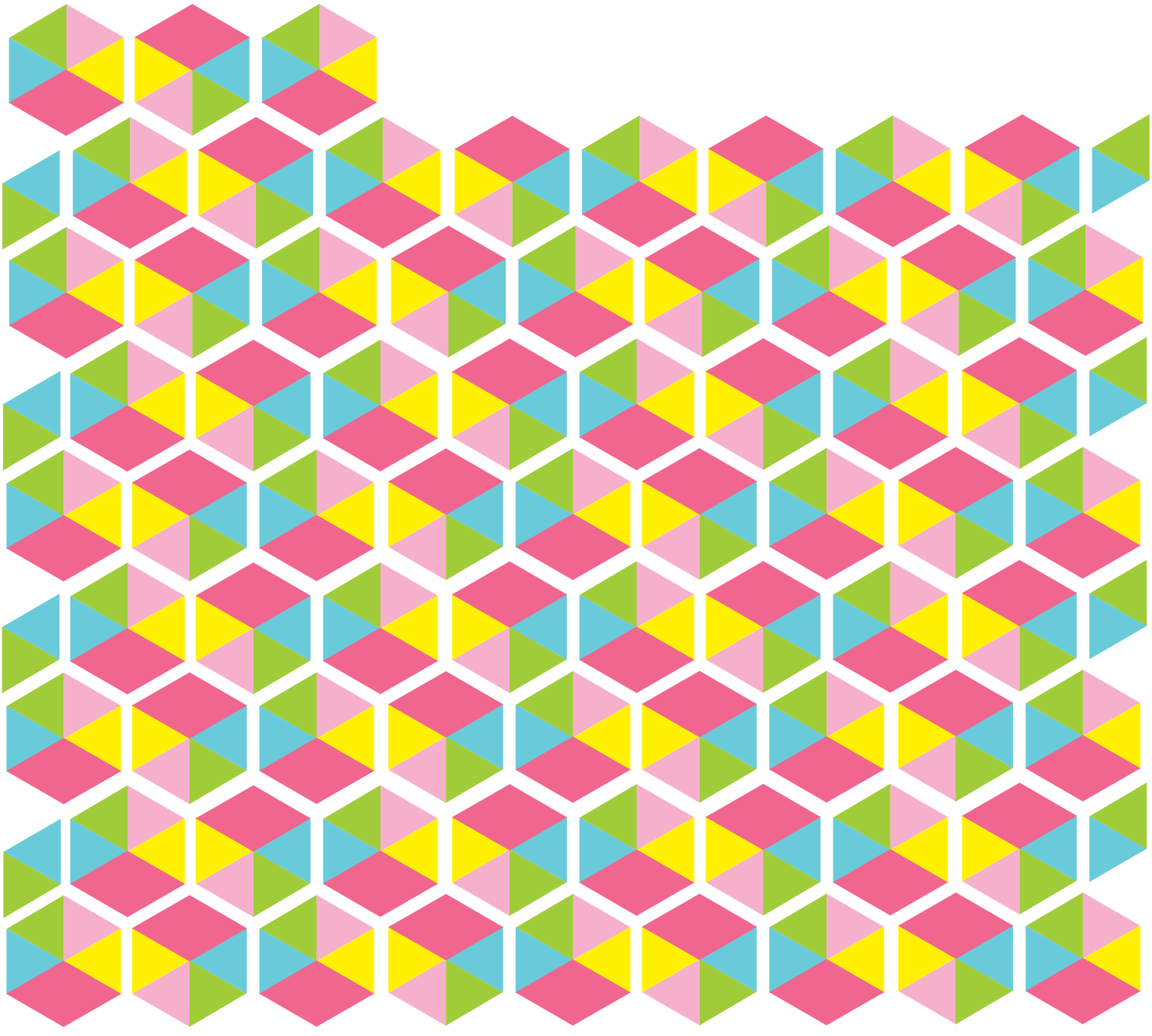
