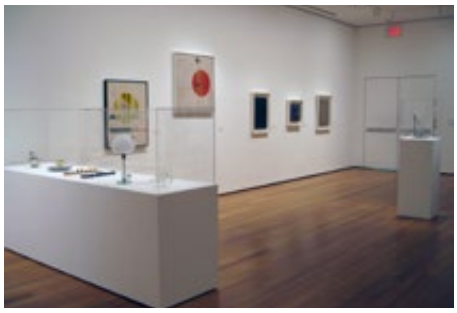

Figure 7. Museum of Modern Art, NY 2006.

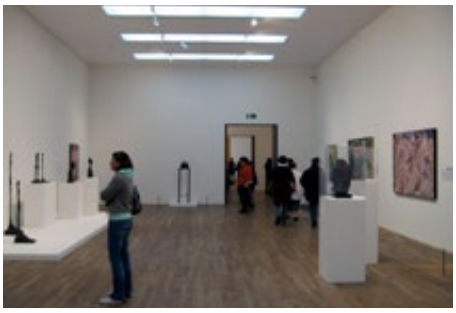

Figure 8. Tate Modern, London 2007.

Figure 9. Centre Georges Pompidou, Paris 2007.

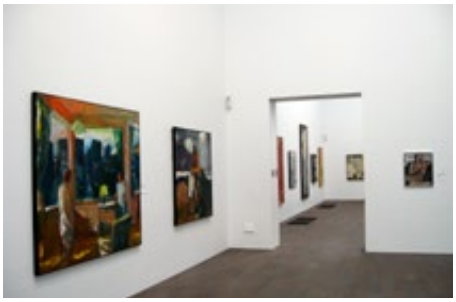

Figure 10. De Young, San Francisco 2006.

Another important element in gaining an understanding of the project during these early stages was a detailed written brief for the curatorial and exhibition development. Whilst this is an accepted aspect of any exhibition design project, when it came to MONA the standard exhibition development processes had to be abandoned.

Just as the building itself deviated from expected norms, so too did the internal working processes. Walsh, always wanting to move beyond expected ways of operating, was evasive about committing his vision to paper. The meagre brief that was eventually compiled was: 'A path to stray from'. Consistent with this notion, the exhibition design development process was open to experimentation and exploration for both the exhibition development team and for Walsh himself. The brief and our ideas each, iteratively, informed the other. This feedback process amongst the development team continued throughout the formation of MONA. In Walsh's words he wanted to 'leave the creative gate open for as long as possible' to capture the full potential of the process.

In many respects, getting a grasp of the project meant undoing many pre-conceived expectations about museum architecture, exhibition design and project management processes. Being a part of the MONA team required a shift in thinking on many levels, but with that came a freedom to apply skills and knowledge in new ways.

A framework for the design process emerged from the exhibition team's groundwork. This framework was based on the elements I identified as the foundational ingredients of MONA: the architecture, the art, and the antiquities, and more specifically, the interrelationship between these elements.

The Defining Elements

1. The architecture

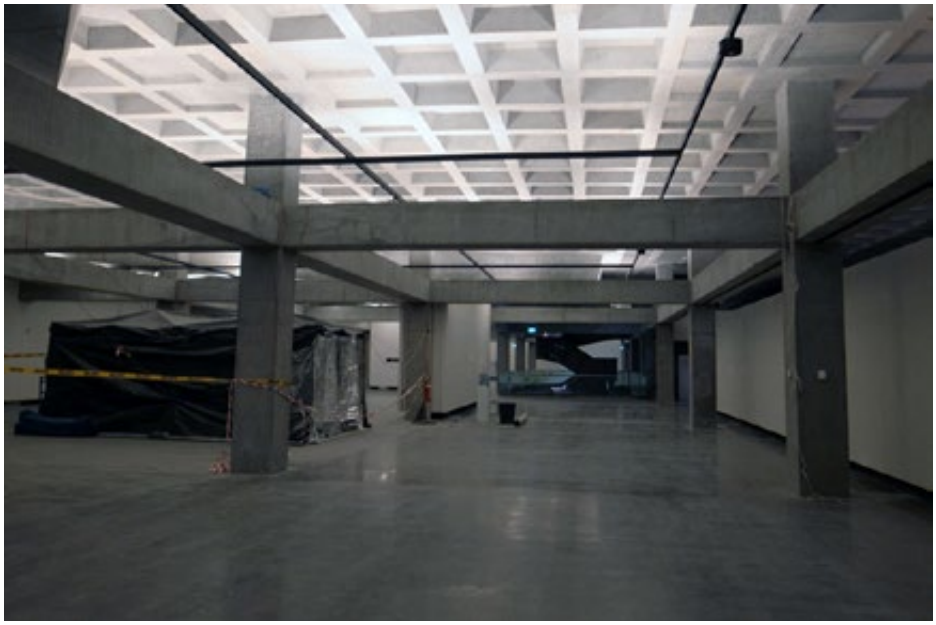

Figure 11. B1, 2010.

