HANDMADE UNIVERSE

Handmade Universe
From craft to code and all the places between

Not all discoveries are heroic and recorded in books. Some emerge in backyards, lounge rooms and quiet corners, encoded in knitting, embroidery and other creations made by hand.

Handmade Universe is an exhibition inspired by the rewards of making and the limitless scope it gives us for invention and enquiry. New commissions by artists, designers and makers are shown alongside fascinating objects from State Library Victoria and other collections. Spanning disciplines, they combine craft, technology, art and science in often unexpected ways.

Many of these objects tell the stories of women and their contributions to innovation in artistic and scientific fields. Their stories range from the creative inventions of stargazers to the evolutionary discoveries of an orchid enthusiast to the ingenuity of seamstresses whose needlework skills took us to the moon.

A series of commissioned artworks and new collection items emphasise that the process of making can be a powerful way of understanding the world around us and our place in it. A spectacular mural by Wurundjeri artist Mandy Nicholson holds us in a Wurundjeri universe and shares the significance of astronomy in the cultural identity of her people. A large, knitted star map reveals a coding feat

by Sarah Spencer, who hacked a knitting machine to stitch the night sky. And a digital installation conceived by artist duo Sans façon invites us on a sun-led journey around the globe to map our position in the cosmos.

Through these works and others, you will meet extraordinary people who challenge established ways of making, bring our awareness to wonders we might not otherwise have known, and push creative boundaries to let their curious ideas take flight.

Ben Hutchings

‘What if you created a system where Google could choose a string of locations and then you turned that into a travel guide? The journey could go on forever.’

Designer Ben Hutchings dreamed up a travel guide that maps a never-ending journey. Using Google's 'search for images' feature, he dropped in an image of State Library Victoria, generating a stream of visually similar locations that plot a path around the globe.

Printed as a concertina, the book stretches out to ten metres in length and illustrates 50 of the places that Google connected through common visual features. The accompanying digital map simulates the journey, revealing an itinerary as far-flung as Melbourne to St Petersburg and Kyoto to Hyderabad.

Ben's work questions the way technology informs our sense of place. It also highlights the abundance of digital information at our fingertips, which lets us navigate the world without leaving our homes. The embroidered map shown alongside served a similar purpose more than 200 years ago.

Ben Hutchings
A visually similar travel guide 2021
Artist book, exhibition copy
Commissioned by State Library Victoria

The embroidered map displayed in the hooded cabinet to your left is incredibly fragile and sensitive to light because of its age and materials. Stitched by the hand of Mary Redman in the 1780s, the map has a silk base, which had shattered before it was collected by the Library. A fine net has been overlaid for its protection.

Embroidered maps like this one are often called ‘samplers’. They were used to teach young women geography while also improving their needlework. In the 18th century, geography was the first science to be taught to girls who attended school.

The earliest samplers depicting maps were drawn onto the fabric by the pupil or teacher. They became so popular that ready-to-stich printed versions were developed. In this example, a faint outline can be seen under the missing embroidery thread, but it is difficult to determine whether it is drawn by hand or printed. The reverse of the map is reflected in the mirror beneath the case. This shows how the threads that have been protected from light are as vibrant as they would have been when the work was made.

Mary Redman
Embroidered map of England and Wales c. 1780–89
Silk thread on silk with cotton backing

Directions:

Move across the gallery stopping at Lucy Simpson’s Yuwaalaraay in the centre before continuing.

Lucy Simpson has designed this installation to be experienced through the senses. Light plays across the ceramic forms as we move around the circular plinth, highlighting the texture of the unglazed earthenware. Lucy chose this material to honour the white dirt hills of Yuwaalaraay Country, her family lands on the border of north-western New South Wales and Queensland.

Lucy's installation embodies a Yuwaalaraay concept that is reflected in the work's title, *Yilaaluu cont,* meaning 'a long time ago' and 'a long time to come'. It is inspired by Lucy's early experiences of making echidna-quill necklaces using ancestral skills handed down from her Aunties. Employing 3D-printing technology, she scanned the echidna quills to produce a mould for casting the earthenware pieces. These beautiful ceramic forms combine Lucy's ancestral knowledge of making bigibila necklaces with digital techniques.

On display nearby are the necklace and casting tools that Lucy used to create this work, and a 3D printer similar to the model she used.

