

The image shows a large, circular architectural structure, possibly a dome or a large-scale staircase. The upper portion is covered in horizontal wooden slats, while the lower portion consists of multiple concentric, curved grey bands. The lighting is soft, highlighting the textures of the wood and the curves of the structure.

**THEME 3.**

**ARCHITECTURE: OASES OF FAITH:**

3 ARCHITECTS: MURCUTT, BALDASSO CORTESE,  
CANDALEPAS ASSOCIATES



## OASES OF FAITH

**bold terms** appear in the Architecture Glossary at the end of Oases of Faith section.

Glenn Murcutt & Hakan Elevli: *The Australian Islamic Centre*, Melbourne Victoria 2017  
Baldasso Cortese Architects: *Tarrawarra Abbey*, Tarrawarra, Victoria 2017  
Angelo Candalepas and Associates: *Punchbowl Mosque*, Sydney New South Wales 2018

**Oases of Faith** explores the use of concrete in three contemporary faith buildings for religious communities; *The Australian Islamic Centre* in Melbourne, *Punchbowl Mosque* in Sydney and Victoria's *Tarrawarra Abbey*. Concrete was preferred by these three architects for its economy and versatility including

- load-bearing strength
- wide diversity of possible surface finishes
- capacity to be cast into difficult shapes (see *Punchbowl Mosque*)
- sustainability for its economy calculated over the total years of use
- reliable durability, lasting for decades
- fire-resistance

### Glenn Murcutt

#### The work: The Australian Islamic Centre



Above: Glenn Murcutt, *The Australian Islamic Centre*, 2016 Newport, Victoria. Photos: Anthony Browell

### What we see

The Australian Islamic Centre is **contemporary** rather than designed in a traditional **Arabic** or **Ottoman** style. Glenn Murcutt's discussions with his client community revealed they wanted a mosque relevant to their current lives; more open and transparent, an accessible building for all visitors both Muslim and non-Muslim. Their new mosque is a white two-storey concrete building set well back from the street. Across an open **entrance court** we can see through plate-glass doors into a light filled interior.

Murcutt replaced some traditional mosque features with contemporary Australian versions. The open entrance court replaces a traditional walled courtyard for secluding worshippers from the outside world. A **minaret** tower for the **muezzin's** calls to prayer, deemed unnecessary as worshippers now have personal time-keepers reminding them of prayers, is replaced by a grand wall. It shelters the open entrance court and holds high a **crescent moon** symbol identifying the building as Islamic. The wall is triangular like a 2D peaked mountain, with the gold sculpture held aloft at its pinnacle acting as a landmark on the street.

Instead of a **dome** traditionally representing the Heavens, Murcutt brings daylight into the main prayer hall through an array of golden roof-**lanterns**, like a high band of **castellations** above the **facade**. They 'crown' the building, their hand-painted gold surfaces gleaming in the sun.

Murcutt had to retain several mosque traditions; female and male worshippers have separate entrances to their own washing areas and prayer spaces, both entering from the public entrance court. A grand enclosed staircase to one side is how women ascend to their upstairs prayer room, while male worshippers enter at ground level. A **minbar** and **mihrab** remain features of the downstairs prayer room.

### The Architect

Glenn Murcutt is Australia's best known architect and although he used concrete for Newport, he normally specialises in **sustainable** lightweight buildings. His design philosophy of 'treading lightly on the earth' is widely admired as minimising environmental impacts of his buildings. According to *Architecture Week* magazine (17 April 2002),

*'Murcutt selects materials that have consumed as little energy as possible in their manufacture, and will consume as little as possible in the operation of the house (building).'*

<http://www.nma.gov.au/defining-moments/resources/glenn-murcutt>

Murcutt used concrete for Newport instead of lightweight materials, because of its other eco-benefits. (See section below titled **Is Concrete Sustainable?**)

Australia's most awarded architect, Glenn Murcutt has won every major Australian architecture award and in 2002 was Australia's first winner of the world-famous **Pritzker Architecture Prize**. The world's most prestigious international architecture award, the Pritzker is awarded by a jury of internationally esteemed architects who celebrated Murcutt's intellectual rigour over his life's work. They praised his disciplined application of his design philosophy and his vast body of work.

Glenn Murcutt took on Australian **modernist** thinking as a young person. He understood the benefits of lightweight buildings from his early childhood spent in a remote valley in eastern tropical Papua New Guinea. There, his father Arthur, a gold miner, had built a lightweight family house using local and found materials.

*'... the family home built by his father...had a roof of lightweight, corrugated iron and was perched on long stilts to keep out water and animals. His time in New Guinea taught Murcutt what he calls, 'the architecture of the essential'.*

<http://www.nma.gov.au/defining-moments/resources/glenn-murcutt>

Following their move to Manly in Sydney, Glenn watched his father's work as a joiner, designer and builder of clients' houses. Glenn's interest in the **contemporary** (in the 1950s and 60s) international modernist style of architecture grew by seeing overseas trends in Arthur's architecture magazines. As a young man Murcutt studied architecture part-time at Sydney's Technical College before starting with a firm called Anchor Mortlock Murray and Woolley (AMMW) in 1962.



Murcutt was part of a push at AMMW to develop an Australian response to the International Modernist style he had admired in his father's magazines. A 'Sydney School' of architecture grew amongst the firm's young architects, independently creating a local Australian style for local conditions. Sydney School architects pioneered the use of unadorned materials left in their untreated state if possible, like naturally occurring colours of unpainted corrugated iron sheeting, raw galvanised surfaces and natural wood finishes.

Murcutt left AMMW in 1969 to work alone which he has done mostly ever since:

*This independence (of working solo) to experiment has contributed greatly to the development of Murcutt's distinctive style. However, in the few larger projects he takes on, the Newport Mosque in Melbourne for example, he often works with younger architects.'*