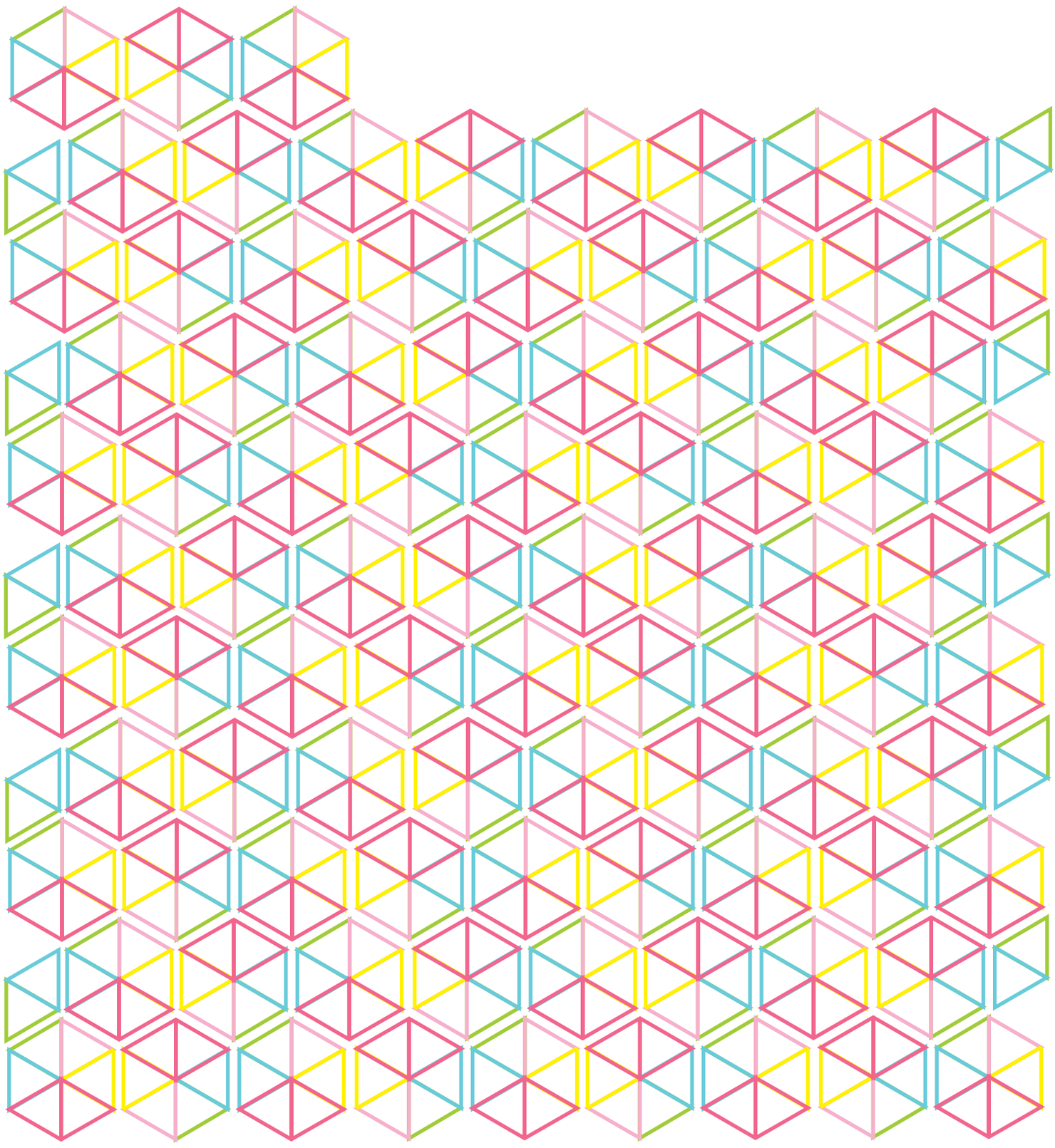
SYSTEMATIC