Lucy Simpson
Yuwaalaraay
Yilaaluu cont 2016
Ceramic, unglazed earthenware
Museum of Applied Arts and Sciences, Sydney
Purchased with funds from the MAAS Foundation, 2019

Lucy Simpson

‘I’ve always been a creative person, always been a maker. I didn’t think of myself as an artist - but I knew I was this other thing.’

Lucy Simpson
Yuwaalaraay

Echidna-quill necklace 2016
Grass, echidna quills

3D-printed plastic model 2016

Plaster mould in two halves 2016

Museum of Applied Arts and Sciences, Sydney
Purchased with funds from the MAAS Foundation, 2019

3D printer 2009
Museum of Applied Arts and Sciences, Sydney
Gift of Louis Pratt, 2016

The echidna-quill necklace at the centre of this display was handmade by Lucy Simpson, using ancestral skills passed down through her Aunties. Combining this cultural knowledge with computer technologies, Lucy has created the large ceramic forms arranged on the circular plinth at the entrance to the gallery.

Lucy cast the earthenware pieces using a 3D-printed plastic model of echidna quills. Displayed here are the model, the plaster mould and a 3D printer similar to the one she used.

Lucy describes her creative process as a balance between ‘the knowledge to create under ancient philosophies of design and what we might consider “new” technologies today’. She herself does not think of techniques as old or new but as part of a ‘long story of transfer, innovation and continuity’.

Directions:

Head back out to the Rotunda and the artworks by Deanna Hitti.

Deanna Hitti

A is for Alam (pen): the object, the language, the archive 2022
Artist book
Cyanotype and screenprints on paper
Commissioned by State Library Victoria

Deanna Hitti's Lebanese heritage is integral to her art practice. Her prints and artist books draw on her experience of growing up in Australia with strong Lebanese traditions in the family home, navigating what she describes as 'living in two cultures simultaneously'.

Deanna specialises in cyanotype printing, a method of printed reproduction that was invented in the 19th century. Inspired by the long history of printing and publishing, she presents her cyanotypes as large installations of 'floating pages' that fold down into books.

This new work consists of 156 double-sided cyanotypes that form three distinct volumes of prints: *the object, the language and the archive*. *The object* documents an educational textbook that Deanna studied while learning the Arabic alphabet, Arabic being her first language.
The language reproduces Arabic instructions for writing English letters and numerals, recalling Deanna's preparation for starting school. *The archive* presents a collection of objects that correspond to each letter of the alphabet and bring to life the exchange of language, knowledge and beliefs that inform Deanna's identity.

Beneath these images and texts are colonial representations of Middle Eastern culture that Deanna has copied from art books. Bringing them into dialogue with recordings of her own history, she highlights the tension between imagined and lived experience, and the influences that shape our understandings of culture and place.

Deanna Hitti

‘My arts practice concerns the nuanced relationships between Middle Eastern and Western cultures. I’m interested in the place from which we look and construct our perception of cultural difference – the way in which these relations are figured and practised, informing our understanding of self and other. I unpack colonial representations of the Middle East on both a personal and cultural level.’

Deanna Hitti challenges the history of the Western gaze in this new installation. Her striking array of cyanotype prints transforms more than 100 images from French Orientalist paintings made during the early period of colonialism. In response to these exoticised Western views of Middle Eastern culture, Deanna has overprinted objects and texts she associates with her Lebanese heritage and her family life in Australia. By overlaying symbols from her personal and cultural experience, she focuses attention on misrepresentations from the past, while prompting reflection on how we relate to our own cultures and cultural difference in current times.

Deanna created this work for Handmade Universe, an exhibition exploring how we understand our worlds through making, which continues in the adjoining Victoria Gallery.

Directions:
Come back into the gallery and turn to the right following the outside walls, past the introduction to the exhibition to more of Deanna Hitti’s Cyanotypes in the oval case.

Deanna Hitti

Artwork volume arba'ah (four)
Artist book
Cyanotype and tannin on paper
Melbourne, Rambunctious Press, 2016

فرأت فأن (An assortment of Arabic letters)
Artist book
Cyanotype on paper
Melbourne, Rambunctious Press, 2014

Deanna Hitti uses creative and scientific techniques in these two artist books. The prints inside are cyanotypes, one of the oldest photographic printing methods. Paper is coated in a chemical solution and then objects or negative films are placed on the paper while it is exposed to ultraviolet light – often the sun's rays or using a specially designed lightbox. A chemical reaction takes place between the UV light and the light-sensitised emulsion. When the image is developed with water, the areas exposed to UV rays turn a deep cyan blue.