<http://www.nma.gov.au/defining-moments/resources/glenn-murcutt>

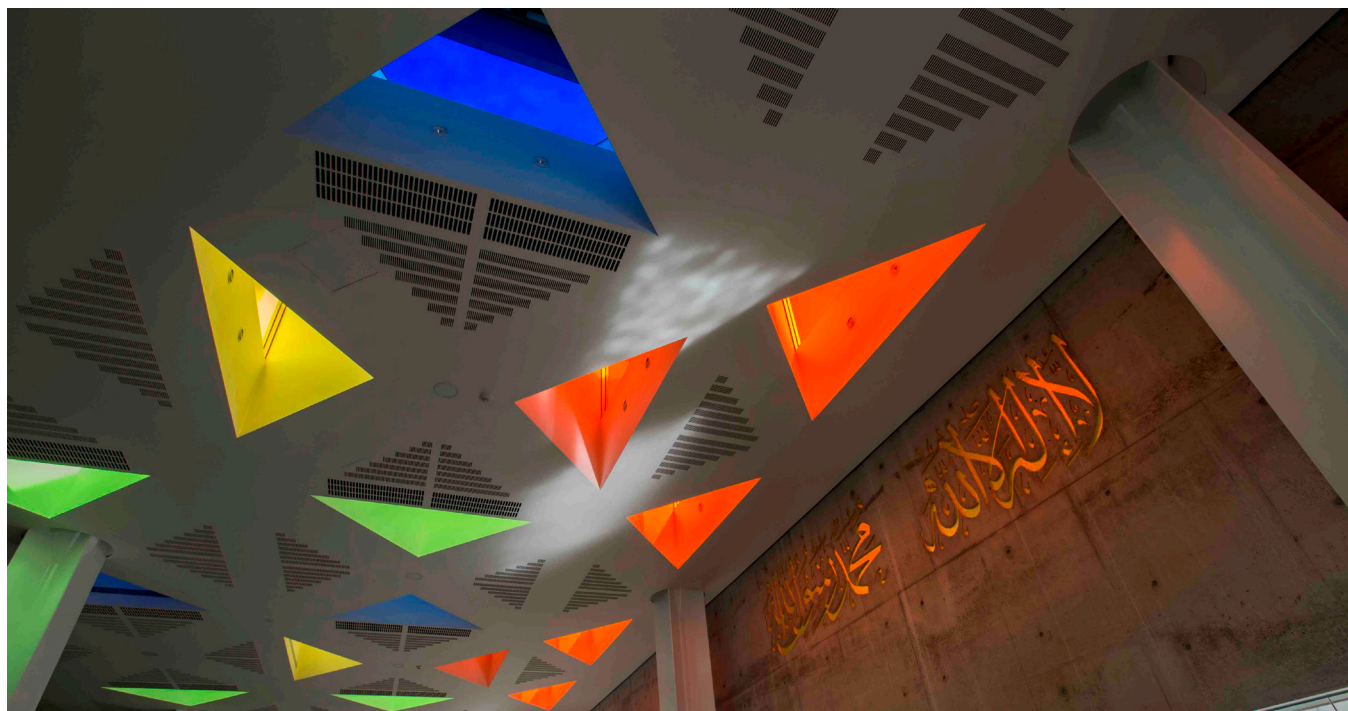
The Newport project introduced him to Hakan Elveli, a young Muslim architect luckily from the same Newport Community in Melbourne. Hakan Elveli became Newport's man-on-the-ground in Melbourne connecting Sydney-based Murcutt with Newport's long complex build.

Murcutt's **signature style** refers to local **vernacular** buildings. Frequently travelling overseas he examines traditional vernacular houses and villages, looking at their sustainable qualities from adapting to local environments. In Europe and America he saw simple, locally relevant buildings built by owner-builders on farms and in small settlements. Local vernacular influences seen in Newport's appearance include its relatively low scale in a residential community of single storey suburban houses.

Newport mosque pre-occupied Glenn Murcutt at a tragic time of his life following the untimely death of his beloved son Nick, also an architect, in 2011.

### Context for the design

Newport's Islamic community is aware of Islam's struggle with its public image in this country. Hoping to change those perceptions through architecture they wanted an inviting and open building, more transparent and inclusive than traditional mosques. Newport's Mosque is stage one of a three-stage development called the Australian Islamic Centre, which will eventually have public spaces and a library, a restaurant and cafe and several meeting teaching spaces.



Above: Glenn Murcutt, The Australian Islamic Centre, 2016 Newport, Victoria. Photos: Anthony Browell  
Right: Glenn Murcutt, The Australian Islamic Centre, 2016 Mihrab (prayer niche). Photo: Anthony Browell





## Methods and Materials

Murcutt believes building processes should be visible in the finished result. Murcutt wanted marks made by **the timber formwork** to show as wood grains and join marks on the mosque's surfaces. This technique has several names including **timber-boarded** concrete. Murcutt controls the final look of his cast surfaces by designing particular formwork with strong wood textures and noticeable joints.

Murcutt believes constructing and shaping concrete by **casting in-situ** is more **sustainable** than bringing in **pre-cast** slabs. In Newport this philosophy led to casting his concrete on site (insitu) rather than elsewhere and transported in.

Murcutt used a limited range of materials in the mosque for greater cohesion of design. While concrete is the main material for construction and most interior finishes, blue glass walls and clear windows provide day light. Wood, metal and coloured light add contrast and patterning, while gold and water are symbolic materials traditionally part of Islamic mosques.

Gold is an exception for Murcutt's design philosophy as it is not a construction material. Gold in Islam embodies the yellow colour of sunrise and Paradise, meaning the Future. Murcutt added gold to a few key locations in the mosque: the gold crescent-moon at the highest point of the entrance wall pinnacle and in giant gold wall-texts, made with **embossed calligraphy**, on several interior walls.

**Gold** texts from the Koran appear on several significant walls as on the **minbar** wall. The words were cast in-situ as inverse or **sunken relief** (like **intaglio**). To cast the words, special formwork was fitted in the shapes of reversed text words to protrude into the wall mould space, before being filled with concrete. When set and the formwork removed, the text was revealed as shallow indentations in a curving sweep of Arabic script. Now clearly visible as indented gold words, they have been hand-gilded with gold leaf.

Water, like gold, is present in all mosques and appears throughout Newport as a symbolic element, connecting this new building with its long Islamic history. Muslims regard water as a gift to all people equally, like air and light, that links each worshipper to wisdom and purity. Water is honoured in the Islamic tradition of water-gardens where running water and still-water pools reflect the sky (the Heavens) while living water plants represent life. Running water is provided in separate areas for men and women to wash away any impure thoughts or actions before prayer.

Ponds feature in Newport, planted with lilies and reeds to remind worshippers of the natural world's greater dimensions than themselves. One outdoor pond is seen through glass behind the **qibla wall** and **minbar** to be visible from inside the prayer hall. Like an enclosed water garden, this pond is open to the sky and effected by storms and rain while worshippers are at prayer.

As a **modernist** designer Murcutt restricts his colour palette to the natural colours of his building materials. White (light-grey) is the mosque's dominant colour from its concrete construction seen throughout the interior. Pale blue is the tint-colour of plate-glass walls which are patterned with triangles echoing **tessellated** tile and mosaics often seen in traditional Islamic mosques. Murcutt also made a triangle pattern in the Prayer Room ceiling with coloured light from this roof lanterns

Light is not usually regarded as a 'material'. However Murcutt has used colour and light for the mosque's most dramatic patterning. For the triangular pattern seen in the high prayer room ceiling Murcutt devised a complex infrastructure of roof-lanterns and light-well holes in the roof. He cast concrete in formwork to make an array of 56 **lanterns** (like triangular sheds), in which two sides of each lantern were cast onto the roof **slab**. A large clear window makes the third side of each lantern. Light feeds down from the windows through large triangular 'holes' (like light-wells) in the deep roof/ceiling slab and into the prayer room.

