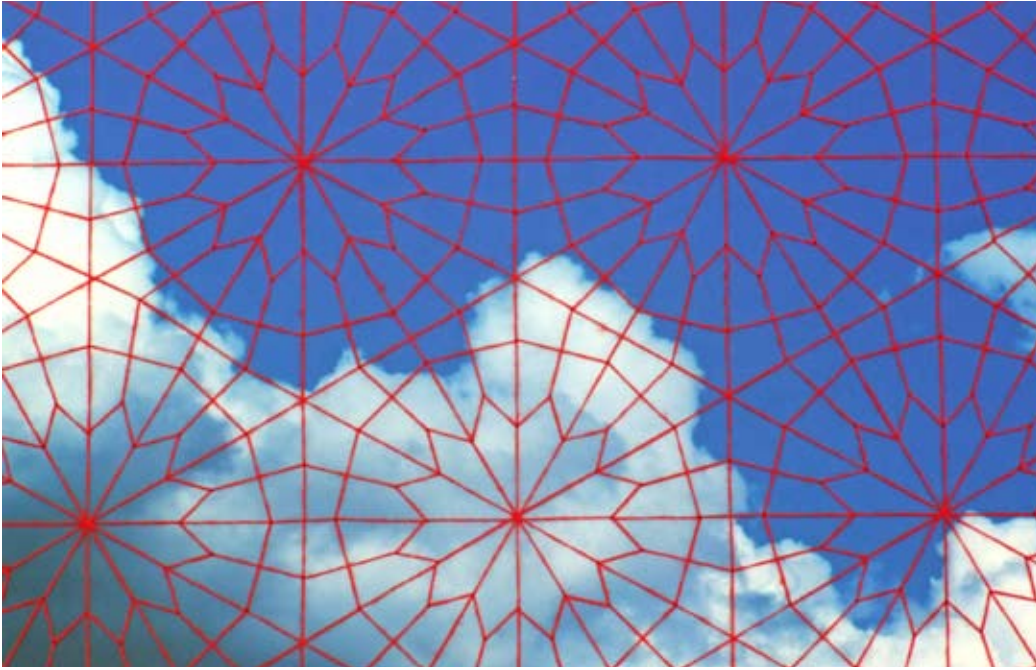


The Cosmology Gallery

Unity through diversity
in a vast and awe inspiring universe





David Sequeira, Pieces of Sky, 2008.



Cosmology Gallery "Penrose Tiling".

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Front Cover
Cosmology Gallery

Rear Cover
Celestial Visions / "Our home galaxy, the Milky Way"

Photographic credits: John Goldsmith, Victor Franz, Perdita Phillips,
Sohan Hayes, Arif Satar, Therese Howard, Warmun Arts Centre.

The Cosmology Gallery

**Unity through diversity
in a vast and awe inspiring universe**

An Introduction to the Cosmology Gallery

**Professor David Blair, Gravity Discovery Centre Foundation (Inc)
John Goldsmith, Cosmology Gallery Development Group.**

The Cosmology Gallery explores the human yearning to understand our place in a vast and awe inspiring universe. The gallery is the result of a collaboration between scientists, artists, photographers and cultural groups, including Indigenous, Christian, Buddhist, Islamic and Hindu traditions. The result is a new visual interpretation of creation stories of the universe we live in.

The gallery is designed to reveal the unity through diversity. The unity is our common desire to understand our place in the universe. The diversity is our rich tapestry of interpretations. The gallery contrasts traditional multicultural cosmology with the cosmology of modern science. Its goal is to capture the universal sense of awe when humans imagine their place in the universe.

The Cosmology Gallery building is a towering limestone construction topped with a 20m diameter dome. Its inspiration is the Baptistery in the Piazza of Miracles, beside the Leaning Tower of Pisa, where the great scientist Galileo was baptised. A long spiral walkway creates an exhibition space, which takes you from the Penrose tiling on the floor to huge moving digital projections on the inside of the dome. Artistic interpretations of creation stories from the world's great cultures and religions are expressed through the original artworks on the walls and interpreted in digital projections on the dome.