Deanna applied two different techniques in the prints on display. The historical portrait was copied from an art book using contact printing, while the pattern that looks like dappled sunlight in the print with Arabic letters is a photogram. To create this effect, Deanna sprinkled *fistok halabi* (pistachio shells) on the emulsified paper while exposing it to light.

Fistok halabi and other everyday items from around the home are recurring motifs in Deanna's work, and richly associated with her family and Lebanese culture. She often layers these motifs over colonial representations of the Middle East to question perceptions of Middle Eastern identity in Western society, such as in the large installation created for the adjoining North Rotunda Gallery.

About cyanotype prints:

* Cyanotypes take their name from the Greek word cyan, meaning ‘dark blue substance’.
* Astronomer John Herschel invented cyanotype printing in 1842.
* Botanist Anna Atkins used cyanotypes to publish her plant specimens in 1843, becoming the first woman to create photographic illustrations.
* Cyanotypes were traditionally used for reproducing architectural and engineering drawings, bringing about the term ‘blueprint’.
* The prints can change before our eyes: they fade with light exposure and regain their colour when returned to a dark environment.

Directions:
Follow the white curved wall towards the centre of the gallery and Sans façon’s Sunset / Sunrise screens.

Follow the course of time, picture faraway places with evocative names, or wait for the sun to come up on a distant loved one.

– Sans façon

The placenames appearing on these two screens take you on a journey across thousands of cities – and oceans and continents – by following the sun. One screen names a place where the sun is setting at this very moment; the other names where the sun is rising at precisely the same time.

Created by artist duo Sans façon, *Sunset/Sunrise* offers a different way to map the world and consider our position in it. The artists invite you to imagine parts of the globe as they move in and out of sunlight.

Sans façon
Sunset/Sunrise 2022
Installation
Commissioned by State Library Victoria

Directions:

Keep going across the gallery and the turn left following the outside of the curve to the oval case which is opposite Deanne Hitti’s cyanotypes.

Claudius Ptolemaeus (Ptolemy)
Almagest
Italy, c. 1200–25
Translated from Arabic into Latin by Gerard of Cremona

Joan Blaeu
Nova et accuratissima totius terrarum orbis tabula
(New and most accurate tables of the whole Earth)
Amsterdam, Joan Blaeu, 1664

A discovery about the universe that revolutionised Western science is captured in these two objects.

The handcrafted manuscript was once the textbook of a scholar, whose notes are in the margins. It reproduces an older second-century text that imagined a geocentric universe, with the planets and stars orbiting Earth.

The intricate map shown alongside it was created some centuries later, after it was found that Earth actually revolves around the sun. It uses colourful pictures of Roman gods and goddesses to tell the story of the planets in motion. At the top is Apollo, the sun god, and below is Diana, the goddess of the moon, watching over Earth. Along the bottom are representations of spring, summer, autumn and winter, which chart the seasons as Earth journeys around the sun. Polish astronomer Nicolaus Copernicus had proven a sun-centred cosmos in 1543.

About this manuscript:

* Animal skin was prepared as vellum for the book pages – a painstaking, costly process.
* The small script makes good use of the valuable skin.
* Conservators used an eraser to take a tiny sample of the vellum for scientific testing, which established it was goat skin.
* The imprint from the animal's spine runs horizontally, which means it was made in Italy; French bookmakers ran the spine vertically on the page.

Directions:

Wrapping around the walls of the gallery is Mandy Nicholson’s mural.

This mural is called Dharangalk Biik | Star Country and surrounds you in the vastness of the burrunj wurru wurru | night sky. The background of the design incorporates the colours of the ngawanj | sun setting at twilight, transitioning into the durt-filled | star-filled burrunj wurru wurru.

The central wavy lines represent the Dreaming Tracks of the Wurundjeri, including the transmission of knowledge, language, cultural Law and spirituality. These are represented by the symmetrical linear markings used by Wurundjeri carvers. The bottom wave represents our Songlines, travelling through the burt | smoke of our wiinj | fires. These are in the colour of Dharangalk Biik.