MONA's building and galleries are structured around a 10 x 7.5 metre grid. The first level, B1 (Basement Level 1) features off-form concrete columns and beams set out on a grid with a concrete waffle slab ceiling, spanning different heights across the space. The mid-level galleries on B2 (Basement Level 2) consist of an area referred to as 'The Catacombs', leading to a larger gallery spanning B1 and B2 levels housing the multi-panel work, Snake, by Sidney Nolan. The Catacombs is a more intimate area. With its low ceilings, recycled timber floorboards, and small separate gallery spaces, it retreats from the stronger architectural elements of the other two levels.

The bottom level, B3 (Basement Level 3), sits seventeen metres below ground level at the base of a 143m long Triassic sandstone cliff excavated into the riverbank, running the full length of the building with approximately 90m exposed. This level comprises three galleries designed for temporary exhibitions, totalling 1300sq metres with a general gallery of 600sqm. Concrete channels housing technical services and lighting span the grid at a height of 3.75m. The B1 and B3 levels have polished concrete floors throughout.

A tunnel connects the B3 galleries to the second of the original heritage buildings, The Round House, designed by Roy Grounds[2]. Both buildings have been adapted to accommodate new additions and their original features restored. The Round House was extended at ground level. This extension houses a library, some gallery space, and a pavilion purpose built for a large artwork, *Sternenfall / Shevirath ha Kelim* (Falling stars / The breaking of the vessels) by Anselm Kiefer.

2. The collection: Old and New Art

Figures 12–14. Clockwise from top left: *Coffin of Iret-Heru-ru Egypt,* 664-332 BCE. Photo: Peter Whyte. *Neolithic projectile points,* Egypt, c. 5300–3000 BCE. Photo: Rémi Chauvin. *Mortuary amulets mounted as a modern pendant, Egypt,* 664-525 BCE. Photo: Peter Whyte

Figure 15. *Large House with Fence*,1998. Howard Arkley © The Estate of Howard Arkley, Courtesy Kalli Rolfe Rolfe Contemporary Art. Photo: Peter Whyte.

Figure 16. *Great Deeds against the Dea*d, 1994. Jake and Dinos Chapman. Photo: Peter Whyte.

MONA opened to the public with a collection consisting of antiquities (some as early as 4000-3000 BCE), modern and contemporary Australian art, and international contemporary art, with the displayed antiquities ranging in scale from small Greek and Roman coins to Egyptian sarcophagi (two containing mummies). Most of these objects are exquisitely designed, finely detailed artefacts whose appreciation requires close examination.

In working with the collection, it became clear that the contemporary art would have a dominating presence juxtaposed with the finer antiquities. The challenge was not to lose the presence of these smaller more delicate artefacts against the more visually enticing stronger works of art. It was crucial to me and the clarity of the exhibition design that what the public were going to see when the Museum was launched reflected its name: the Museum of Old and New Art.

Placing this diverse collection of art and antiquities within such a vocal voluble architectural environment added another layer of complexity to the resolution of the design. The challenge for me as Exhibition Designer was how to employ strategies to bring these three elements into a coherent relationship.

The Design Response

1. Using light as a volume control

As part of the original architectural design some of the architectural elements were lit with architectural lighting to highlight their form. This is standard practice in building design but when applied to the architectural forms within an art gallery environment it has particular consequences when the primary function of a gallery is to display art and artefacts.

To gain a balance between the viewer's attention to the architecture and to the collection, some of the architectural lighting was turned off or toned down. This was not to lose the presence of the architecture but to experience it as having an equal voice with the collection. The whole MONA experience is an intertwining of these two elements. They have their own energy when pitched against one another. In some areas the architecture has total attention and in others the art and artefacts dominate.

Figure 17. B1 level with architectural up-lighting turned on. Photo: Rémi Chauvin.