The dome of the Cosmology Gallery is a truncated icosahedron, a shape first discovered by Pythagoras in the 6th Century BC, who believed that geometry held the key to understanding the universe. Two thousand years later, Leonardo da Vinci explored and drew the truncated icosahedron. The modern soccer ball, based on this shape, was invented by Richard Buckminster Fuller - the great promoter of geodesic dome structures. In 1985, a new form of carbon was discovered in which 60 carbon atoms form the same perfect shape. These beautiful molecules were dubbed 'Buckyballs' in honour of Buckminster Fuller after his death. We now know that Buckyballs are created in red giant stars and

in the flame of a smoking candle! It is also the building block for carbon nanotubes - the strongest known structures which are at the forefront of the nanotechnology revolution. Thus, carbon - the atom of life - creates a link from stars to soccer ... from Pythagoras to advanced technology, as well as being the inspiration for the gallery roof.

Many cultural groups have contributed to this project. Artists drawn from these communities have created artworks. The artists have interacted with scientists to explore the unity and the diversity of their traditions and their creation stories. Their interpretations of cosmology are displayed on the lower and upper levels of the Gallery. The support and participation of the many individuals, community groups and organisations in this project is greatly appreciated and acknowledged.

One series of works is *Celestial Visions*, which links space, time and culture. Space is the astronomical space of the universe, and places on Earth with special cultural significance. Time is the time of dramatic astronomical apparitions, which coincide in rare moments captured on film.

The "Timeline of the Universe", due for installation in April 2008, presents the history of the universe along a 60 metre display, viewed from the spiral walkway. It presents the astonishing scientific story of the creation and evolution of the universe in photographs, poetry and text. The timeline explores the history of the universe, the synthesis of atoms, the supernova that led to the solar system, the origin of life and the future of our planet.

The Cosmology Gallery provides an opportunity to imagine our place in a vast and awe inspiring universe. We hope that the gallery will inspire other community and cultural groups to add and share their own stories of the cosmos and its creation.

Celestial Visions

John Goldsmith
February 2008

When we look towards the stars, what do we see, and what do we feel? Is it a sense adventure? Or beauty in a moonrise? Surprise by an unexpected shooting star? Or perhaps a sense of awe with the vastness of the universe we live in. People are fascinated with how the universe began, what will become of it, and how to make sense of it all.

There are many connections between the astronomical world and human culture. These connections are revealed in many ways, through cultural creation stories of the cosmos, ancient monumental structures inspired by the celestial, modern scientific endeavours to understand the universe, and artistic interpretations of the universe.

The wonders of the night sky, the excitement of exploring the cosmos, the marvels of astronomy and the often beautiful sights of nature are all reasons behind my pursuit of astronomical photography.

Ever since the long awaited re-appearance of Halley's Comet in 1986, we have been privileged to witness some of the most remarkable and rare astronomical phenomena ever observed. For example, in late February 1987 the first supernova

(exploded star) seen for over 400 years unexpectedly and suddenly brightened in the southern sky, coinciding with the appearance of Comet Wilson. The year 1994 saw the spectacular destruction of the newly discovered Comet Shoemaker-Levy 9, which split apart and then slammed into planet Jupiter, the first time in recorded history that such an event was predicted to occur and then observed! Only 12 months later, another newly discovered great comet known as Comet Hyakutake, narrowly missed the Earth (by astronomical standards), and went on to provide a very impressive appearance to northern hemisphere skywatchers. Then, in 1997, after an absence of over 4200 years, Comet Hale-Bopp attracted worldwide attention as it reappeared in the northern skies as a dramatically bright and beautiful comet, with a prominent curving tail. When it was recognised that the comet last appeared in ancient times, this sparked an idea to document the comet as it appeared above two of the most famous ancient sites in the world; The Great Pyramids of Giza, and Stonehenge. Recording the ancient Comet Hale-Bopp above the Pyramids and Stonehenge was a great adventure in itself, and it also prompted me to learn about how different cultures understand astronomical events.