Although this light appears to be coloured, the colour comes from light illuminating the brightly coloured sides of each light-well. These coloured light wells are coloured voids in the ceiling, each painted in one of four symbolic colours which glow as vibrant day light and direct sunlight streams in.

Islam attaches meaning to the colours yellow, green, blue and red. Murcutt's coloured triangles are in these four colours and are arranged in the ceiling according to their meaning. This ceiling replaces a traditional **dome** normally representing the Vault of Heaven and painted with a blue sky with yellow stars.

Murcutt's lanterns are arranged to correspond with the pattern in the ceiling below, and face in one of the four cardinal directions, making the ceiling pattern relevant to the meaning of the colours.

- Yellow represents Paradise, the concept of Future. The yellow light-wells are lit by east facing lanterns as they catch the first light of day. The rising sun shines directly into east facing lantern-windows, making yellow triangles in the prayer room ceiling. These all face east.
  - Green represents the natural world: light coming through north facing lanterns then down into green light-boxes makes green triangles inside all facing north.
  - Blue is for the Heavens; these lanterns face south to catch constant day light without direct sun. Blue triangles face south on the ceiling below.
  - Red light represents strength and human endeavours: it comes from west-facing lanterns catching the setting sun. Red ceiling triangles all face west.
- During the day the quality of light brightens and softens as the sun moves across the sky.

The Lanterns appear gold from the street; textured gold patterning, hand-painted by the Mosque's community, covers their concrete sides. Up on the roof they appear as tall boxes or turrets, set close together in rows filling the flat roof space. Each one is over 2 metres tall, with space to walk between them. Hand-painting adding an organic hand-crafted element to their surfaces, in a textile-like chequered pattern.

Air is ventilated through Murcutt's light-well/lantern structures. He designed a passive air-circulation system with the lanterns as flues, venting rising warm air up through the light wells to escape outside through slat-vents above the glass windows. In this way the lanterns serve the purpose of 'sucking' out the warm air from inside, to be automatically replaced by cooler air coming in to the building at ground level.



Above: Glenn Murcutt, *The Australian Islamic Centre*, 2016. Photo: Anthony Browell



## Architect's statements

*'As a one-man office, I have been able to experiment with wind patterns, materials, light, climate, spaces and the characteristics of the site'.*

<http://www.nma.gov.au/defining-moments/resources/glenn-murcutt>

Murcutt on the positive effects architecture can offer society; *'Im putting forward the idea that, in a society that is anti-Islam, we can produce some work that actually can bring Islam back into our community to become an addition to our culture'* Glenn Murcutt, speaking to Pritzker laureates (past prizewinners) at the United Nations in New York, 2016.

On being asked to design Newport's mosque by the Community:

*'Of course I was excited by the possibility, but working outside one's city and experience of designing a mosque, for a sole practitioner, had its special difficulties. Knowing how difficult it is to achieve the level of architecture that makes a new project worthwhile, excitement can easily be overtaken by nervousness. I wanted to work with an architect from an Islamic background, in equal collaboration. Hakan Elevli was suggested, a meeting took place and he joined the project'.*

Ewan McEoin Published courtesy of NGV, Melbourne

<https://www.ngv.vic.gov.au/essay/the-australian-islamic-centre-in-newport-melbourne/>

*He (Murcutt) became the lead designer, aided by Elevli, a Turkish migrant who grew up in a Collingwood housing commission flat. Murcutt had the design thinking, Elevli the experience with mosques and documentation skills. Murcutt says not being Muslim helped him. "One does not have to be of a faith to design a religious building. In fact, it's probably better to know little about a building type prior to developing a solution – greater possibilities and freedom, I would think."*

By Michael Bleby, Australian Financial Review Magazine, June 23, 2016 <https://www.afr.com>

*'50% of the Mosque's walls are visible concrete, with glass forming the other 50%'*

**\*Vimeo: The Newport Mosque-Glenn Murcutt and Hakan Elevli** Images and Glenn Murcutt and Hakan Elveli speaking about Newport.

## Other perspectives

Ewan McEoin, curator of Murcutt's recent exhibition at the National Gallery of Victoria (NGV) described Newport Mosque in his exhibition catalogue as ...

*"A large east-facing ground-floor courtyard and undercover verandah form the mosque's entrance zone, including different access points for men and women. The expansive verandah offers a generous gathering space reminiscent of traditional mosque sahn courtyard) and provides additional space for large congregations, such as those that gather during Eid prayer.*

*To the south, the courtyard and verandah are bordered by a slender water pond and shielded on one side by the expansive minaret wall. Beyond the verandah, glass doors open directly onto the double-height volume of the main prayer hall. A clear line of the sight is maintained from outside the mosque right through the prayer hall to the main mihrab, qibla wall and water gardens."*

by Ewan McEoin,

[www.ngv.vic.gov.au/essay/the-australian-islamic-centre-in-newport-melbourne](http://www.ngv.vic.gov.au/essay/the-australian-islamic-centre-in-newport-melbourne)

Jorge Silvetti, an admired Argentinian architect, one of the jurors for the 2002 Pritzker Prize, commented that

*'The architecture of Glenn Murcutt surprises first, and engages immediately after, because of its absolute clarity and precise simplicity – a type of clarity that soon proves to be neither simplistic nor complacent, but inspiringly dense, energizing and optimistic. His architecture is crisp, marked and impregnated by the unique landscape and by the light that defines the fabulous, far away and gigantic mass of land that is his home, Australia.'*

<http://www.nma.gov.au/defining-moments/resources/glenn-murcutt>

## ARCHITECTURE QUESTIONS: Glenn Murcutt

### 1 CULTURAL

Explain how Glenn Murcutt addresses Islamic cultural traditions in Newport Mosque.

### 2 PERSONAL/SUBJECTIVE

Research and evaluate how Glenn Murcutt's design philosophy of 'treading lightly on the earth' connects with his concrete mosque in Newport.

Explore the origins of Murcutt's signature style and his attitudes towards materials being left 'to speak for themselves'. Describe evidence of this aesthetic style throughout the Newport Mosque.

### 3 CONTEMPORARY/ POST MODERN

Newport Mosque is considered to be a contemporary mosque. Describe how Glenn Murcutt provided design solutions to the contemporary concerns and perspectives of his client community.

### 4 FORMAL/STRUCTURAL

Describe how Glenn Murcutt achieved the forms of this mosque. Include the front wall sheltering his open courtyard and to the pattern of ceiling holes in the ground floor prayer room.

Explore how Murcutt made triangular 'holes' in the prayer room ceiling to function as light wells. Make a scale model of one of Murcutt's lanterns to show their dual functions as light-wells and air ducts.

### Links to begin your research

Images & interview (Glenn Murcutt and Hakan Elveli) about Newport:

<https://www.architecture.com/knowledge-and-resources/knowledge>.

Vimeo: The Newport Mosque - Glenn Murcutt and Hakan Elevli

Murcutt's 'extraordinary enlightenment': Australian Islamic Centre ...