Figure 18. B1 level with architectural up-lighting turned off. Photo: Rémi Chauvin.

Controlling the architectural lighting also allowed the exhibition lighting system to play its role. The exhibition lighting is a conventional gallery lighting system comprising a mix of 240v wall wash, spot and projector spots with gating capability and independent dimming control on a three circuit track system.

Exhibition lighting design is a unique skill, which required someone with extensive museum and art gallery experience. I engaged lighting designer Adam Meredith, formerly of the National Gallery of Victoria, Melbourne to implement the exhibition lighting design for the galleries and display cases. Meredith won awards from the Illuminating Engineering Society of Australia and New Zealand for MONA's inaugural exhibition Monanisms, and for subsequent exhibitions in 2012 and 2013.

One of the defining features of MONA's galleries is that the walls are painted a dark charcoal. The decision to paint the walls dark evolved quite late in the design process and was not a deliberate reaction against the 'white cube' gallery. The dark walls helped minimise light that would have been reflected back into the space. Creating a dark environment also helped focus attention on the artworks and allowed the lighting system to take a more dramatic role in focussing attention on the art. The exhibition lighting and the dark walls act like a volume control, turning the art up and the architecture down.

The combination of the dark walls and a detailed lighting approach was something the design team were able to envision quite accurately, prior to the museum being finished, by utilising a 3D virtual real-time model (a tool discussed in more detail further on). Being able to move around in a virtual 3D model of the museum assisted the team to visualise the effectiveness of the exhibition within dark walled gallery spaces and had a major influence on the chosen direction.

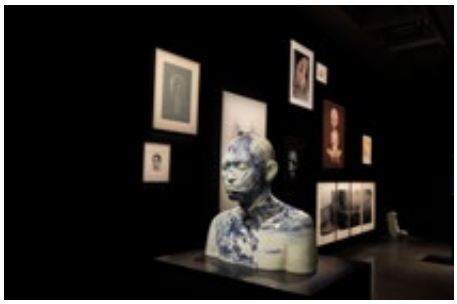

Figure 19. B1 level, Photo: Leigh Carmichael.

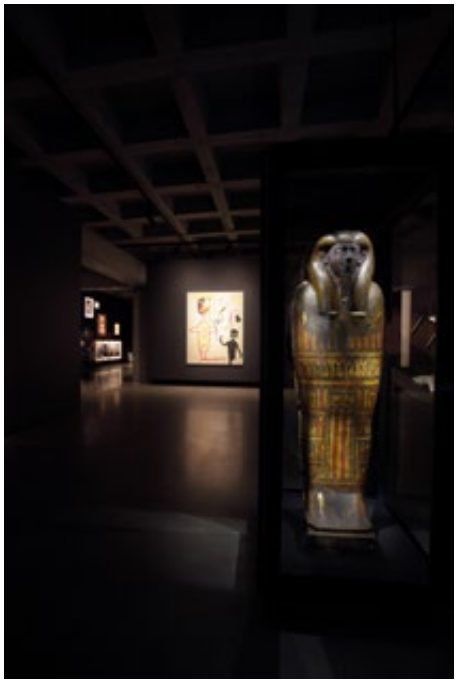

Figure 20. B1 level, Photo: Leigh Carmichael.

2. Display case design

The display case design played an important part of managing the balancing act between the three elements: the architecture, art, and antiquities. There were a number of standard four-sided glass case designs readily available on the market. These products were well established within the museum industry, however they did not address the specific display needs of MONA. After exploring a number of design directions it became apparent that we needed to address the subtle and fragile nature of the antiquities in contrast to the more dramatic contemporary works. For example, how could we exhibit small ancient coins in a way that drew attention when placed in juxtaposition to artworks like Damien Hirst's *Beautiful Mis-Shapen Purity Clashing Excitedly Outwards Painting*, (Spin) painting and, at the same time, allowed them equal presence within the architectural space.

My solution was the design of custom display cases that provided an internal backdrop for the smaller antiquities. The objects were suspended a short distance off the backdrop panels to give the appearance of the object floating in space. The cases were contracted to Belgium based display case company, Meyvaert Glass Industries, and manufactured in Australia by an associated company, European Museum Technology.