John Goldsmith / Celestial Visions: Comet Hale-Bopp, Stonehenge, Great Pyramid and Islamic Mosque, 1997.



In 1998, during astronomical photography at Wolfe Creek Meteorite Crater in the far north of Western Australia, I was introduced to Indigenous perspectives of the night sky and astronomical creation accounts of the crater, by local Indigenous people.

Documenting remarkable astronomical events by astronomical photography is a tremendous privilege, partly because I know that many people do not have the opportunity to witness such events for themselves.

These experiences have all contributed towards the development of the Celestial Visions exhibition. The exhibition explores the profound connection between the celestial realm and our own biological, cultural and earthly experience. Key themes include the celestial wilderness, deep space, ancient skies and celestial cities.

The Celestial Visions photographic exhibition is a unique collection of astronomical photography and has developed from over 20 years of photography. The exhibition features diverse astronomical events including major comets, meteor showers, eclipses of the moon and sun, views of our own Galaxy, the Milky Way, and many other astronomical events.

Master astronomical photographers have inspired my work. The gift of revealing colour in the night sky is inspired by Dr David Malin (previously Anglo Australian Observatory) and his superb colour photography of the universe.

The approach of linking astronomical events to our familiar earthly landscapes is inspired by world renowned Japanese astronomical photographer Akira Fujii. This style helps to establish a close connection between the astronomical events portrayed and our own familiar environment, placing events into context and provide a sense of scale and connection.

Celestial Visions is an adventure into the awesome and vast universe we live in. It is a great pleasure to share these images so that we all can appreciate the wonders of the night sky, and the amazing astronomical events which we are privileged to witness.

John Goldsmith is Project Coordinator for the Cosmology Gallery project, chairs the Cosmology Gallery Development Group and is producer of the Celestial Visions photographic exhibition.



Wonder, Curiosity, Truth, Belief

Penny Bovell
February 2008



Toogarr Morrison, Bibbulmun Religion, 2008.



Therese Howard, Dust to Dust (detail), 2008.



Therese Howard, Dust to Dust, 2008.

On different occasions, two sweet boys shared with me their thoughts about the universe. The first, a boy of four lay on a rock at the north mole in Fremantle. It was a hot night, too hot to sleep. It seemed that for the first time he understood how far away the stars were and in a moment of wonder said: 'This is the best night I have ever had.' Years later, a more studious nine year old asked me what I thought was the most important subject (in the world). Curious as to what he might answer I returned the question and he knowingly said: "Space!" I often recall these episodes, they remind me that moments of wonder are rare; if only we could always see the world through children's eyes, or, if only moments of wonder could be extended. Unfortunately, as the Roman poet Lucretius (c.100-C.55 B.C.E.) reminds us in *De Rerum Natura* (*On the Nature of the Universe*), individuals rarely escape the practicalities of life.

Lucretius' poem explained his belief that the universe was composed of tiny atoms moving about in an infinite void, which meant all things were connected: from the creation of the universe to the progress of humankind to the formation of culture, art and science.¹ Julian Spalding reminds us in *The Art of Wonder: a history of seeing that everything has its place in the order of creation, from twinkling stars to sparkling eyes.*² In one respect, I believe that many artists are motivated by wonder: they offer their audience the same experience.

Every traditional culture has cosmology stories. Primack defines cosmology as how the universe and the world began, how it still exists now, and how human kind fits within that order. In other words, Cosmology is about how the everyday fits within an invisible reality. (Primack: www.sciencemag.org July 2007) This concept is such an overwhelming thought that we might agree no-one could do justice to the representation of creation stories. However, it hasn't stopped people around the world from trying. Selection, reduction and extraction are how artists deal with complex narratives and, as I have pointed out earlier, an artist's intention might be to provoke a sense of wonder rather than search for a particular truth or follow a belief.