<https://architectureau.com/.../murcutts-extraordinary-enlightenment-australian-islamic>

Ewan McEoin, [www.ngv.vic.gov.au/essay/the-australian-islamic-centre-in-newport-melbourne](http://www.ngv.vic.gov.au/essay/the-australian-islamic-centre-in-newport-melbourne)

### Sources for Islamic Architecture:

Introduction to mosques: <https://www.khanacademy.org/humanities/art-islam/beginners-guide-islamic-art/a/introduction-to-mosque-architecture>

Masjid or Musallah? - Ummah.com - Muslim Forum

<https://www.ummah.com/forum/.../293763-masjid-or-musallah-an-excellent-read>

Water in Islam: <https://www.ecomena.org/water-islam>

Patterns in Islamic art:

<https://classroom.synonym.com/what-do-patterns-mean-in-islamic-architecture-12087246.html>

Gold in Islam: <https://www.philamuseum.org/exhibitions/735.html>



## Further examples of CONCRETE ARCHITECTURE and ARCHITECTS

- \* Canberra bus stops, 477 in total, designed 1974 by Clem Cummings, Canberra, Australia (Australian Brutalist)
- \* Barbican Centre 1981, by Chamberlin Powell and Bon, London, UK (Brutalist)
- \* Church of Light, Tadao Ando, Japan, completed 1999 (International Style)
- \* High Court of Australia, by Colin Madigan, Canberra, Australia (Aus Brutalist)
- \* Indigo Slam Building, by Smart Design Studio, Sydney, Australia 2016 (Contemporary)
- \* MAXXI: Museum of XXI Century Arts Rome, Italy (completed 2009) by Zaha Hadid (award winning female Iranian architect) features curved walls
- \* National Gallery of Australia, by Colin Madigan Canberra, Australia (Aus Brutalist)
- \* Sagrada Familia Cathedral, by Antonio Gaudi, 1920s - 2018 Barcelona Spain (modern Gothic)
- \* Serpentine Pavilion, by Frida Escobedo, 2018, Hyde Park, London UK (Contemporary)
- \* Sirius Building, The Rocks, Sydney, by Tao Gofers, 1978 -79 (for NSW Housing Commission) Australia (Aus Brutalist)



Above: Glenn Murcutt, The Australian Islamic Centre, 2016 Triangular Lanterns. Photo: Anthony Browell

## OASES OF FAITH

### Baldasso Cortese Architects: Tarrawarra Abbey



A fire resistant concrete bunker-residence has been added to an existing monastery site of wooden buildings. The new bunker has work rooms, a gymnasium, a tailors' room, kitchen and bathrooms. Tarrawarra Abbey is a monastery home for 16 Cistercian (a Catholic order) monks set on 400 hectares of grazing land at Yarra Glen in Victoria's Yarra Valley, 60 kilometres north-east of Melbourne. Monasteries are secluded self-sufficient residential quarters for religious communities, often including food gardens, work places for income-generating activities and spaces for study, guests and worship.

*'Based in medieval traditions the order is known as "the working monks" because they live off agrarian and hand-crafting activities. At Tarrawarra the monks make and market Eucharistic bread, run a beef herd, grow their own vegetables and sew their own habits.'*

Article from Domain, by Jenny Brown, August 3, 2018 'Holy Smokescreen: The creation of a robust bunker for 16 agrarian monks'

<https://www.domain.com.au/news/holy-smokescreen-the-creation-of-a-robust-bunker-for-16-agrarian-monks-20180803-h13bm1-756384/>

### What we see

Shaped rather like a snake's head in plan, Tarrawarra's concrete bunker is a versatile fireproof residence with work and recreation spaces. At the 'head' a solid concrete building which is an above-ground recreation room, looks out to the rural landscape. Curving away behind it are several more rooms, increasingly enclosed by a sloping **turf roof**. This roof begins at the recreation room's highest point, sloping down into the soil behind workrooms, covering them all, creating a cool, damp and organic surface for extra fire resistance. Rear rooms were cut into the sloping site to make semi-underground spaces for extra fire protection.

Above: Baldasso Cortese Architects, Tarrawarra Abbey, 2016. Photo: Peter Clarke, Latitude.



The high recreation room looks out through tall (4.5 m) floor-to-ceiling windows which flood the space with daylight. These windows are sheltered on the outside by a series of dramatic concrete blades projecting vertically out from the wall. While shielding the windows from direct summer sun or the heat of fires, these blades make a grand architectural statement for this modest monastery.

**Timber-boarded** concrete was **cast in-situ** to make this room's robust exterior walls. Timber boarding makes pronounced surface imperfections which is the most obvious feature of the new Abbey's appearance. These intentionally created textures and patterns occur when concrete is poured into **formwork** constructed of timber boards, especially chosen for their board-width (rather than made of smooth sheets of ply wood) and their deliberately made rough texture.

This timber board texture softens the distinctive grey concrete so that, when combined with the sloped green roof, the bunker will merge into its surroundings to look increasingly part of its larger landscape.

### The architects

Melbourne architectural practice Baldasso Cortese is a team of 57 people and is the professional life of founding architects Anthony Baldasso and Steven Cortese, who established it in 1987 as a two-man business. Their success lies in their strong design skills honed through a collaborative partnership over 31 years; they have expanded to an office in Christchurch, New Zealand.

Baldasso Cortese's design priority is to create sustainable built-environments and working collaboratively with their clients. In preference to working for the corporate world they prefer working with community groups, with the care and life-style sectors and the education sector. Tarrawarra's commission for a small monastery appealed to their community thinking.

Baldasso Cortese's **signature style** explores qualities in their structural materials and devises interesting lighting in large airy spaces. Their philosophy insists that structural materials like steel, glass, wood and concrete are celebrated as key elements in the finished appearance of their work.

A major inspiration for Baldasso Cortese is the iconic **modernist** Brazilian architect, **Oscar Niemeyer** (1907 - 2012) one of the 20's architectural stars. Concrete is attractive to Baldasso and Cortese because of its **plasticity**, its quality of being malleable into any form, which allows the construction of any shaped building form, large or small (see Canberra's **Brutalist** bus-stops).

Baldasso Cortese's folio of Melbourne projects include central city redevelopments, as at 276 Flinders Street Melbourne; community health services like the Rumbalara Health Services Clinic in Mooroopna, Victoria; community schools like St Mary of the Cross Primary School and community projects like the Tarrawarra Abbey.



Above and right: Baldasso Cortese Architects, *Tarrawarra Abbey*, 2016. Photo: Peter Clarke, Latitude.

### Context for the work

Since taking over this picturesque property on the Yarra River in 1954, the community makes use of religious and farm buildings to support their **sustainable** way of life. A precious weatherboard church and all original work buildings are made of timber weatherboards cut from nearby forests making this little farm settlement extremely vulnerable to fire.