EDUCATION RESOURCE and TEACHER'S GUIDE

Written and developed by Dr Eliza Burke in consultation with
Contemporary Art Tasmania and Plimsoll Gallery, Hobart.

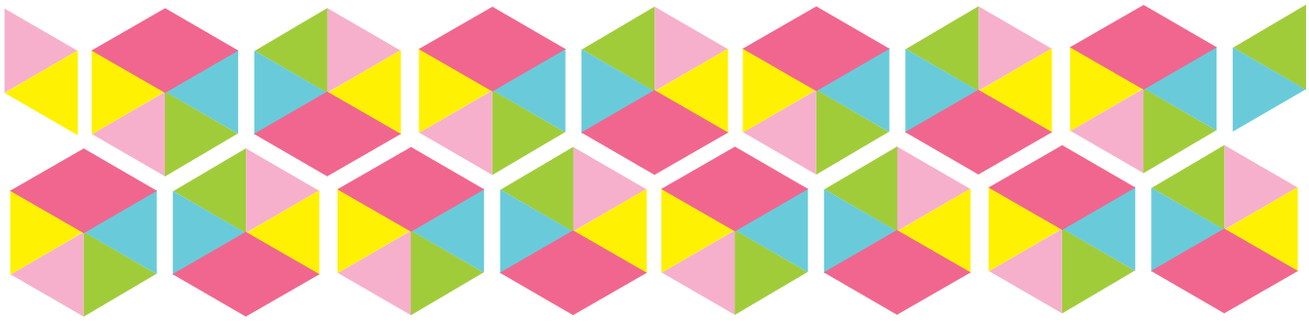


SYSTEMATIC
An Introduction

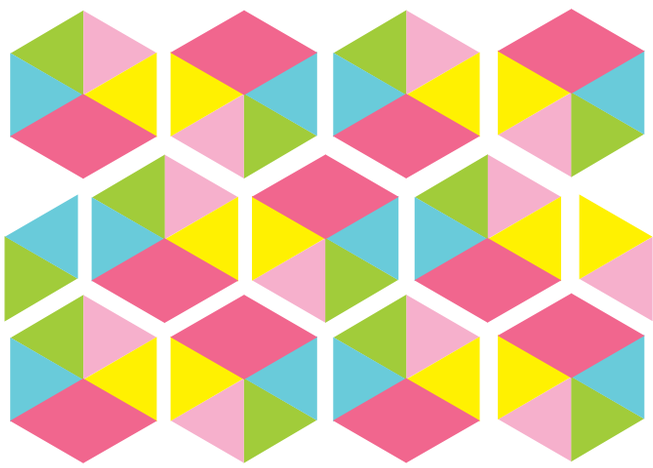
Systems are ubiquitous features of modern life. They represent the myriad structures we negotiate in our daily lives and the frameworks we use to build, manage and comprehend a complex world.

Systematic explores current artistic approaches to concepts of 'the system' showcasing eight Australian artists whose works constitute self-contained systems in their own right, or engage with systems principles at conceptual and material levels. The works explore the impact of systems across technological, archival, political and ecological arenas and their various meanings as products of human invention.

Systematic is a blend of playful, vibrant and kinetic works that invites viewers to reflect on their own relationship to contemporary systems, the interdependency between the part and the whole, and the generative potential of systemic productivity and failure. Taking a broad view of 'the system', the exhibition comprises works that reference particular kinds of systems and explore questions of connectivity, organisation and inter-relatedness.



How to Use This Resource



This resource has been developed to support students learning experiences before, during and after their visit to the *Systematic* exhibition. It is designed to meet the learning needs of students in:

- Upper Primary: Years 5 – 6;
- Lower and Upper Secondary: Years 7 – 10;
- Senior Secondary: Years 11 – 12.

In the following sections, you will find:

- background information on the themes and ideas relating to the artworks in the exhibition
- suggestions for pre-visit activities
- artist statements and information on each artwork
- questions to assist discussion in the gallery
- worksheets for students to complete in the gallery
- suggestions for post-visit classroom activities
- artist biographies

The topics for in-gallery discussions are broadly conceived, and teachers are encouraged to adjust them according to their students' relevant skills and abilities. They are divided into three key skill areas for students to critically engage with the artworks:

- 'Observe' - the observation and identification of an artist's materials, mediums, techniques and methods.
- 'Reflect' - the ability to critically reflect on the artist's use of materials and techniques to convey their ideas and concepts.
- 'Respond' – the ability to articulate and explain their thoughts and feelings about an artwork and share this with others.

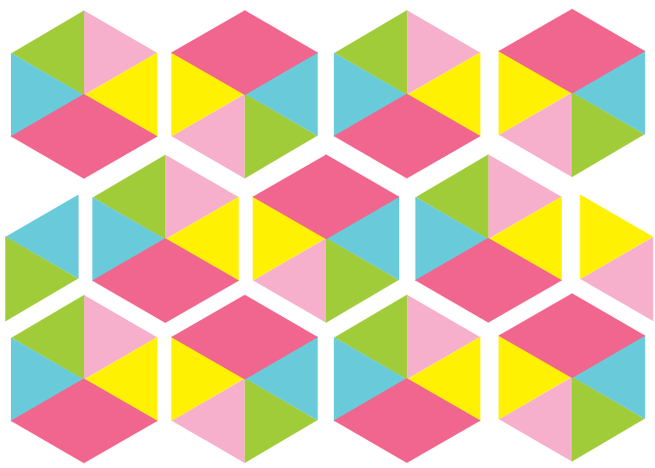
Teachers of Grade 5 - 6 students may find the 'Observe' questions are most useful for these year groups. The 'Reflect' and 'Respond' questions encourage all students to engage with the more conceptual elements of the artworks, and may be more useful for the higher grades. However, teachers should encourage all students to explore and discuss the artworks critically and creatively, using the questions as a guide.

Curriculum Links

This resource is designed as a cross-curricular program of activities that compliments several learning areas of the Australian Curriculum. It encourages students to think across disciplines to consider a range of ideas relating to the artworks in the exhibition and to reflect on how they inspire insights into systems in their world. It is aligned with several principles of STE(A)M education as it encourages 'cross' or 'trans' disciplinary learning across the arts and sciences, and fosters critical thinking between these subject areas.

Informed by key principles of systems thinking such as inter-relatedness, connectivity and change, and the aims of 'Sustainability' as an Australian Curriculum priority area, the resource provides prompts and activities to support students critical thinking skills in relation to art and the wider world. The post-visit classroom activities are designed to encourage making as a form of participation in the world of ideas and a way of deepening their response to the artworks in the exhibition. Teachers may wish to adapt these activities to suit their subject areas, and are encouraged to use them to inspire students to develop their own ideas and artworks.