Diversity of cultural responses adds richness to wondering. Indeed traditional creation stories are most likely to be religious. Religion provided the foundational texts about society and culture. Artists created the sacred images for devotion and worship. However, art objects, destined for galleries or museums function differently. Whilst they might provide contemplative experience, and engage spiritual concerns, their emphasis is more likely to be aesthetic. Today, artistic and religious practices are

¹ http://en.wikipedia.org/wiki/On_the_Nature_of_Things, also referred to as *On the Nature of the Universe* (February 2008)

² Spalding 2007: 33

shaped by different rituals, protocols and etiquettes and friction could arise when art and cultural beliefs merge.

When art separated from religion, it began to share similar methods of enquiry with science. Both fields rely on experimentation to forge new ways of explaining things about the world. Nevertheless, art and science differ fundamentally because (I believe) art tends to extrapolate wonder whilst science pushes beyond it. Through experimentation, science proves or disproves belief systems whilst art seeks an aesthetic response that remains open-ended. Art, science and religion are different cultural forms that preserve or call into question canons or belief systems. In so doing they share a social purpose as they allow for critical reflections that throw into doubt the status quo in order to seek a preferred state of existence.³ Centuries of scientific knowledge have sidelined the important religious texts and yet societies and individuals continuously rekindle their trust and faith in religions. Furthermore, cultural roots are not easily recognizable in our migratory and global society. Artists do not necessarily feel as if they 'belong'; in fact, making art necessitates solitariness and reflection.

Having distinguished some tensions and differences between cultural beliefs, art, science and religion the Cosmology Gallery agenda might appear idealistic and challenging. Inevitably, the highlight in taking up this curatorial project was navigating between the idealism inherent in the theme and the practical reality of commissioning, consulting and bring together artists with communities. We sought to find high caliber artists from particular communities in order that they could provide their authentic cultural perspective about the creation of the universe. The aim was to acknowledge the profound nature of authenticity. Cultures own their stories and should be the sole people who reenact them. But, more complex issues, some of which I have tried to outline above, were at stake and could not be ignored during this project. What of those born into one faith who feel they belong to another, or, of migration and diasporas and people searching for their ancestral culture. Expand this conundrum to include artists who were once scientists and scientists who wish to be artists. And, what of wonder and yearning? Authenticity is the key; it is through practice that authenticity reveals itself.

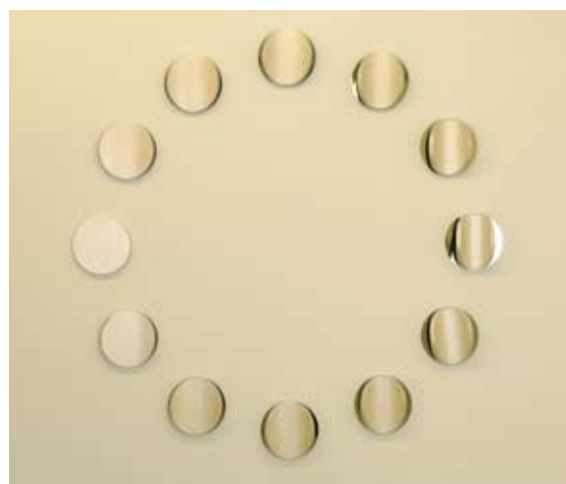
Artists chosen to participate in this inaugural exhibition, and to be part of the Cosmology Gallery permanent collection, are indeed authentic in their practice as artists. The selection criteria sought artists with an ability to engage with (their) cultural beliefs,



Perdita Phillips, Night Vision, 2006.



Mabel Juli, Garnkiny Ngarrangkarni, 2007.

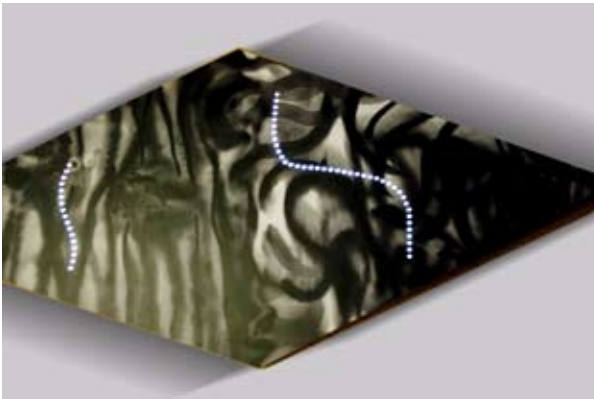


Marion Borgelt, Lunar Circle: Figure C, 2007.