The faint stars throughout the design depict Bunjil – the star Altair – with his wives Gunuwarra | Black Swans on either side of him. They are interwoven in the Dreaming Tracks and Songlines. Dreaming Tracks tell the narrative of Country, while Songlines map Country. The centre of the large diamonds is the durrung, the heart of the durt | star.

The top and bottom blue lines with inner circles, and those in the middle section, represent the durt journey, like a galada | river through the sky. The five central flowing forms also highlight the layers of Wurundjeri Country: Biik-ut | Below Country; Biik-dui | On Country; Baanj Biik | Water Country; Murnmut Biik | Wind Country; Wurru wurru Biik | Sky Country; and Dharangalk Biik | Star Country, which is the Bush Country above the clouds, a reflective Country in both a physical and a spiritual sense.

– Mandy Nicholson

Mandy Nicholson
Wurundjeri, Dja Dja wurrung, Ngurai illum wurrung
Dharangalk Biik | Star Country 2022
Digital print on PVC mesh
Commissioned by State Library Victoria

Directions:

Move further into the space to the case with John Flamsteed’s atlas and Margaret Ann Field’s crochet.

John Flamsteed spent his life studying the stars. He grew up during the telescope revolution of the 17th century and taught himself astronomy. At the age of 19, he wrote his first astronomy paper. Ten years later, he became the first astronomer at the newly built Royal Observatory at Greenwich, in England.

During his time at the observatory, Flamsteed catalogued 3000 stars, which formed the basis of his celestial atlas, *Atlas coelestis.* A perfectionist, he was reluctant to share his work publicly. His wife, Margaret, oversaw the publication of the atlas in 1729, after Flamsteed's death. It enjoyed immediate success in Britain and Europe, setting a new standard for astronomical study because of its precision.

John Flamsteed
Atlas coelestis
London, 1729

About this star atlas:

* An edition was published without permission by Isaac Newton; Flamsteed retrieved most of the unauthorised copies and publicly burned them.
* The atlas includes 25 engraved maps of the constellations after designs by James Thornhill, an English painter of historical subjects.
* At the time of publication, it was the largest star atlas that had ever been made.
* Though celebrated for its impressive size, it was almost too big to use. Requests from scholars for reduced plates were fulfilled, with a smaller French version appearing in 1776.

Many beautiful pieces of lace will, I hope,
be made from these new and easy patterns …
A glorious future may be in store for the little Cinderella hook!

– Margaret Ann Field

Margaret Ann Field

Crochet lace sampler 1922
Cotton, silk, cardboard, paper, pen and ink
National Gallery of Victoria, Melbourne
Gift of the artist, 1922

Crochet lace border samples 1900–10
Silk
Museum of Applied Arts and Sciences, Sydney
Gifts of Mrs Lee Byrne, 1988

The pinwheel motif in the large pieces of crocheted lace was inspired by the brightest star in the Southern Hemisphere, known in Western astronomy as Sirius. The design was skilfully crafted by Margaret Ann Field, who brought her knowledge of astronomy to a crocheting technique she invented in the early 1900s.

A sampler board of Field's designs includes a handwritten label explaining the benefits of her technique, which reduced strain on the hands and eyes: 'the needle is never inserted into the stitches but always into the spaces formed by the stitches'.

Field advocated for crocheted lace to become the national needlecraft of Australian women, publishing her patterns in a book she named *Australian lace-crochet (easy and artistic)*, which is on display nearby. Her needlework was rediscovered by feminist artists in the 1970s, when domestic crafts became a medium for expressing views on women's rights.

There are many ways to connect with the night sky that do not involve a telescope. Living under the stars in a remote Victorian mining town in the early 1900s inspired Margaret Ann Field to unite her hobbies of needlework and stargazing. She interpreted the stars through the art of crocheted lace, using a technique that she invented to make lacework less strenuous on the hands and eyes. Field published a book of her lace patterns and an instructional booklet for beginner astronomers, both of which are shown here. Some of her surviving lacework is on display nearby.

Margaret Ann Field (Mrs Edwin Field)

Australian lace-crochet (easy and artistic)
London, Simpkin, Marshall, Hamilton, Kent & Co. Ltd, 1909

The stars for 3D
Melbourne, E.W. Cole, 1910

An easy guide to southern stars was published in 1896, designed to fit in a pocket and travel with its owner. The simple diagrams of constellations could be held up and matched to the stars – a forerunner of today's smartphone apps that decode the night sky.