The resource aims to inspire and excite students' imaginations by encouraging them to explore how contemporary art intersects with other areas of their learning, and how creative approaches to systems can support their understanding of the contemporary world.



Relevant Australian Curriculum learning areas include:

- Visual Arts
- Media Arts
- Science
- Mathematics
- Design and Technologies
- Humanities and Social Sciences
- Cross-curriculum Priority Area: Sustainability

Relevant skills include:

Upper Primary - Lower Secondary (Grades 5-8)

- Explore ideas and practices, including how artists use different materials, techniques, technologies and processes;
- Explain how artists use visual arts conventions to communicate ideas;
- Use artworks to develop and plan their own artworks;
- Identify and connect specific features and purposes of visual artworks in contemporary art contexts.

Upper – Senior Secondary: (Grades 9-12)

- Research the works and practices of contemporary artists;
- Discuss themes, concepts or subject matter in relation to particular artworks;
- Analyse and evaluate how artists use visual arts conventions to communicate complex ideas;
- Research and analyse the characteristics, qualities, properties and constraints of materials, technologies and processes across a range of forms, styles, practices and viewpoints.

In relation to the Cross-curriculum area of Sustainability, relevant skills and capabilities include:

- The ability to question, think critically, solve problems, communicate effectively, make decisions and adapt to change, and explore their own and competing viewpoints, values and interests;
- Understanding systems enables students to work with complexity, uncertainty and risk; make connections between disparate ideas and concepts; self-critique; and propose creative solutions that enhance sustainability.

Teachers can access the Australian Curriculum online for relevant content descriptions, priority areas and achievement standards here:
http://www.australian-curriculum.edu.au

Throughout the resource, teachers are encouraged to explore the nature of systems from different perspectives and in different fields of endeavour. Students should be encouraged to think freely about systems but approach the artworks with an eye for detail. The worksheets encourage students to identify artists' methods and materials, reflect on key ideas and explore connections between the works.

The in-gallery worksheets are designed for two groups: Upper-Primary/Lower Secondary and Upper/Senior Secondary students. They aim to guide students' engagement and encourage independent learning and observation. Teachers are advised to make multiple copies of the worksheets prior to visiting the exhibition. Please contact gallery staff prior to your visit to discuss any details in relation to making the most of your class visit.

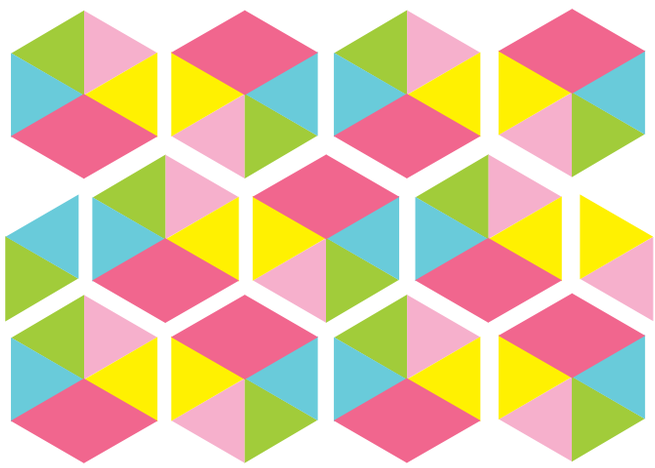
Systematic has been developed as a national touring exhibition and teachers are invited to adapt the learning activities to meet their state curriculum requirements for primary and secondary students. The *Systematic* catalogue includes a curatorial essay, artist statements and information about the artworks that may also be of assistance to teachers and students. Although the guide is designed with reference to the requirements of the Australian Curriculum, it may also provide a basis for gallery education programs or workshops during the exhibition schedule.

Themes and Ideas: Key Questions

- How do systems impact on daily life?
- How do systems inter-relate?
- Why are artists interested in systems?
- How can we think about systems in creative ways?

Art and Systems and 'Systems Art'

All the artworks in *Systematic* explore ideas about systems, their organising principles, mechanisms, and dynamic properties. They range across various mediums including photography, video, painting, sculpture and installation, incorporating a variety of formal and conceptual elements. Each artwork constitutes or references some sort of system in its own right, and they all explore the conceptual dimensions of the systems in order to critique, re-imagine or re-invent their workings.