3 Clair 1999:35



Dun Zhu, Tibetan Mandala.



Audrey Satar, Sunyata, (detail) 2008.



Audrey Satar, Sunyata, 2008.

and who could develop sophisticated visual ideas and aesthetic material outcomes. Some artists worked closely with communities: Rodney Glick, Sohan Hayes and Christopher Hill worked with the Balinese villagers of Tengulak (Ubud) and Audrey Satar worked closely with the Temple of Fine Arts (Perth). Glick, Hayes and Hill's work *Everyone* is crucial to this exhibition because it raises the issue of cultural hybridity and individualism. Eveline Kotai is a founding member of the Tashi Choeling Tibetan Buddhist Centre and David Sequeira follows Sufi philosophy. Therese Howard engaged in the consultative process with theologian Dr James (Jim) Trotter, from Murdoch University whilst also drawing on her own catholic education. ***Dust to Dust*** is a reference to the *Book of Common Prayer*. Toogarr Morrison and Mabel Juli are acknowledged elders in their Bibbulmun and Warmun communities but each have a different story of the stars, sun and moon based on the inherited dreaming significant to their own family and country. Where Mabel Juli is reductive in her approach to painting, Toogarr Morrison painstakingly and meticulously works with detail.

One way the exhibition attempts to deal with tensions between traditional and contemporary conditions, is by presenting actual contrasts. For example, Kotai's *Bardos of Becoming* interpretation of impermanence and interconnectedness is coupled with a traditional Tibetan Mandala by Dun Zhu that represents time and the universe, physical and mental aspects of ourselves, and aspects of Buddhist practice. Perdita Phillip's digital photographs *Night Visions* are of a field trip and attempts to merge scientific and artistic methodologies, whilst Marion Borgelt reminds us that observing the waxing and waning of the moon tells us much about the weather and seasons as it does about ourselves. The cross-overs and connections between the different artworks about the creation of the universe and our place within it evoke unity through diversity far greater, or more powerfully than individual artworks, cultures or fields of knowledge could possibly do.

Penny Bovell lectures in studio and art history theory at the Faculty of Architecture, Landscape and Visual Arts, The University of Western Australia.



Eveline Kotai, Bardo of Becoming, 2008.



Rodney Glick, Sohan Hayes, Christopher Hill, Everyone, 2008.

Community and the Cosmos

By its very nature, the Multicultural Cosmology artworks project has involved many individuals, organisations, cultural and community based groups. The project has provided opportunities for interaction between a wide range of people and groups, to facilitate the creation of the cosmology artworks. Through this process, the multicultural cosmology artworks project has benefited by being exposed to diverse perspectives of the community, including scientific expertise, artistic interpretation, community, religious and culture perspectives.

Several University of Western Australia extension courses have been held on topics relating to the Cosmology Gallery. These courses have helped to generate ideas which have been incorporated into the Cosmology Gallery project. These popular courses include topics such as;

- Einstein Buddha and Modern Cosmology (February 2006)
- Finding our Place in the Universe (January 2007)
- Are Science and Religion Incompatible? (February 2007)
- Finding our Place in the Universe (Feb 2008)
- Awesome Universe: Cosmology in Art, Science and Culture (March 2008)

It is estimated that over 800 people have been directly engaged through courses, workshops and forums.

In August 2007, the Cosmology Gallery was privileged to host Sir Roger Penrose, English mathematician and cosmologist. Sir Roger Penrose is one of the Patrons of the Cosmology Gallery and his famous "Penrose tiling" is featured at the gallery. The "Penrose tiling" is generated by the combination of two geometric shapes, which combine to create non-repeating patterns. During his visit to Western Australia, Sir Roger Penrose also gave a public presentation "What Happened Before the Big Bang?" (August 2007).