Having luckily escaped tragic Black Saturday bush fires nearby in 2009, the monks wanted a fire-resistant and low-energy-consuming residential bunker: concrete was the obvious choice of material. The brief had to provide for the community's long term survival in an emergency. Because Tarrawarra's monks are self-sufficient farmers and graziers, bakers and tailors who often host visitors staying for religious retreats they required fire resistant accommodation and assembly areas for residents and visitors.

Professional work rooms inside the bunker allow tailoring and baking work to continue, supplying monastic garments and Eucharist bread around Australia. Health facilities with a gym and bathrooms provide for fitness regimes and physical care to continue should there be an emergency.

### Methods and Materials

Fireproofing the bunker required several strategies. Concrete itself is a primary fire-retardant and taking advantage of the site's gentle slope by half-burying some of the bunker under a turf roof, making it almost invisible from its southern view, are clever solutions.

To connect the bunker with its surrounding timber environment exterior walls were timber textured during the casting process, by **timber boarded formwork**. From their understanding of creative formwork, Baldasso Cortese softened the bunker's concrete bulk with horizontal bands and wood texture on its concrete surface. Design Director Steve Cortese explains 'It was important this building have a handcrafted appearance as a genuine response to its rural context'.

Yarra Valley's local **vernacular** style of wooden plank farm buildings is mimicked by the bunker's timber-boarded surface. Rather than looking out of place, chunky, grey and smooth the bunker now visually unifies the site by linking with the timber character of the monks' rural settlement. The texture will encourage weathering mosses and dust to fill the texture with **'patina'** in a short time.

Several motifs of a Cistercian-cross are embossed on two external walls to identify the Abbey. Noticeable by their smooth **rebated** outlines they were cast as **inverted relief** during the concrete pour. The building's thermal performance is assisted by double glazed windows as well as the **turf roof** and thick walls. Other materials in the Abbey are local materials with simple easy-to-maintain finishes;





The idea of embedding the building into the hill came from another Australian firm called ASPECT Studios. A landscape architecture firm, ASPECT also suggested Tarrawarra's green roof be built with an irrigation system that could be turned on during danger times to wet the planted roof.

Source: [www.domain.com.au/news/holy-smokescreen-the-creation-of-a-robust-bunker](http://www.domain.com.au/news/holy-smokescreen-the-creation-of-a-robust-bunker)

Tarrawarra's sloping roof-meadow of local grasses and flowering plants also helps the bulky concrete bunker fit into its rural context by almost hiding the bunker from its south view.

**Sustainability** features of Tarrawarra 's bunker are embodied in its intended longevity and fire proofing design. As well as being fire resistant, concrete's thermal mass enables temperature control during the day by regulating ambient temperatures to a comfortable level for most of the year.

Reduced energy consumed from the grid (by being self generated) for heating and cooling the new building is also achieved by insulating against temperature loss or gain by several strategies: the thick concrete walls; by building directly onto the ground; by cladding the rooms under a thick turf roof and by setting the new rooms partially underground.

Concrete can be a sustainable material under certain conditions (please see the SUSTAINABILITY section for more information).

#### Architects' statements

*'While enhancing the overall aesthetic and requiring minimal maintenance, the green roof comprises a series of layers above the concrete roof deck, including waterproofing membrane, root protection layer, drainage layer, filter layer, growing media, irrigation, ballast and selected grasses & plants.'*

*'Catering for both recreational activities and workshop duties, the building is a contemporary facility which will complement the monk's lifestyle of simplicity and order in this uniquely Australian setting.'*

<https://www.archdaily.com/788954/tarrawarra-abbey-baldasso-cortese-architects>

*'The interiors respond to the uniquely rural setting, using natural materials including polished concrete floors and spotted gum timber linings.'* Architects Statement:

<https://www.archdaily.com/788954/tarrawarra-abbey-baldasso-cortese-architects>

The architects described their insulation techniques:

*'Utilising the inherent protective qualities and thermal mass of in-situ concrete external walls, the design compliments the existing timber buildings on the site and provides a more robust sanctuary. Designed as a fire shelter, the contemporary design cuts into the gentle slope of the site and is topped with a planted green roof.'*

<https://www.archdaily.com/788954/tarrawarra-abbey-baldasso-cortese-architects>

#### Other perspectives

*'So inside a robust bunker they asked for a tailor shop, a secure archive store, a fitness area, a disabled bathroom and a multi-purpose room.'*

*'Reflecting these requirements and the community's character - without being institutional about it, Cortese gave them a rather elegant and mainly above-ground, "free flowing, handcrafted shelter that responds to the landscape".'*

Article from Domain, by JENNY BROWN, August 3, 2018 'Holy Smokescreen: The creation of a robust bunker for 16 agrarian monks' <https://www.domain.com.au/news/holy-smokescreen-the-creation-of-a-robust-bunker-for-16-agrarian-monks-20180803-h13bm1-756384/>

## ARCHITECTURE QUESTIONS: Baldasso Cortese Architects

### 1 CULTURAL

Describe several cultural (monastic) aspects required by the monks in their brief for Baldasso Cortese.

### 2 PERSONAL/SUBJECTIVE

Evaluate the visual relationship Tarrawarra's new concrete building has with its context of vernacular wooden farm buildings and the surrounding context.

### 3 CONTEMPORARY/ POST MODERN

Explore any influences from Oscar Niemeyer that show in Tarrawarra Monastery's new building.

### 4 FORMAL /STRUCTURAL

How does the cast surface of Tarrawarra's new building connect with both International Modernism (Brutalism) and contemporary form-work and timber-boarding techniques?

Explain why Baldasso Cortese chose timber-boarding for Tarrawarra's in-situ cast concrete.

#### Links to begin your research

<https://www.archdaily.com/788954/tarrawarra-abbey-baldasso-cortese-architects>

[www.domain.com.au/news/holy-smokescreen-the-creation-of-a-robust-bunker](http://www.domain.com.au/news/holy-smokescreen-the-creation-of-a-robust-bunker)

Landscape Architects, Urban Design Studio

ASPECT Studios Australia, <https://www.aspect-studios.com/au/>

Oscar Niemeyer | The Pritzker Architecture Prize

<https://www.pritzkerprize.com/biography-oscar-niemeyer>

Timber boarding: [https://youtu.be/688MeG\\_RKRM](https://youtu.be/688MeG_RKRM)

JamFactory CONCRETE: ART DESIGN ARCHITECTURE Exhibition Catalogue





## OASES OF FAITH

### Angelo Candalepas

**NB Bold** terms appear in an architecture glossary at the end of the architecture section.



This mosque is on a quiet residential street in Sydney's south west, a culturally diverse area where 35% of the population identify as Muslim. Following years of patient struggle seeking permission to build their Australian Islamic Mission, Punchbowl's Muslim community was eventually able to commission an architect in 2008. Then in 2018, after ten more years of building work this mosque opened to launch their centre. The whole centre provides a moral focus for worship and social meetings, with its **masjid**, courtyards and a primary school all serviced by an underground carpark.