Systems Art

Artists have been making work about systems since the mid-twentieth century when 'systems art' emerged as part of the first wave of conceptual art. Systems art of the 1950s and '60s responded to several major changes in the West wrought by the impact of significant advances in science and technology, the birth of the environmental movement and an unsettled political arena where resistance was fought against the invisible power of 'the system'. Systems artists responded not only to the increased operation of systems in modern life and their impact on society, but also to the creative potential of systems, their material and technological structures and properties. Whilst many theories about systems originated in the sciences, systems artists shifted this focus to the arts, exploring questions about the purpose and function of systems in critical and creative ways.

Key figures in the Systems Art movement include: conceptual artist Hans Haacke; curator and writer Jack Burnham; and generative systems artist and academic Sonia Landy Sheridan. Students may wish to research these artists before they visit Systematic.

Systems: Concepts and Methods

As an artistic concept, the 'system' became a way of looking at a range of questions about the dynamics of inter-relatedness, connectivity and inter-dependence. On a philosophical level, such questions were focused on relationships between humans and the various systems with which they interacted, and the impact of these relationships on notions of human autonomy and inter-dependence. This included a number of speculative concerns with the potential of technological systems to develop non-human powers of intelligence.

On a methodological level, such questions led to experiments with process, such as sequencing, coding or generative methods where the artwork was produced through interactions with an influencing system, be this of the artists invention or of independent origin. Such experimental methods emphasised relationships between processes such as repetition and variation, change and adaptation, often exploiting the organisational structure of systems for creative outputs.

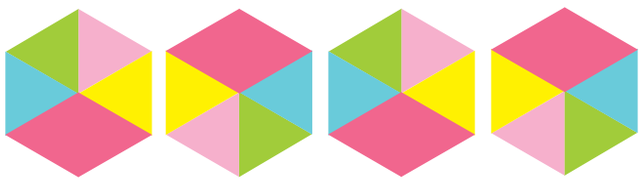
The System as Medium

The radical methods of the systems art movement challenged traditional views of the artwork by defining it as responsive to the world in which it was situated, and indeed, vulnerable to its influence. They challenged the notion of the art object as an autonomous, stand-alone object, instead suggesting its purpose and meaning was mediated by the systems in which the artist was positioned, and through which it was produced. Through this emphasis, the contributions of systems art lay in redefining the art object as an inter-related entity, subject to external influences and implicated in a broad network of relations and effects beyond its own boundaries and traditions.

Post-humanism

In contemporary contexts, systems-based artworks are often aligned with concepts of the 'post-human' which challenges traditional views of human nature as defined by an autonomous, free-acting human subject. Aligned with the broader critique of 'anthropocentric' or 'human-centred' viewpoints, post-humanism suggests that in contemporary cultures, what is 'human' can only be defined in terms of our relationship with the broader networks of relations on which we have impact and which impact on us. The post-human is thus defined by its inter-relatedness with other entities, systems or species, be they artificially or naturally produced. Teachers and students will find echoes of these concepts throughout *Systematic* and students are encouraged to reflect on how their own relationship with systems can inform their understanding of a post-human world.

Pre-Visit: All Systems Go!



What is a System?

Systems are complex entities that operate in many different contexts with different materials, purposes and effects. This means that systems can be quite difficult to define, especially when we try to compare one system with another. All systems however share common properties or characteristics and students may find it useful to look at the defining features of systems before they visit the exhibition. The Oxford English Dictionary offers these helpful definitions:

Definition of system in English:

Noun:

- 'A set of things working together as parts of a mechanism or an interconnecting network; a complex whole.
- A set of principles or procedures according to which something is done; an organized scheme or method.
- 'The system' - the prevailing political or social order, especially when regarded as oppressive and intransigent.'

(Source: https://en.oxforddictionaries.com/definition/system)

Before you visit *Systematic*:

Take some time in class to brainstorm all things SYSTEMS. Ask students to name a system in their daily lives, define what it does, its purpose and how it works.