The guide was written by Mary Acworth Orr after she visited Australia and was awestruck by the clarity of the southern stars. It sparked Orr's lifelong study of stars and solar events. Today, however, she is best known for her study of astronomical references in the poems of Dante Alighieri.

Mary Acworth Orr
Southern stars: a guide to the constellations visible in the Southern Hemisphere
Cover title: *An easy guide to southern stars*
Edinburgh, Gall and Inglis, 1896

Ludwig Becker recorded the rare sighting of a meteor with a characteristic eye for detail in the above watercolour sketch. Becker was employed as the artist to document the Victorian Exploring Expedition (the expedition of Burke and Wills) across Australia in 1860. His notes beneath the sketch describe what he saw as the meteor journeyed across the sky:

1860. Meteor seen by me on Oct. 11t at 10h 35m p.m. at the river Darling, 25 miles N. of Macpherson's station, in Lat: 33, S. It made its appearance in a bright part of the milky way near the tail of Scorpio, to the right of it, but, to the left of the Ecliptic; it commenced small but grew in the time of 1½ second to 7 inches, the moon taken to 12. Green color; after disappearance red sparks.

Ludwig Becker
1860. Meteor seen by me on Oct. 11t at 10h 35m … 1860
Watercolour on paper

Directions:

Cross the gallery to the centre and Mandy Nicholson’s kangaroo skin ***Map of Port Phillip Bay*** artwork.

Painted on a kangaroo skin cut in the shape of a stingray, this map describes the lands, waters and skies that are integral to the cultural life and identity of Wurundjeri people. It was handmade by Wurundjeri artist Mandy Nicholson, who also created *Dharangalk Biik* | *Star Country*, the striking textile wrapping the walls of the gallery. The central design depicts the five stars of the Southern Cross reflected in the water of Port Phillip Bay. In the text accompanying this work, Mandy describes how the five stars represent the five clans of the Kulin lands.

Mandy Nicholson
Wurundjeri, Dja Dja wurrung, Ngurai illum wurrung
Map of Port Phillip Bay 2000
Paint on marram | kangaroo skin
Koorie Heritage Trust, Melbourne

Mandy Nicholson

‘This map of the durt | stars is painted on a marram | kangaroo skin and depicts the eastern/central Gulini | Kulin. The design highlights the connection between the five Language Groups that belong to Gulinj. Affiliations between the five have remained strong throughout millennia, and can be mapped by comparing the Groups’ languages and cultural beliefs. This includes belief in the same Creator, Bunjil.

The map also represents Naarm Naarm | Port Phillip Bay and how it was flooded by creation of the Birrarung | Yarra River. The Creation Narrative tells of both Moyarra and Barwool, successive Wurundjeri Ngurungaeta | Headmen, using their garrginj | stone axes to cut a channel to free the vast body of water | moorool locked in the ngurrak | mountains.

Their journey was long and hard and they used up many garrginj, but eventually freed the water onto a vast flat plain that marram and boorrimul | emu once roamed, creating the final resting place for the moorool.’

Directions:
Continue across the gallery to Kate Just's ***Anonymous was a Women*** and then follow the wall to the star map.

I knitted this project continuously for one year and eleven months
36,500 hours
2,365,300 stitches

– Kate Just

Kate Just created her epic knitted artwork, *Anonymous was a woman,* to honour the time and labour involved in work typically done by women. Armed with a variety of coloured yarns, she knitted those words 140 times. As Kate has said, ‘held in these stitches are many breaths, heartbeats, thoughts and conversations’.

‘Anonymous was a woman’ comes from a line on women’s authorship in Virginia Woolf’s feminist essay *A room of one’s own*, published in 1929. Kate quoted the phrase to acknowledge the forgotten women throughout history. But she also recognised an empowering message for today: the word ‘was’ can become a reality if women’s contributions to culture and society are no longer excluded or downplayed.