Surprisingly the community chose a Greek Orthodox architect, Candalepas and his Associates, to design their **mosque**. Despite having early doubts about working for a different religious group than his own, Angelo Candalepas was encouraged to accept their faith in him by his own mentor. He immediately embraced the cross-cultural exchange with his client community, patiently working collaboratively over the next ten years to satisfy their requirements.

### What we see

Using concrete, timber and glass Candalepas made a **béton brut** finish of smooth raw concrete throughout the mosque.

Although it is not a traditional looking mosque it retains traditional mosque features. Replacing a **minaret** a solid tower flanks the entrance court and carries the only symbol of Islam seen in this mosque complex, a **crested moon** and **star** motif, high up on its wall. From the entrance court we go through a low and sheltered doorway which opens surprisingly into a vast expansive and joyous **domed** interior.

Images: <https://architectureau.com/articles/a-99-domed-mosque-opens-for-sydney-architecture-festival/>

Above: Candalepas Associates, *Punchbowl Mosque*, 2018. photo: Rory Gardiner.

Candalepas created an exciting feature, the **murqanas**, a traditional Islamic device of stepped mini-arches that support the dome as it rises high above the prayer room. Candalepas made his murqanas as a fascinating sculptural ceiling that wraps round two adjoining walls, just below the dome. Dark dramatic shadows caused by the murqanas contrast with 102 tiny points of bright day-light shining through like stars, one for each segment, recalling a more ancient form of traditional star-domes.

These 102 glittering pin-pricks of light shine through from the sky outside, adding a heavenly brilliance. This expanse of 'stars' reminds the congregation of their Islamic faith-concept of Allah being the Heavens above, historically represented by stars painted or tiled inside traditional domes. Inside each of 99 of the mini-domes a name of Allah was written in gold by a visiting calligraphy expert, each bearing one of Allah's ninety-nine names. <https://architectureau.com>

### The Architect

Angelo Candalepas is a founding director of his firm Candalepas Associates. Now gaining many awards for their Sydney work, his practice is attracting commissions from various faith groups. In the same week he was offered the Punchbowl Mosque commission Candalepas gained three other faith projects, all of which he accepted; a synagogue extension, a church for the Antioch Gospel Church and a rest home to be built by his own faith, the Greek Orthodox Church. As an inclusive designer preferring to work with a diversity of faith clients, he understands their specific faith requirements and belief-themes they might have in common.

This innovative and contemporary Punchbowl Mosque is attracting architecture awards, including the Sir John Sulman Medal in 2017 and last year in 2018 the Australian Institute of Architects (AIA) awarded Candalepas their prestigious National Award for Public Architecture.

### Context for the work

Although the brief required Candalepas to include essential features of a traditional mosque he gave them a **contemporary** form, replacing traditional Arabic domes and minarets with modern versions. As the AIA jury noticed he referenced architectural history in this project, including Roman (the Pantheon) and Arabic works.

*The mosque posed a unique challenge – to respect the sacred traditions of the Islamic faith as described by the qiblah wall facing Mecca and the minbar (like a pulpit), rising high to address worshippers and observe the planning guidelines and height restrictions of the red brick and tile suburb. The result is one in which the traditional wedding cake mosque with its high minarets and dome sitting on top of a cube has been reinvented.*

Linda Morris, SMH, 27 August 2017 <https://www.smh.com.au/entertainment/sydney-architecture-festival-unveils-the-citys-newest-mosque-20170818-qxyyu6.html>

Candalepas created a shorter version of a minaret, believing the height once needed for projecting a muezzin's call across a wide distance is no longer necessary.

*The mosque's minaret has been adapted so that worshippers imagine the importance of the call to prayer "without having a pole upon which they climb because today we have the ability to create an augmentation of voice without necessarily screaming it from a post," Mr Candalepas said.*

Linda Morris, SMH <https://www.smh.com.au/entertainment/sydney-architecture-festival-unveils-the-citys-newest-mosque-20170818-qxyyu6.html>

### Methods and Materials

Concrete is the mosque's dominant material and is visible in **béton brut** finish softened with light to create dramatic spaces. This building is typical of Angelo Candalepas's **signature style** in which he employs light in unconventional ways to highlight his raw materials like timber, concrete and glass. Candalepas's murqanas forced him to experiment with new techniques of building **formwork** for the **casting** process.



Inspired by **star**-covered domes in traditional Arabic mosques, Candalepas cleverly included a contemporary 'star' covered ceiling. He devised a way of casting a tiny 20mm piercing at the centre of each concave segment of the murqanas. Having given himself a very difficult task of shaping liquid concrete into a mass of 102 concave segments, each with a 20 mm piercing, he miraculously managed a one-pour casting into very complex formwork.

Timber was reserved for two significant features: the womens' prayer mezzanine (above the men's prayer hall) is screened with beautifully polished vertical timber slats, allowing them to look down on the mens' prayer space. Below. Additionally a superbly finished timber lining inside the dome adds rich warm organic colour to the apex of the prayer room interior.

### Architect's statements

*'Approached by Punchbowl's Sunni community a decade ago to design a place of worship, architect Angelo Candalepas thought, "how strange, a mosque." Mr Candalepas is of the Greek Orthodox faith and his whole family are involved in church activities. "I found it complicated and difficult to imagine myself working on a mosque to be honest." Linda Morris, SMH (Sydney Morning Herald)*

*"There is going to be a series of intense lights through the little skylights that exist in every single one of these half domes and there will be 102 stars," Mr Candalepas said. "It will be beautiful, don't you think?"*

<https://www.smh.com.au/entertainment/sydney-architecture-festival-unveils-the-citys-newest-mosque-20170818-gxyyu6.html>



Linda Cheng interviewed Angelo Candalepas:

Candalepas designed a mezzanine floor for the womens' area, which includes them in the huge prayer space of the mosque;

*"That has been designed such that the women are right at the centre of the dome so they're, in a way, placed in a more powerful position than the men who are below them," Candalepas said.*

Describing the stars he put into every half dome of the murqanas, Cabdalepas explained their origin;

*"The Muslims imported the knowledge from their navigational science into their buildings to describe the night sky," Candalepas explained: "We've placed that idea within the entire building. Very small she-bolts that hold the concrete together are also skylights such that the building can be lit from the outside [like] a series of stars in the concrete."*

*'Below the "stars," the building will be inscribed with the 99 names of god in gold Islamic calligraphy. This text on the building is, as Candalepas said, akin to "people putting tattoos all over their bodies." "That's the last touch that will make the building extremely traditional, which I'm very much looking forward to."*

Interview with Linda Cheng September 2017 <https://architectureau.com>

### Other perspectives

*Made predominately of concrete, the mosque includes a minaret structure at its entrance. Traditionally, the minaret is a tower attached to mosques and serves as a visual focal point and a call to prayer. As Candalepas says, in many Middle Eastern countries where mosques serve a large population, minarets can result in tall, oppressive structures. The minaret of the Punchbowl mosque, by contrast, is designed to break down its scale. Its partially open screens create a delicate facade and a welcoming entrance. Inside, the mosque is topped with a stepped dome that also incorporates a series of skylights.*