You may like to offer some prompts for BIG kinds of systems such as

Environmental
Technological
Information
Social
Mechanical
Biological

Or SMALL systems such as

the human body
a fish tank
a computer

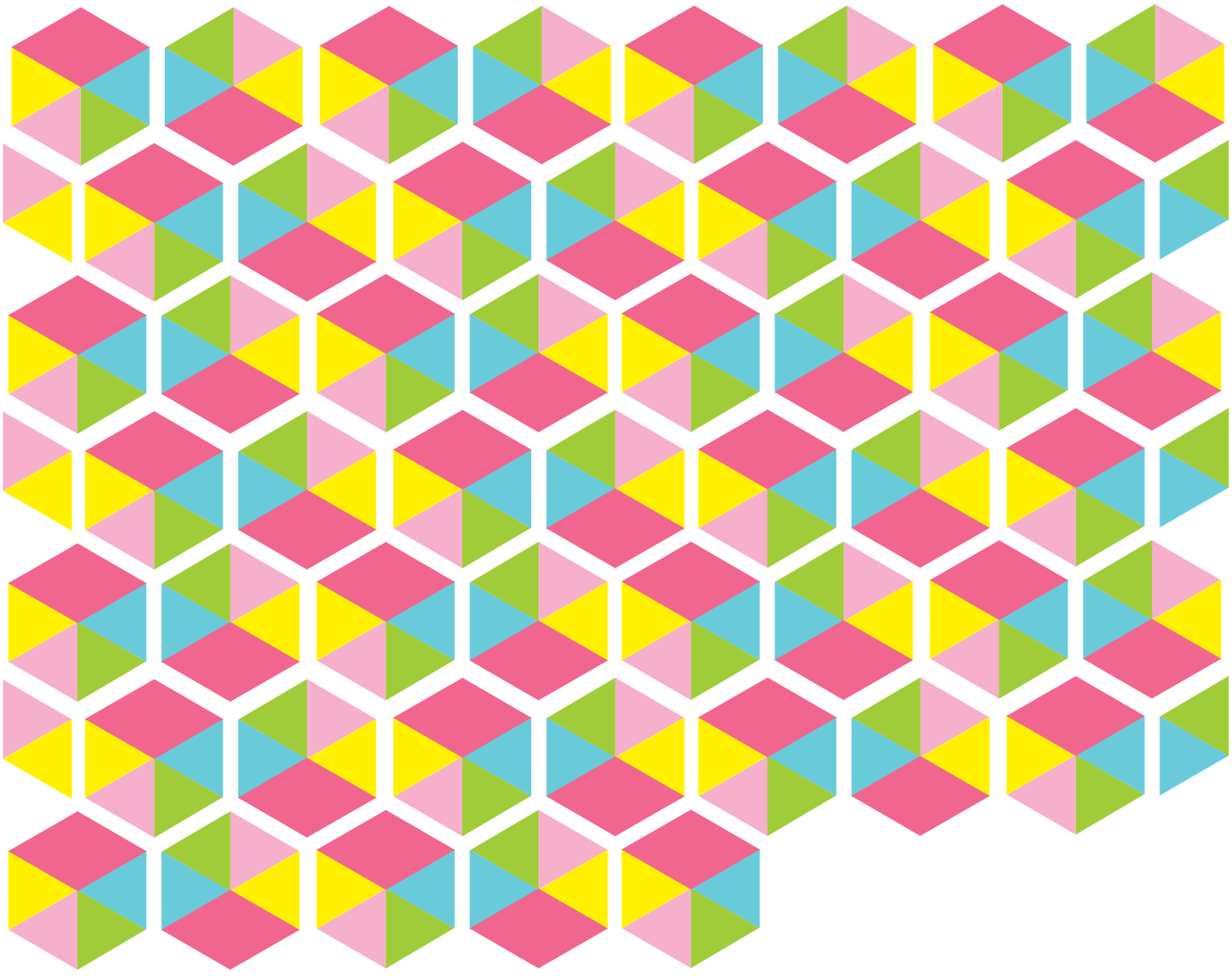
How many different systems can the class come up with? Which systems do students use on a daily basis? Which are their favourites, and which ones don't they like at all?

Choose a system to focus on and ask students to think about systems principles such as the relationships between the parts of a system and the whole: What is the purpose of the system? How are its parts co-ordinated or designed to interact? Which are the most important parts and what would happen if any of those parts stopped working or changed? How can we think about a system as a network of parts and connections? Do systems control us, or do we control them?

Ask them to consider what other systems their system interacts with or depends upon? See how many they can come up with!

At the Exhibition: Artworks and Discussion Topics

In the following section you will find images of the artworks in the exhibition and statements provided by the artists about their work. The artist statements are followed by 'Discussion Topics' which teachers are encouraged to use to guide students' engagement with each artwork.



Tega Brain

'Keeping Time'
Materials: Archival Ink on paper + single channel video
Dimensions: Variable
Date: 2018

Artist Statement:

'Keeping Time' is an ongoing series of work made by scraping the internet for images of particular plant species. Vast quantities of images are uploaded to online platforms daily and many of these include observations of other species. Each work in 'Keeping Time' is produced from several thousand photos of Jacaranda, Sturt's Desert Pea, Cowslip Orchid and the Cherry Blossom in Kyoto, uploaded to the Flickr database from 2002 to the present day. The results for each species are laid out and composited according to their time stamp. Photographs are arranged into rows according to year, and ordered across each row according to date. This process reveals phenological patterns of the plant species being observed across the annual cycle.

Phenology is the study of the timing of recurring biological events in animals and plants such as flowering, budding and fruiting. It provides a sensitive indicator of the response of the biosphere to a changing climate, with species flowering earlier due to warmer weather.