Virginia Woolf

A room of one's own
London, Leonard and Virginia Woolf at the Hogarth Press, 1929

A room of one's own
United Kingdom, Penguin Press, 2009
On loan from Kate Just

Kate Just

Anonymous was a woman #80 2019–21
Hand-knitted panel from a series of 140 panels
Wool, viscose and acrylic yarns

The making of *Anonymous was a woman* 2021
Single-channel video
Commissioned by State Library Victoria
Produced by Alice Stephens

While the embroidery looks bright and modern, these waistcoats were stitched more than 170 years ago. Both embroidery designs follow Berlin wool work patterns, a German needlework style that reached Australia in the 19th century.

Known as ‘fancy work’, Berlin work was a product of new commercial printing technology that modernised needlework, making patterns cheaper to produce and buy. The designs came in a wide range of colours to capitalise on improved techniques for dying wool.

Berlin work was popular among middle-class women who were spending less time on household labour and more time on creative pursuits. These waistcoats were embroidered by a Mrs Hugh Peck, and their quality suggests they were made by experienced hands. Each tiny woollen stitch replicates a small coloured square from the gridded charts that accompanied Berlin work designs. In a recent revival of the craft, it has been described as ‘the original pixel’.

Mrs Hugh Peck
Waistcoats with Berlin wool work designs 1844
Wool, linen

Ernest Tompkins
The science of knitting
New York, Wiley, 1914

Bessie Clements
Pattern for stitches c. 1915–17
Typewritten text on dressmaker's paper

Sarah Spencer
Knitting samples used to refine the code for the Knitting Network Printer
2017
On loan from the artist

There is a science to knitting. The letters and numbers typed onto these pieces of dressmaker's paper are knitting instructions for those who can decipher the code.

The knitted samples are also translations of code. Created by artist and computer scientist Sarah Spencer, they are prototypes for her large machine-knitted star map at the centre of the gallery. Sarah hacked and reprogrammed a domestic knitting machine to invent the Knitting Network Printer, which can stitch complex patterns at high resolution and almost entirely by itself.

Sarah puzzled over the programming while on maternity leave with her son, and wrote the corresponding code whenever her hands were free. She charted her progress by knitting these samples of the iconic Penguin Books logo. As she refined the code, the logo became sharper and correctly proportioned. Once Sarah achieved 'the perfect algorithm' she programmed the machine to knit a baby blanket for her son.

Sarah Spencer hacked a domestic knitting machine like this one to create the giant knitted star map nearby. Working with open-source software, she wrote a computer code that allowed the machine to stitch any multicolour pattern. Sarah then engineered additional hardware to perform these functions quickly, accurately and at scale. These enhancements have never previously been accomplished on a domestic machine.

Sarah called her invention the Knitting Network Printer and showcased its capabilities by knitting a star map like no other. Measuring 12 square metres, *Stargazing* features the 88 constellations used in Western astronomy and by the International Astronomical Union. Sarah chose to knit the stars to celebrate ‘a science all around us’. For *Handmade Universe* she has engineered a system of lights that can be illuminated to draw our own pattern in the knitted night sky.

Brother KH-950i knitting machine c. 1988
On loan from Sarah Spencer

Opposite:

Sarah Spencer
Stargazing 2018
Wool, cotton, LED lights
Interactive component commissioned
by State Library Victoria

Sarah Spencer and John Spencer
Heart of Pluto circuit board 2020
Early prototype used to run the LED lights in Stargazing
On loan from Sarah Spencer

About the star map:

* *Stargazing* took more than 100 hours to knit and is made from 15 kilograms of Australian wool.
* Sarah individually soldered a network of 842 LED lights, which illuminates the knitted constellations.
* The lights are powered by a custom-made circuit board with a miniature gold-plated print of the star map on the back.
* When the finished work was unveiled, the positions of the sun, moon and planets matched the actual sky.
* The knitted stars vary in size according to their real-life brightness.
* The map is knitted in double jacquard, a double-sided knitted finish that tucks away loose threads.
* You can lift the knitted sample below to see the reverse side of the technique used in *Stargazing* and to feel the textures produced.

Directions:

Continue to the left doing a complete circle of the star map.

Silver foil, signage board and an olive-oil can are not typical construction materials for a scientific instrument. But here they have been assembled into an antenna for a powerful telescope to collect radio waves.

In backyards across Australia, these hand-built telescopes are being used in a citizen-science project that aims to capture the movement and rotation of the Milky Way. The project was initiated by astrophysics student Rami Mandow when he was searching for a way of inspiring amateur astronomists.