*The mosque contains a single, "all inclusive" space with a mezzanine floor for the women's gallery. Adjacent to the dome, the ceiling features 99 dome-shaped relief carvings, each with a small opening to the sky.*

Linda Cheng, September 2017 <https://architectureau.com>

Punchbowl Mosque by Candalepas Associates won the 2018 Public Architecture: National Award from the Australian Institute of Architects. The Jury citation explains why Candalepas was the award winner;

*Punchbowl Mosque is a sublime essay in the potency of in situ concrete. The mosque is singularly defined by its intimate but simultaneously dramatic prayer room with a floating array of corbelled bisected hemispherical domes. Although to be completed in stages, the project already has a presence.*

*The dome array, which was also created in one pour, culminates in a floating central oculus of radial and stepped concrete, then timber, that hovers on its own glow of light. As in most spiritual spaces, the gaze is continually drawn to the heavens above.*

*The **corbelling** and the contingent play of perspective in some moments echo the relieving arches of the Pantheon while also emulating the light quality experienced in much larger and older mosques. The use of hemisphere domes as a motif or texture also references the architectural history of the dome as a structural technology. Cascading domes conjure up another time and place and it is this ploy of redefining timelessness that makes this project profoundly clever as it responds to the challenge of connecting a contemporary piece of architecture to the architectural history of a religion. Words: 2018 National Architecture Awards Jury*

<https://architectureau.com/awards>

Left: Angelo Candalepas in his office. Photo: Brett Boardman



## ARCHITECTURE QUESTIONS: Caldalepas and Associates Punchbowl Mosque

### 1 CULTURAL

Describe which traditional Islamic features Candalepas included in this contemporary building.

Investigate several contemporary Islamic mosques in Australia, Asia and the Middle East. Discover how they manifest traditional mosque features.

### 2 PERSONAL/SUBJECTIVE

After looking at a range of sources describe your views on the sustainability of concrete. Back up your opinions about which conditions make concrete unsustainable or a sustainable building material.

### 3 FORMAL/STRUCTURAL

How did Candalepas make the muqarnas? Discover and describe in your own words how he managed to cast the entire muqarnas wall in just one pour.

Investigate and present an account of innovations devised by Angelo Candalepas for the building of Punchbowl Mosque.

Account for several crucial innovations in the development of concrete that have changed how it is used in public buildings from Roman times to 20 Century Modernism.

### 4 CONTEMPORARY/ POST MODERN

Angelo Candalepas regards this mosque as being traditional. Describe how it could also be contemporary.

Brutalism and Modernism were 20th century intellectual developments that coincided with, and were directed by, developments in the technology and use of concrete following wartime economic constraints. Study several architects from each design philosophy to reach your own conclusions about their design strengths and style innovations. Illustrate your opinions with descriptive examples.

Evaluate whether raw concrete, called **béton brut** by **Brutalist** architects of the 1960s, is an historic or contemporary technique.

### Links to begin your research

Interview about choice of concrete; Architectural Insights with Angelo Candalepas  
<https://youtu.be/rTHFTDEiTn8> :

ABC Broadcast: The Aussie mosque that broke the mould - The Spirit of Things-ABC...  
<https://www.abc.net.au/radionational/programs/spiritofthings/...mosque/9768130>

Muqarnas: Construction and Reconstruction | SpringerLink  
[https://link.springer.com/chapter/10.1007/978-3-319-00137-1\\_47](https://link.springer.com/chapter/10.1007/978-3-319-00137-1_47)

Vimeo: A mosque for the future: The story of Punchbowl Mosque  
[www.thepointmagazine.com.au](http://www.thepointmagazine.com.au)

Sydney Morning Herald Architecture writer Linda Morris, SMH, 27 August 2017  
<https://www.smh.com.au/entertainment/sydney-architecture-festival-unveils-the-citys-newest-mosque-20170818-gxyyu6.html>

## ARCHITECTURE GLOSSARY: OASES of FAITH

\* words marked with an asterisk could be Further Research topics

\* **NB** A GENERAL GLOSSARY of concrete terms is section 1.4 at the beginning of this resource.

**Aesthetic:** set of principles of beauty; a combination of visual elements contributing to the particular look or appearance of a work.

\* **Béton brut:** French term meaning **raw** concrete; concrete surface intentionally left unfinished or roughly-finished after casting, to remain exposed visually often deliberately showing imprinted surface of the formwork. Béton brut is the source of the term **brutalism**.

\* **Brutalism:** concrete based architectural style of 1950s and 1960s, characterised by its raw or exposed concrete surfaces, called **béton brut** in French. Brutalism succeeded the philosophy and the architectural forms of early **Modernism**. The term was coined from its French component of *béton brut* and the style of elegant chunky concrete buildings by French architect Le Corbusier in his 1950s work in Chandigarh, India.

**Calligraphy:** beautiful handwriting with hand tools like pens or brushes. Cultural styles derive from differences of script, implements and media (inks or paint).

**Castellations:** in the shape of battlements, parapets alternating with indentations, as on the top of a castle.

**Corbelling:** brick or masonry courses each built protruding out above the one below in a series of corbels, as support for a larger horizontal beam or lintel or dome above.

**Crescent:** crescent moon (new moon) often seen enclosing a **star**, regarded by many as the symbol of Islam. Many Muslims resist any symbol for Islam. Prior to invasion by Osman 1st leading his army of Muslim Turks in 1453, the ancient city of Constantinople (now Istanbul) had used the crescent moon as its city motif. Osman appropriated the motif as his own for his Ottoman dynasty and later Empire.

**Dome:** a circular vault of even curvature, usually erected on a circular base, sometimes on a square base. In cross section it can be segmental (of a circle) semi-circular, pointed or bulbous. In Islamic architecture domes represent Heaven. Their internal surfaces are often painted with a pattern of stars on a blue sky.

*"The dome is, of course, a cosmic symbol in every religious tradition; and symbolically, in Islam the dome represents the vault of heaven in the same way as the garden prefigures Paradise,"*

Source: James Dickie, "Allah and Eternity: Mosques, Madrasas and Tombs." Jan 11, 2014

**Embossed:** carved or moulded in sunken or inverse relief (ie image is below the surface).

**Entrance court:** (in a mosque) a space for preparing to enter the mosque prayer rooms. Often enclosed by walls in Arabic style mosques. Might contain water for washing.

**Facade:** principal face of a building, towards a street or an open space.

**Formwork:** temporary shaping moulds usually of braced wood or metal, making a hollow volume into which wet concrete (or mud or other fluid building materials) is poured to harden into shape. When **formwork** is removed the cast material will have taken on the texture of the formwork material imprinted on its surface, providing an opportunity for deliberate creativity in surface treatments and patterns. See **timber-boarding**.