What is revealed in 'Keeping Time', are patterns of species visibility. Observing the number of photos taken throughout each year, it becomes clear that plants only become visible to us at particular charismatic moments in their life cycles - when a species flowers or when its leaves colour during autumn. The messy nature of online platforms also means 'Keeping Time' is full of seemingly unrelated images of babies, weddings and restaurants. However this noise in the data gives a rich glimpse of the socio-cultural relationships, showing that many of these plants have significance as people's names, the names of places or within festivals.'

Tega Brain, 2018

Discussion Topics

OBSERVE

- Look closely at ‘Keeping Time’ - what objects can you see in the individual photographs’?
- Describe the patterns you see across each panel, and the artwork as a whole? What does it remind you of?
- Each panel shows photographs people have taken of flowers over several years. What can you tell about the annual flowering cycles of plants from looking at the panels?

REFLECT

- Why do people take photographs of flowers?
- By using Flickr, what ideas about photography does the work explore?
- Is Flickr useful for finding out about the flowering cycles of plants? What can it tell us? What can’t it tell us?

RESPOND

- Why do you think Tega has included pictures of people in ‘Keeping Time’ and not just plants?
- Why do you think Tega has called her work ‘Keeping Time’?

Ian Burns

'Circle'
Materials: Fans, latex gloves, table, air, timing system
Dimensions: 165 x 157 x 157 cm
Date: 2016

Artist Statement:

'Attempts at spectacle are of interest not for their capacity to succeed, but rather for the clarity found in their failures. Satisfaction renders us passive. Desire heightens the senses. I concur with those enlightenment-era thinkers who placed curiosity as the first of all passions.

The richest contemporary sublime is found in disappointment. It exists in nostalgia for the ability of the manufactured display to make presentation of the un-presentable.

I invent processes and forms that subjugate the expectations and clichés of art viewing to supporting roles in the creation of forms and systems that privilege the unique experiences of physicality, investigation and awareness to be found on that thin line between the poetic and the ridiculous.'

Ian Burns, 2018

Discussion Topics

OBSERVE

- What objects has Ian used to make ‘Circle’? How has he arranged them?
- Kinetics is the term we use to describe how the interaction between things creates movement. Describe the kinetic movement in ‘Circle’.
- What energy sources has Ian used to create these effects?
- Ian’s rotary fans turn on and off in sequence – how does this affect the movement of the latex gloves?

REFLECT

- What would the objects in ‘Circle’ normally be used for?
- What systems in everyday life do we associate these objects with?
- How does Ian change the purpose of the objects? What is their new purpose in ‘Circle’? Is this purpose obvious, or is it mysterious?

RESPOND

- What ideas about consumerism and our use of domestic goods is Ian exploring in ‘Circle’?
- What are some of the visual effects in the work that help to convey these ideas?
- In what ways is ‘Circle’ a system in its own right? What features of a system does it have?

Patrick Pound

'Small World'
Materials: Photographs on paper
Dimensions: Variable
Date: 2007

Artist Statement:

'To collect is to gather your thoughts through things. I collect vernacular photographs and other things to see how they might be found and made to hold ideas differently. Instead of taking photographs I buy them on the internet. I collect according to categorical constraints and search for apparent alignments and connections. Some things have nothing in common until you put them together. My work treats the world as if were a puzzle to be solved. It seems to say: if only we could find all the pieces we might solve the puzzle. It's a tragicomic folly of course.'

Patrick Pound, 2018

Discussion Topics

OBSERVE

- Look closely at the different photographs in ‘Small World’ - what objects or figures can you see?
- Identify some of the visual connections between the photographs. What shapes, forms or events seem to relate to each other?
- Identify two photographs in ‘Small World’ that you think relate to each other and explore why you think they ‘go together’.

REFLECT

- Looking at the artwork as a whole, is there a system or ‘logic’ to the way the photographs are arranged in ‘Small World’? Or does it seem more like a random collection?
- What ideas do you think Patrick is exploring by assembling his photographs this way?
- Patrick says he builds his collection of photographs by searching online with particular search terms or categories. Looking at his photographs, what do you think these search terms might be? See if you can come up with more than one search term for each photograph!

RESPOND

- Compare Patrick’s ‘Small World’ to Tega’s ‘Keeping Time’ – how do the artists approach the arrangement of their photographs differently?
- How does Patrick use the internet as a creative tool?

Bill Hart

'Dialectic Seepage'
Materials: Generative animation (software) and digital display (video)
Dimensions: Variable
Date: 2008

'Prototype for a Philosophical Prosthesis'
Materials: Bespoke hardware and generative software
Dimensions: Variable
Date: 2018

Artist Statement:

'For the past seventy years computers have been teaching us much about what it means to be human, often through their failure to be able to do many of the tasks we take for granted as humans. In recent years though, there has been a surge in the capacity of computers to imitate human capacities in ways that we thought they would never be capable of. Technologies to understand speech, to translate between languages, to read emotion on human faces, to mimic your voice, or mannerisms, or even your handwriting.