Rami modified an open-source design that can be customised with any suitable materials on hand. His prototype is modelled on the famous horn antenna that was used to detect the cosmic background radiation that is everywhere in the universe. It also mimics the Parkes radio telescope, which was one of two main receiving stations in Australia when footage of the first moon walk was beamed to Earth in 1969.

More information about the SpaceAusScope project is available at SpaceAustralia.com.

SpaceAusScope radio telescope antenna
Corflute, aluminium foil, duct tape,
pine wood, olive-oil tin
Design courtesy of Rami Mandow,
SpaceAustralia.com
Produced by Edward Rossi, 2021

Atong Atem

‘I’ve been scanning, weaving, collecting, slicing and printing.’

Atong Atem blended craft with digital technologies in these photographs. She printed images of herself and then cut the paper into strips and wove them into abstracted portraits. She then documented the weavings using a digital scanner, which added another layer of visual disruption to the final image. There are just enough details to distinguish a face, but they do not resolve into a portrait.

This process of abstraction allowed Atong to connect with her practice of making self-portraits in a hands-on way. The weaving slowed down her technique and made time for her to question how she presents her identity to others. As Atong has written, ‘these photographs indirectly ask how we choose to weave our concept of self’.

Atong Atem

Red weave 2021
Inkjet print on paper, unique edition

Teal weave 2021
Inkjet print on paper, unique edition

When you're deep in the animation zone, you catch yourself analysing everyday movements, dissecting the ebb and flow of motion and time.

– Donna Kendrigan

Donna Kendrigan draws us into an uncanny world in her new animation, *Season of the orchid.* Incredible botanical characters act out a scientific discovery made in 1927 by self-taught naturalist Edith Coleman, whose field work took place close to home in Melbourne and at her holiday cottage in Healesville, Victoria. Surpassing the likes of Charles Darwin, Coleman proved that particular orchid species shapeshift to mimic the anatomy of female wasps, luring male wasps into mating with them to assist pollination.

On screen, the surreal relationship of the orchid and the wasp unfolds in a visual spectacle that blends natural history with science fiction. Orchid specimens fuse together to look like creatures from outer space, coming to life through subtle movements that synchronise with curious noises in a synthesised soundscape.

Donna referenced early sci-fi films and literature, along with a rare collection of orchid photographs assembled by Edith Coleman, to craft by hand the models for her animation. Each of the models was animated using traditional stop-motion techniques: one minute of footage required hundreds of hand-adjusted movements.

Donna Kendrigan
Season of the orchid 2022
Stop-motion animation
Sound design by Chris Henschke
Commissioned by State Library Victoria
Supported in part by the City of Melbourne Arts Grants

Ralph Malcolm Warner

Blunt-tongue greenhood orchid 1959
Cooktown orchid 1959
White spider orchid 1959

Gouache on cardboard
Original artwork for Discover Australia with Shell collector cards, wildflower series

Edith Coleman
Come back in wattle time: an illustrated handbook to our Australian wattles
Melbourne, Robertson & Mullens, 1935

Donna Kendrigan
Models for the animation Season of the orchid 2022

Caladenia tentaculata (large green-comb spider orchid)
Wire, foil, putty, latex, plastic, synthetic polymer paint, paper, cotton tape

Pterostylis atrans (blunt-tongue greenhood)
Wire, wire mesh, latex, synthetic polymer paint, cotton tape

Cryptostylis leptochila (small tongue orchid)
Wire, wire mesh, latex, synthetic polymer paint, polymer clay, cotton tape

Commissioned by State Library Victoria
Supported in part by the City of Melbourne Arts Grants

About these photographs:

* The photographs are called stereographs, a technique invented in the mid-19th century.
* Stereographs are the original augmented-reality technology.
* They are made from two separate but near-identical photographs placed side by side on a card. Viewed through a stereoscope, they produce the illusion of
a single 3D image.
* The stereograph of a male wasp shows pollen collected from an orchid on the tip of his abdomen.

With me the love of these shy blooms is not an isolated attachment. It is closely associated with the songs of birds, the scent of heath, blue hills, cool gullies and the whip birds call, and the many other delights which each season brings.

– Edith Coleman

These photographs of orchids and wasps helped solve an evolutionary riddle.