In July 2007, artists, scientists, cultural, religious and community leaders gathered together to explore the subject of cosmology and the creation of the universe. This fascinating forum provided many interesting and informative perspectives about cosmology, including perspectives from Indigenous, Christian, Buddhist, Hindu, Jewish and Islamic traditions. Artists were short-listed, based on community groups putting forward their suggestions and expression of interest from the arts community. This process resulted in the final selection of artists, who were engaged to participate in the cosmology project. During the development and creation of artworks, many artists continued their interaction with their community groups, thereby gaining important guidance for their artwork. The act of creating artworks has been documented by several video productions, in which artists describe their ideas, and how they have approached the subject of cosmology and the creation of the universe. The documentaries have been developed by Mr George Karpathakis and students from Edith Cowan University, in conjunction with the Film & Television Institute (Western Australia). The story of the artists creating their works is now presented by video projections onto the Cosmology Gallery dome.

The Cosmology Gallery now provides a permanent collection of artworks to provide an enduring benefit to our community. It is hoped that the Cosmology Gallery will help to inspire and encourage greater understanding of cultural views of the creation of the universe, and our place in it. We hope the Cosmology Gallery collection will grow and develop over time, through future projects, sponsorship and donations.



Abbott Placid, Prof David Blair and Ajahn Brahm, 2007.



UWA extension course "Are Science and Religion Incompatible?" 2007.



Scenes from the documentary videos and the cosmology workshops.

Listing of exhibits

1. Dun Zhu (born 1961)

Tibetan Mandala

Acrylic on silk

Artwork dimensions 105 x 105 cm (framed)

Donated by David Blair 2008

2. Perdita Phillips

Night Vision (2006)

Digital print on paper

Artwork dimensions 4 x 86 x 86 cm (framed)

3. Eveline Kotai

Bardo of Becoming (2008)

Oil on Belgian linen

Artwork dimensions 183 x 198 cm

4. Mabel Juli (Warmun Community, Turkey Creek WA)

Garnkiny Ngarrangkarni (2007)

Natural ochre and pigments on canvas

Artwork dimensions 120x120 cm

5. Rodney Glick, Sohan Hayes, Christopher Hill

Everyone (2008)

Digital prints Edition 1/5

Artwork dimensions 8 x 96 x 120 cm (framed)

6. Marion Borgelt

Lunar Circle: Figure C (2007)

Moulded marine ply on polished metal

Artwork dimensions 130 x 130 cm

7. Therese Howard

Dust to Dust (2008)

Bronze, patinated and cold painted silver

Artwork dimensions variable

8. David Sequeira assisted by Chris Malcolm

Pieces of Sky (2008)

Polyester string sewn through digital photos

Artwork dimensions 12 x 50 x 40cm (framed)

9. Toogarr Morrison

Bibbullmun Religion (2008)

Acrylic on canvas

Artwork dimensions 170 x 230 cm & 8 x 53 x 41 cm

10. Audrey Satar

Sunyata (2008)

Digital print on acrylic with etched

and perforated details and back light with led lighting

Artwork dimensions variable

Celestial Visions photographic exhibition by John Goldsmith

Photographic prints, 39 x 59 cm, framed 55 x 75 cm

Sun & Moon

Series of four photographic prints

Golden sunrise

Ring of Fire: Annular Solar Eclipse

Annular Solar Eclipse, 1991

Total eclipse of the moon

Celestial Wilderness

Series of six photographic prints

Stars above the Bungle Bungles

Road to the centre of the Universe

Star trails at Wolfe Creek Crater

Morning planets at Wolfe Creek Crater

Meteors, dawn & the Pinnacles

Meteor shower & the Pinnacles

Ancient Skies

Series of seven photographic prints

The Pyramid, Sphinx and the Sun

Stonehenge

Comet Hale-Bopp and Stonehenge

Comet Hale-Bopp, Egypt, 1997

Comet Hale-Bopp, Mosque, 1997

Comet Hale-Bopp and Stonehenge

Golden desert sky, Egypt, 1997

Celestial Cities

Series of seven photographic prints

Comet Hale-Bopp, 1997

Moonrise over Sydney Harbour

Our home galaxy, the Milky Way

Crescent moon and Venus

Comet McNaught & Perth, WA, 2007

Crescent moon & Opera House

Perth, City of Lights

Patrons

English mathematician and cosmologist Sir Roger Penrose, and Australian astronomical photographer, Dr David Malin (David Malin Images), are patrons of the Cosmology Gallery.