A fibre-optic lighting system was the key to the success of this effect. The lighting, produced by French company Luxam, utilised tiny luminaries, similar to those used in theatre and motion picture lighting but on a miniature scale. Luxam's specialist approach to case lighting has evolved through their experience in lighting tens of thousands of objects in museums across Europe and America over the past 18 years. Their philosophy, encapsulated by the words of Luxam's founder Jean-François Hocquard is that:

> The display case is no longer a transparent coffer aimed at protection and showing an object. It becomes a working space, a presentation studio, designed to maximise all the lighting possibilities on the objects while making the technique invisible to the public. (Hocquard, 2008, p.13)

This philosophy made sense in addressing the issue of balance between the three foundational elements in MONA's exhibition design. Measuring the success of this design strategy is difficult but anecdotal evidence gleaned from the public's response indicates that the antiquities are present in how the visitor responds to Mona as a whole. For example:

> Very thought provoking, stimulating and unexpected. Loved how the old and new were mingling together. (Vicki Douglas, January 8th, 2014)

> The curatorial and installation crew have done a seamless job assembling this unconventional narrative. The artefacts appear to hover effortlessly in their chic black boxes. The ethereal connection of one work to the next is a treat in itself. (Williams, 2011, p. 32).

Visitor data collected from MONA's electronic interpretive device, known as the O, also points to the fact that the antiquities are being experienced on equal terms as the contemporary works. A snapshot captured by the O of the top 100 most-viewed artworks over the first year of operation reveals that the smaller cased antiquities have a presence among the larger more visually enticing works of contemporary art, for example: the Neolithic projectile points, Egypt, c. 5300–3000 BCE sit at 25 out of 100 most viewed objects and the Egyptian *Mortuary Amulets mounted as a modern pendant* 664 BCE – 525 BCE sit at 32.

Whilst the display case design needed primarily to tackle the special nature of the antiquities in contrast to contemporary art works, the physical aesthetics and dimensions of the cases were also important considerations. I thought it vital to maintain a relationship between the raw exposed fabric of the building and the fabric of the display cases. In response to this, some are made from raw steel with a gun-metal finish and others from a special lightweight concrete. These materials echo those of the architectural structure and establish a synergic connection with the building.

Fig. 21. Metal display case containing Bactrian coins. Photo: Rémi Chauvin.

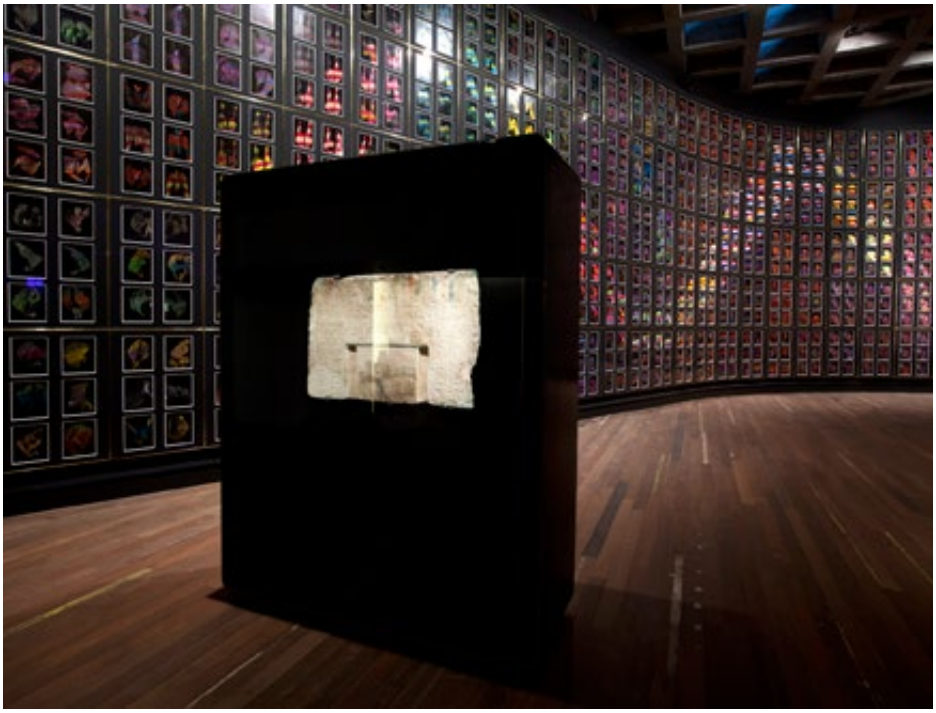

Fig. 22. Metal display case containing, *Part of a false door from the tomb of Ptahshepses*, Egypt, 2500 BCE to 2200 BCE. In the background, the multi-panel work Snake by Sidney Nolan. Photo: Rémi Chauvin.