**Lantern (roof):** a many sided (polygonal) turret with windows allowing daylight to filter downwards to illuminate an interior space, often at the top of domes. See Ely Cathedral, UK and St Paul's Cathedral, London UK.



**In-situ:** on the site, in the situation. Re: concrete usually refers to casting on-site rather than transporting pre-cast concrete pieces onto the site from a place of manufacture.

**Intaglio:** incised design, carved or cast into the background surface, not protruding from it

**Masjid:** see **mosque**.

**Mihrab:** a semi-circular niche in the **qibla wall**, often decorated with elaborate calligraphic verses, and indicating the direction towards Mecca worshippers face during prayer.

**Minaret:** tall slender tower or turret within a mosque compound, with one or more projecting balconies encircling the shaft from which the muezzin calls the congregation to prayer. See The Great Mosque, Damascus, from the early c8.

**Minbar:** staircase and the raised platform it leads to, like a pulpit, often near the mihrab for the Mosque's Imam to speak from.

**Modernism:** late c19 and early c 20 cultural philosophy, leading to a style of Art and Architecture. Modernism arose out of social changes brought about by c19 industrialisation of Western European societies, in which traditional styles and building traditions were overthrown and replaced with 'modern' ideas considered more relevant to the times. Moving away from hand-worked materials, decoration and traditional spaces, modernism is now associated with a practical and analytical approach to building, focussed on function and efficiency.

Disastrous wars in the early c20 changed the affordability of older building modes. Enabled by c19 & c20 mass-production of new materials like steel, modern concrete, insulation, sheet-metal and sheet glass, modernism encouraged a tougher, rational & more economical use of these materials so our buildings show these. Modernist architects began experimenting with building structures and eliminating unnecessary ornament with this new thinking and economics.

**Monolithic:** a large single piece of stone or single material, plain, unembellished.

**Mosque:** called a '*masjid*' in Arabic (mosque is an English term) a Muslim place for congregational worship. The earliest masjid or prototype was built at Medina (Saudi Arabia) by Mohammed in 622 AD. It was a simple square prayer building enclosed by surrounding walls of brick and stone and partly roofed, so some of the enclosure made an open courtyard, now considered essential in traditional mosques. Mosque format had evolved by the end of c7 AD. Essential features include prayer halls (one for men, one for women), a **mihrab** which marks the direction of Mecca where worshippers must face towards during prayer; the **minbar** and areas for washing before entering a prayer room. See The Great Mosque of Mecca, The Dome of The Rock in Jerusalem, Blue Mosque, Istanbul.

\* **Murqanas:** a 3D system of small arches or mini-domes sitting on top of each other as a support structure; repetitive concave mini domes built into the corners of a square base to supports a round dome above; built in horizontal layers, each layer projecting beyond the layer below as rise up to the dome base. Traditionally a mosque murqanas is highly decorated with coloured mosaic in geometric patterns. Shadows cast into the hollows increases the visual interest of this engineering device.

\* **Niemeyer, Oscar (1907 - 2012)** Brazilian Master designer, worked in the International architectural **modernist** style employing **raw cast** concrete on a grand scale. Niemeyer was also a **Pritzker Prize** winner. Niemeyer's concrete mastery can be seen in many large projects in Brazil, including the country's controversial designed-from-scratch capital city of Brasilia.

\* **Ottoman:** dynasty and empire of Muslim Turkish ruling family Ossman (or Ottoman), who ruled parts of Asia Minor including present day Turkey, for 600 years from c14 to early c20.

**Patina:** incrustation, softened alteration of a surface by accumulation of matter and wear over time.



Above: Candelapas Associates, *Punchbowl Mosque*, 2018. photo: Rory Gardiner.



**Patterns in Islamic art:** take three main forms; curving vines (like vegetation) often called arabesques; calligraphic verses, usually from the Koran, in the form of Arabic script; a range of geometric shapes representing abstract faith concepts. Patterns encourage the faithful to reflect on impermanence (of the physical world) and the higher and unifying nature of God, Allah.

**Plasticity:** the capacity to be moulded; poured into a mould when soft before hardening into shape.

**Polished:** concrete (mostly floors) smoothed with a rotary grinding machine before finishing with a protective clear sealant for a shiny surface.

**Pre-cast slabs:** also known as tilt-ups, made in a concrete casting factories away from the build site; whole wall-slabs can be poured horizontally by machinery.

\* **Pritzker Prize:** greatest international architecture prize, awarded annually to honour a living architect.

**Qibla:** a wall which worshippers face as they pray, ensuring they are facing towards the Kaaba in Mecca. Often contains the **mihrab**.

**Raw:** surface of concrete as cast in formwork; bare, unrefined, rough, uncoated, unpainted.

**Rebate:** rectangular groove or notch cut into a surface.

**Relief:** a carved or cast design stands out from, or is sunken into, a background surface eg Egyptian tomb and temple carvings.

**Signature style:** style or look that identifies a designer architect or artist; style they are best known for.

**Slab:** large flat expanse of cast concrete, made for floors, ceilings or walls, usually reinforced.

**Sunken relief:** inverse, incised, intaglio relief; the image is sunk below the level of the surrounding surface; contained within a sharply incised contour line that frames it with a powerful line of shadow.

\* **Star:** in Islam the star is a manifestation of God (Allah). Stars are often represented as a pointed geometric shape in tessellated tile patterns.

**Surface treatments:** **Béton brut**, **raw**, rough, bare, unpainted, bush hammered, **polished**.

**Tessellated:** geometric patterns derived from small cubes of glass or stone (tesserae) in mosaics; geometric glazed tiles embedded into wet cement on walls and floors.

\* **Timber-boarding:** derived from (timber) formwork for casting concrete into, the timber selected is deliberately chosen and assembled to create increasingly manipulated textured and patterned surfaces to the cast concrete.

**Turf roof:** A sod roof, or turf roof, is a traditional Scandinavian type of green roof covered with sod (of earth) on top of several layers of birch bark on gently sloping wooden roof boards. Until the late 19th century, it was the most common roof on rural log houses in Norway and large parts of the rest of Scandinavia.

**Vernacular:** (architecture) concerned with ordinary buildings, usually built by owners (non-professionals) from local, easily available materials for utilitarian uses; eg houses, sheds, farm buildings. Vernacular building occurs in most continents and societies and is often good at addressing local climatic conditions.

## SOURCES

The Penguin Dictionary of Architecture, by Fleming, Honour & Pevsner, pub Penguin

The Concise Oxford Dictionary, pub Oxford at Clarendon Press

The Penguin Dictionary of Symbols, Chevalier and Gheerbrandt, pub Penguin Group 1996

On-line searches identified in the text

Right: Glenn Murcutt, The *Australian Islamic Centre*, 2016 Newport, Victoria. Photos: Anthony Browell