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- Members of the Cosmology Gallery Art Committee
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- Rabbi Fraylich
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- Mr Len Collard, Murdoch University
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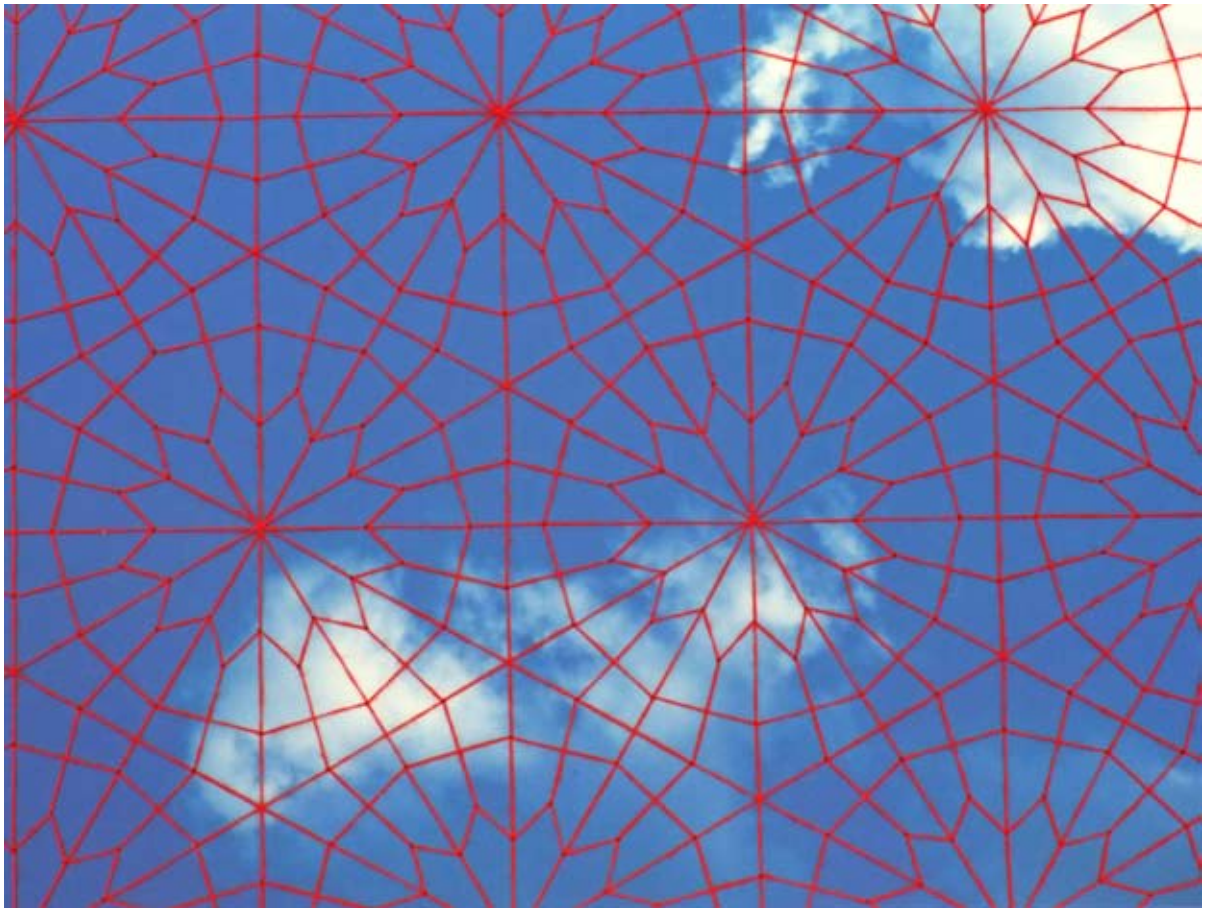
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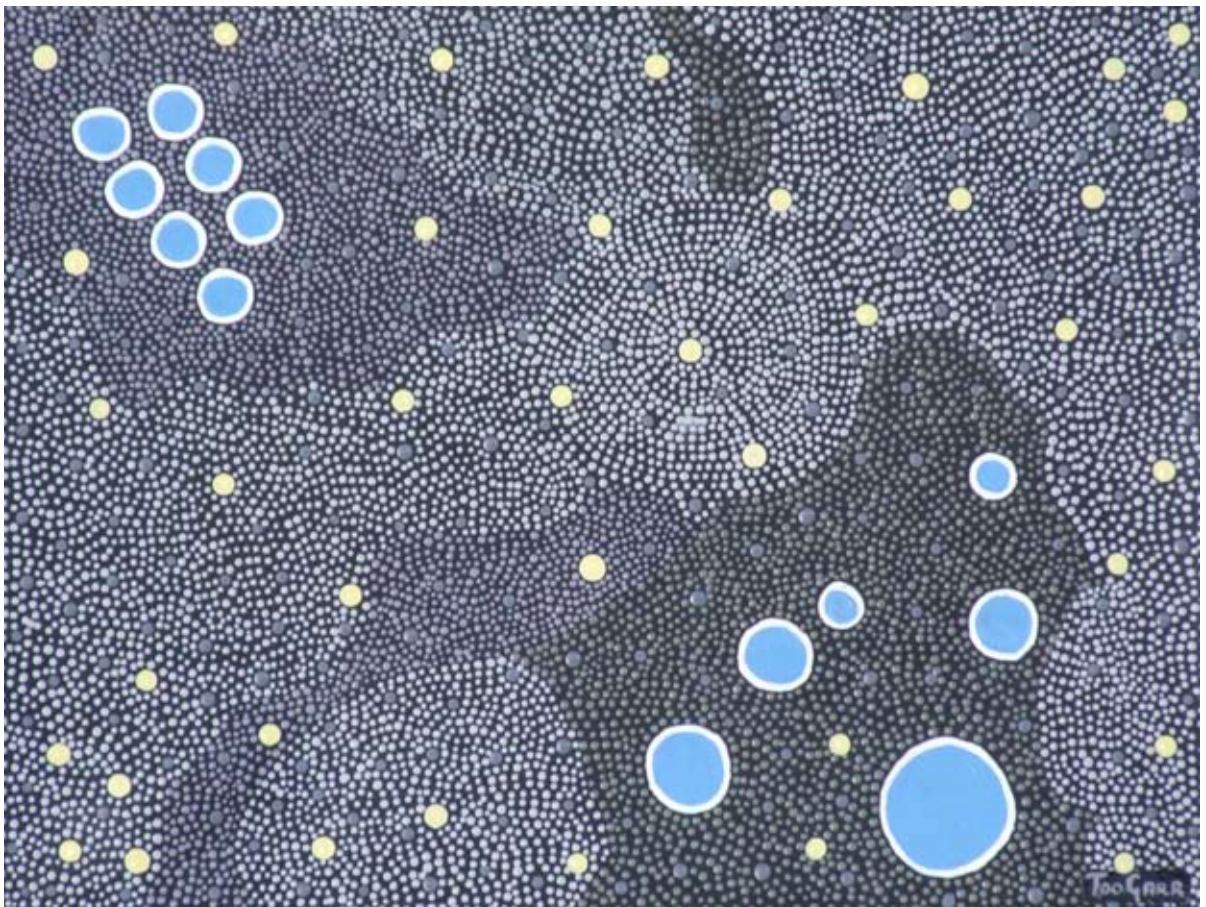
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David Sequeira, Pieces of Sky, 2008.



Toogarr Morrison, Bibbulmun Religion, (detail) 2008.