Fig. 23. Metal display case containing, *Bowl with aquatic decoration*, Egypt, 1550 BCE to 1295 BCE. Photo: Rémi Chauvin.

The scale of the display cases is also influenced by the scale of the surrounding architecture. The strength of the architecture dictated that the cases needed to have a strength and presence that would define themselves within the gallery space; however, I did not want them to be dominating design statements in themselves.

The intended outcome of the design was for the cases to become almost invisible, allowing the artefact to attain the main focus. Attaining this invisibility was almost counterintuitive—the cases, in isolation, are large and imposing, but in the context of the architecture and lighting, harmonize with the space.

3. The effect of the art on the building

Initially, sections of the building design were adapted specifically to accommodate two major works in Walsh's collection: Julius Popp's *bit.fall* and Sidney Nolan's Snake. However, as the team worked with some of the commissioned artists for the first installation of the collection, called *Monanisms*, we had the opportunity to make some minor alterations to various spaces to accommodate these works. For example, we reconfigured spaces to accommodate the specific installation requirements of Wilfredo Prieto's, *White Library* and Brigita Ozolins' *Kryptos*. Prieto's and Ozolins' installations required dialogue with both the artists, the project architect and the Engineers in determining practical solutions that fitted around predetermined architectural structures and the building's technical services.
Anselm Kiefer's large lead and glass installation, *Sternenfall / Shevirath ha Kelim*, was acquired during the building's development. Architect Nonda Katsalidis explored a number of solutions for its placement within the existing museum building—however these required significant intervention into the building's structure in order to meet the artist's intention that it be exhibited in its own pavilion. The eventual solution was the construction of an external purpose-built freestanding Pavilion connected internally to the Round House Library.

As a designer, my role is to find design solutions that push conventional boundaries without compromising the artist's message. For example, the brief for Candice Breitz's *Queen*, *A portrait of Madonna* was to exhibit the work in an enclosed white room. I saw an opportunity to transform this in a way that would better integrate the artwork to a particular location within the gallery, providing it with a greater presence within the gallery space. My approach was to introduce a translucent white glass cube in the middle of the gallery. The shadowy figures inside and the faint sound-spill are designed to create an awareness of the work and a curiosity to entice visitors into the space. These design concepts were proposed to the artist who, although not having approached her work in this way before, was willing to entertain these new ideas. The technical integrity of the work itself was fully retained in this solution.

Fig. 24. B1 level showing the glass enclosure for Candice Breitz's, *Queen, A portrait of Madonna.*
Photo: Leigh Carmichael.

In order to solve the practical issue of *Queen's* 3.4m height, determined by the configuration of its cube monitor video wall, the building's structural elements were co-opted to form an integral part of the exhibition structure. The roof of the structure straddles the 3.4m high grillage beams providing support for the glass walls and housing essential services within the volume of the ceiling space. In this case, far from encountering restrictions imposed by the building, the building was used to its best advantage.

Whilst most works were integrated within the architectural structure of the building, others required a more radical response. An example of this is the so-called Death Gallery. My design intent for this gallery involved the complete removal of any architectural reference. This space is a dark water-filled gallery where visitors walk on stepping stones over black water to reach a central plinth upon which there are two identical concrete caskets. One displays an unopened sarcophagus containing the body of Pausiris, an ancient Greek-Egyptian man. The other displays a virtual cat-scan movie of the sarcophagus that slowly cuts away to reveal the mummified body inside. When first designed, the Death Gallery contained a portrait photograph of a deceased person titled, *The Morgue (Blood Transfusion Resulting In Aids)* by the artist Andres Serrano. Walsh's curatorial intent was to highlight the contrast between the two images of death: one ancient and one recent. The Serrano reminds us of the confronting nature of recent death in contrast to the more detached curiosity we have for ancient, more distant death.

My design objective was to focus the visitors' minds on what they were seeing and experiencing by concealing the surroundings, facilitating their engagement with the elements in the space. The only reference to the immediate built environment is signalled by water dripping from the ceiling into the pool, occasionally breaking the silence and bringing an awareness of the volume of the space. Only two visitors are allowed in at a time in order to preserve this focus.