Originally housed in the cigarette tin on display, they were commissioned in the 1920s by Edith Coleman, a self-taught naturalist. By gathering evidence from her garden in Melbourne and the bushland surrounding her holiday cottage in Healesville, Victoria, Coleman was to prove the phenomenon known as pseudocopulation. She was able to confirm that while most flowers offer nectar in exchange for pollination, some orchid species attract male wasps by mimicking the shape, colour, feel and scent of a female wasp. This little-known wonder of the botanical world had even puzzled Charles Darwin.

Coleman's collection of photographs captured the attention of artist and animator Donna Kendrigan during a State Library Victoria fellowship in 2019. They inspired Donna's hand-built models of orchids, which she brought to life in a new animation, *Season of the orchid.*

Capstan cigarette tin c. 1928–31
With stereograph of *Corysanthes dilatata,* now *Corybas dilatatus* (veined helmet-orchid) 1927
Sepia-toned gelatin silver print on postcard
Attributed to Ethel Eaves and Timothy Green

Ethel Eaves
Stereograph of *Lissopimpla semipunctata,* now *Lissopimpla excelsa* wasp, with pollen from *Cryptostylis leptochila* (small tongue orchid) 1928
Sepia-toned gelatin silver print

Stereograph of *Pterostylis obtusa* (blunt-tongue greenhood orchid) 1927
Sepia-toned gelatin silver print on postcard
Attributed to Ethel Eaves and Timothy Green

Stereoscope c. 1901–10
With stereograph of *Corysanthes diemenica*, now *Corybas diemenicus* (slaty helmet-orchid) 1928
Exhibition copy of sepia-toned gelatin silver print on postcard
Attributed to Ethel Eaves and Timothy Green

Charles Darwin
The various contrivances by which orchids are fertilised by insects
London, J. Murray, 1862 and 1899

The moon is our closest celestial companion but has remained out of reach for most. This display reveals changing views on women's role in space. A female astronaut made it to the cover of one of these science-fiction magazines, but when they were published, in the 1950s, space was more often used to market consumer goods that bound women to the home. This is evident in advertising materials from the 1960s, which capitalised on 'moon madness' to upsell women's underwear and household appliances. A few decades on, women have reached the space control room in a poster promoting technical courses and apprenticeships for girls.

Women were involved in the coding, mathematics and engineering that enabled the first moon landing in 1969. The adjacent display also reveals the specialised work of seamstresses that ensured success on the Apollo 11 mission. Today, nine female astronauts are in training for NASA's next lunar exploration.

Back:

American science fiction
Sydney, Malian Press, c. 1954–59
Cover designs by Stanley Pitt

Kath Walters
‘Technical skills are out of this world! Girls apprenticeship and technical scheme’ 1985
Screenprint on paper
Another Planet Posters, Melbourne

Front:

‘Moonlight white’, *The Sun* 16 July 1969

Thomas P. Hansen
Guide to lunar orbiter photographs
Washington, DC, Scientific and Technical Information Office, National Aeronautics and Space Administration, 1970

Out of this world … new Vactric 505
Promotional booklet
Sydney, Vactric Electrical Appliances Ltd, c. 1961–69
On loan from Dean Keep and Jeromie Maver, Melbourne

How did needlework get ‘man’ to the moon during the space race of the 1960s? A team of highly skilled underwear seamstresses crafted the Apollo 11 moon suit when Playtex won the NASA contract. The brand’s innovative bras and girdles provided the engineering solutions for keeping astronauts secure, supported and comfortable in the environment of space.

The evolution of a suit ‘made for space’ is captured in two magazines in this display. One features the silver pressure suit that carried a NASA astronaut into orbit for the first time. Its design was the starting point for the final moon suit, which is shown during construction in the accompanying article.

Composed from an astounding 21 layers of material and insulating fabrics, the moon suit required precise assembly and was mostly sewn by hand. However, a photograph in the NASA archives shows team leader Hazel Fellows operating one of the twin sewing machines reprogrammed to accurately finish the outer shells. The seamstresses affectionately nicknamed them Big Moe and Sweet Sue.

Back:

Seamstress Hazel Fellows working on a NASA spacesuit 1967
Exhibition print
Smithsonian National Air and Space Museum Archives, Chantilly, VA

Playtex living bra: long line c. 1960–69
Private collection, Melbourne

Front:

‘A suit tailor-made for space’, *Life* 1 August 1960

‘A precision job for tailors and technicians’, *Life* 9 August 1968