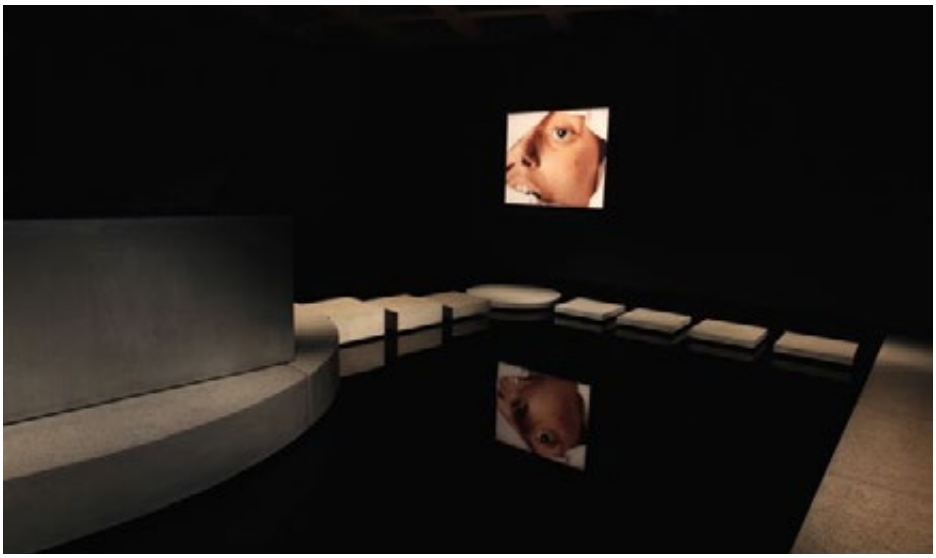

Fig. 25. Death Gallery, B1 level. Photo: Leigh Carmichael.

The architectural design of MONA's gallery spaces are diverse and respond well to the equally diverse collection. In some instances the art and antiquities merge perfectly with their architectural surroundings, in others, as in the case of the Death Gallery, the collection dictated a more nuanced solution that requires, in a sense, erasure of the architectural elements.

4. Designing for change

The overarching intention for MONA's exhibitions was that they regularly change. Even the few items earmarked in the beginning for longer-term display have since been changed. In keeping with this idea, the strategy I adopted was to design everything for maximum adaptability. Cases became freestanding, but easily movable, and can easily be repurposed. Wall cases were designed as units that could be readapted to new wall configurations. A temporary wall panel system was developed for partitioning the gallery spaces, and when plastered together, appear solid and permanent. This approach allowed for any future juxtaposition of artworks and supported the development of new spatial elements that would change the look and feel of the galleries.

5. A linear or nonlinear approach

MONA's deviation from standard gallery design initially required a rethinking of how visitors to the Museum would experience the spaces and art. At first glance, the museum's open, interconnecting galleries seemed to present a problem: how would we control traffic flow and direction? It is an accepted practice to control the visitor's journey through a museum in some way. This is usually achieved through the initial design of the building, the placement of temporary walls, cues provided by the placement of works or interpretive labels and other way-finding devices. Walsh had a different idea:

> Mona is very difficult to navigate and that's the point, I'm trying to say that what we know is extracted painfully and what we know, or what we think we know, is constantly changing. The layout of the museum is a metaphor for that. (Walsh 2011, p. 82)

It was Walsh's belief that art is to be discovered rather than shown off and that the connection, or not, with the viewer should be built from personal experience rather than something imposed. This sentiment would be reflected in the direction the design team would eventually take in determining the visitor's interaction with MONA's gallery spaces. Initially there were thoughts of theming areas of the collection to provide some level of cohesion and connection. However, as the project unfolded, the team's approach evolved into embracing a totally nonlinear experience of the galleries. As a consequence, it became less important to give the public any direction through the collection or even to provide signage.

An important influence on this approach was the introduction of MONA's O or iPod interpretive device. The O utilises indoor positioning technology and was conceived by Walsh in the very early stages of the project. It was Walsh's intent to remove traditional interpretive labels from the wall whilst still giving visitors the opportunity to access interpretive material. It provides a vehicle for visitors to access different levels of information about the works, including audio delivery. The O's ability to locate the works in the viewer's immediate vicinity provides an orientation to the art but has not been applied as a guided tour through the collection in the way most museums apply similar electronic devices.

The decision not to use wall labels impacted on the exhibition design by reducing the visual clutter, making the overall design cleaner. For the viewer, this helped to create a more direct engagement with the art and antiquities, one that is unencumbered by the visual imposition of didactic elements. This is rarely experienced in conventional museums.

The nature of the building design itself also promotes a nonlinear approach for the visitor experience. Entering from the only access point into the building, down a spiral staircase or a 15 person lift, visitors have two choices: B1 or B3 where they can embark and access the galleries. On Basement Level 1 there are three directions they can take and the galleries are mostly large open spaces with no containment. As the quote below highlights, this can be disorientating for the visitor but conversely adds to the notion of self-exploration, as intended by Walsh.

> First impressions are of awe, as the Museum is dominated by a massive seventeen-

metre high wall cut out of the sandstone. This feeling is closely followed by complete disorientation as the galleries seem to morph in a very plastic way, making it difficult to negotiate the museum space—a deliberate tactic to facilitate a relationship of personal discovery and slow reveal, rather than didactic encounter. (Belle, 2011, p. 58)

6. Virtual real time model as a design tool

Under normal circumstances, the exhibition design process involves visualising concepts and designs through two dimensional representations or simple 3D physical models. However, this strategy is only successful when working on more traditional white cube gallery spaces. A complex architectural space like MONA is far more difficult to replicate and visualise in these ways.

In response to this challenge a physical 1:50 scale model of the museum, as mentioned earlier, was built and used as an early understanding of the spaces and their relationship to one another. But this model also had limitations when it came to the exhibition design. With interconnecting spaces on a number of levels, the exhibition design had to be seen and understood from a number of vantage points and approaches. The MONA design team needed to experiment with colour and light and manipulate the spaces with walls and partitions. It became clear that this was only going to be possible through virtual 3D modelling.

When the design development called for this type of visualisation my first thought was to investigate virtual 3D renders and movies utilising 3D software like Cinema 4D, 3D Studio Max or Maya. Certain companies produce 3D renders and movies for the architectural industry but upon investigation these proved very expensive. As an example, a short one-off movie that would take a virtual tour through the galleries was estimated to be around $30,000 to produce. As the creative process was on-going there was a requirement for multiple visualisations, which made this process too inflexible and expensive.

During the project's development, Dr Peter Morse, at that time lecturer in Communication Studies at the University of Western Australia and specialist in computer visualisation, was consulted. He suggested to me that volumetric data from the architect's CAD files could be imported into gaming software. After investigating this idea further with gaming developer Jon Tiller, I was convinced that this would be the most effective means of achieving the design visualisation we required. I commissioned Jon to import the entire data set of the museum into his gaming software. This was time consuming and entailed a lot of work to reduce the amount of unnecessary data or polygons, essential details for architects but not needed or even seen within the virtual gaming model. In hindsight, the process might have been easier if built from scratch instead of stripping out all this unnecessary data from the existing architectural model.

Jon's brief was to develop not only the virtual museum but to design tools within the virtual model that gave the user the capability to place and manipulate 2D and 3D art; display cases; wall panels and video art, projected on a wall or on an LCD screen or cube monitor. The model included the capability to change wall and panel colours; it has a measuring tool and a placement grid; users can place notes and teleport themselves to different locations within or outside the museum. Another unique feature was that design sets could be saved to a server for access by other remote users who could make their own changes to existing designs. This was particularly useful given staff working on MONA were located in Hobart, Melbourne and abroad. A comprehensive catalogue of MONA's collection was imported into the model and made available via a searchable menu for placement on the walls. This level of accessibility to the artworks made the virtual model invaluable in helping make decisions about how the collection would be displayed throughout the museum.

In the later stages of the exhibition development process most of the final gallery designs were constructed and visualised within the virtual model. The designs were explored from various vantage points that, given the complex nature of the architecture, clarified the foundational ingredients of the Museum: the architecture, art and antiquities.

Fig. 26. Screenshot of the Death Gallery from the virtual real time model 2010.

Fig. 27. Screenshot of the B1 galleries from the virtual real time model 2010.

Fig. 28. Screenshot of the B1 galleries from the virtual real time model 2010.

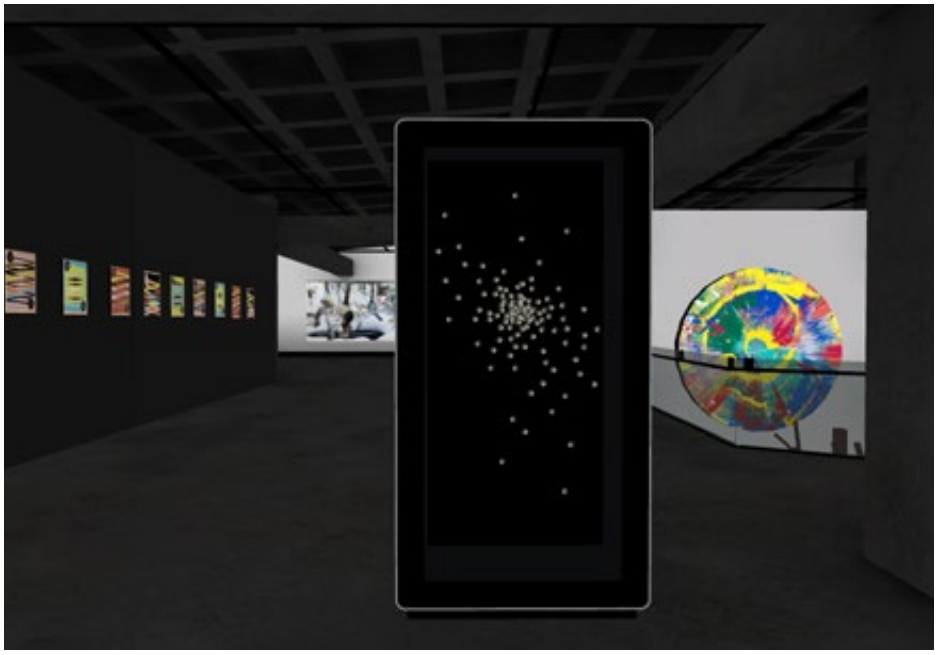

Fig. 29. Screenshot of the B1 galleries from the virtual real time model 2010.

Conclusion

> Utterly unique place. An unbelievable experience. (Emma McCoy, MONA Facebook January 1st, 2014)
>
> There is no cool, sterile, detached white cube here; the experience is immersive and sensuous. (Belle, 2011, p. 58)
>
> At every turn, as you explore the raking tunnels, the bridged box-within-boxes, the veiled halls, there is a sense that the work, the lighting, the space and the materiality have been choreographed with subtlety and skill into a singular if hugely idiosyncratic whole. (Farrelly, 2012)

The response to MONA, by critics and the public alike, gives credence to the notion that it is possible to create a museum with an atmosphere that is interesting and engaging from both an architectural and exhibition design perspective. Both can coexist, regardless of the individual strength of either element. It also suggests that both architecture and content are equally important in how an audience responds to their experience of a museum.

Designing for MONA was a unique challenge. The complexity of the architecture combined with David Walsh's organic, non-traditional approach to conceptualising the museum required myself and the team to stretch beyond our established expertise: to engage in new ways of thinking and creating. The complex nature of the building required the invention of new tools and processes and the diversity of the collection asked for something original and unique.

In engaging with the challenges set out by the MONA project, it was first necessary to develop a framework for the design process. This framework set the creative scene for the exhibition design and was based on what I identified as the foundational elements of the Museum: the interrelationship between the architecture, art and antiquities.

I set out to explore strategies with which to strike an overall balance in the exhibition design for MONA. The driving outcome of this was to achieve an equal voice for the finer antiquities in juxtaposition with the larger contemporary works and to ensure that these both retained their presence pitched against a very strong architectural environment.

Lighting, display case design, built-in gallery flexibility, showcasing the uniqueness of the collection and the creation of a new exhibition visualisation tool were all ways in which this balance of elements was achieved. Although MONA has been hailed as breaking the mould in terms of traditional museum and exhibition design, this outcome was not our explicit intention from the outset; rather it was an organic outcome derived from a response to Walsh's unique vision and collection and somewhat experimental strategies employed to meet this particular set of challenges.

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Endnotes

[1] Courtyard House was once the home of Cladio Alcorso, who founded Moorilla winery, Tasmania's first commercial winery on the current MONA site.

[2] Sir Roy Grounds,, Australian modernist architect who designed both the Courtyard House, 1958 and the Round House, 1958-1960 for Claudio Alcorso.

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With thirty-three years of museum experience, Adrian was invited by David Walsh to join the MONA project in 2006 at the early stage of the architectural development. His knowledge of exhibition infrastructure, art installation and museum operations informed the design and construction of the galleries and other functional spaces. As the building phase progressed Adrian took a leading role in the exhibition design development process, particularly in the design of MONA's custom display cases, gallery concepts and exhibition control systems.