But still computers have as yet shown no signs of creative intelligence.

These works explore the use of these new technologies in playful ways to probe the frailties of both humans and machines. Is a machine a more absurd philosopher than a human? Where does the meaning lie in language, and how does it drift and shift through the processes of communication?'

Bill Hart, 2018

Discussion Topics

‘Dialectic Seepage’

OBSERVE

- Describe the visual effects of ‘Dialectic Seepage’? How does it make you feel?
- Can you read the words? Do they make sense as sentences, or on their own?
- Describe the movement of the words. What is controlling this movement?

REFLECT

- What do you find yourself trying to do when watching ‘Dialectic Seepage’?
- How does the work challenge your ability to make sense of language?
- If we think of language as a system with rules, how does Bill’s animation break the rules of language?

RESPOND

- Bill typed two different quotes about language into Yahoo’s translation program. He then asked the program to translate them into several different languages and back into English. The shifting words you see are the result of these processes of translation. What ideas about translation and computer systems does ‘Dialectic Seepage’ explore?
- Can we trust computer systems to translate language?
- How many processes of translation do you think a sentence can go through until it loses its original meaning?

‘Prototype for a Philosophical Prosthesis’

OBSERVE

- Identify the different materials in Bill’s ‘Prototype’ machine.
- Describe the different parts and how they interact.
- What is the purpose of the Prototype? What is it doing? Where is the handwriting coming from? What is the handwriting saying?

REFLECT

- What technologies has Bill used to create this work?
- Bill’s writing machine is re-writing fragments of text about human consciousness from philosophy books. Why do you think Bill has used hand writing to re-write the text? What ideas about humans and technology does this work explore?
- Is the machine human in any way? Can a machine think? Or is it just programmed to ‘think’?

RESPOND

- What is a prosthesis? What do you think Bill means by a ‘philosophical prosthesis’?
- What does this title suggest about relationships between humans and their technologies?
- How do computers influence our thought processes?
- Are computers creative? What might this mean?

Jacob Leary

'the object compendium (as/sets)'
Materials: Boxes, mirrors, light, paper
Dimensions: Variable
Date: 2018

Artist Statement:

'This work is part of a larger series of papercut-based works exploring the production of pictorial space with algorithmic processes. Fusing the mechanical language of algorithms with subtler handcrafted modes of production, the work aims to produce an artistic vocabulary synthesising the hand and the system— a particular creative collaboration with non-human forces capable of producing aesthetic effects.

The works start as two dimensional shapes or 'territories' but grow into worlds based on patterns and algorithmic systems which have informed the artistic process of composition. Underpinning this conceptual approach is a fascination with the nature of organization, different systems and processes of organization, and how we understand them.

The foundation for the work is defined by the technological processes within programs such as Adobe Photoshop and how these digital tools can be used to build and create 'imaginary worlds' which can become 'real'. By combining the algorithmic process with an organic or intuitive artistic approach, the works grow into extruding and submerging three-dimensional worlds—an interplay between concave and convex—negative and positive.

The infinity mirror box elements have emerged as part of new research exploring the idea that objects have a hidden 'withdrawn' depth to their inner life. The boxes produce an inter-objective schema exploring the ways that objects evade definitive meaning'.

Jacob Leary, 2018

Discussion Topics

OBSERVE

- Describe the formal elements of Jacob's work. How many sets can you see?
- Describe the visual effects of Jacob's work. What methods and materials has he used to create these effects?
- Describe the effects of colour and pattern – how do they make you feel?
- Describe the effects of Jacob's use of mirrors – how does it affect the way you see the objects?

REFLECT

- What do the shapes and forms in Jacob's work remind you of?
- Jacob describes his paper cuts as 'territories' – what kind of territories are they? What kind of world do they suggest?
- What different manual techniques has Jacob used to make the work? What technologies has he used?

RESPOND

- How does each box explore different ways to look at objects in space?
- How does Jacob's work explore the impact of technology on the way we see and make things?

Nadège Philippe-Janon

'At the Core is Another'
Dimensions: Variable
Materials: Various inc. salt, glass prisms, motors, animation, sound
Date: 2018

Artist Statement:

'Nadège Philippe-Janon draws from science, nature, culture and personal narrative to explore our physical and learned ways of perceiving, with a particular focus on anthropocentric associations with the non-human world. Philippe-Janon's works investigate the imperceptible forces that exist within everyday experiences - gravity, electromagnetic energies, the strange seduction of a certain worn object - to emphasise the interconnected and multi-faceted qualities of our relationships with our surrounding environments, decentring humans from the worlds they construct and inhabit.

Imbued with an awareness of the art-making and exhibiting process, her works are frequently site specific and makeshift, retaining a fragility and transparency that leads the viewer to recognise their coexistence in the space, and invoking a sense of instability and transience within human ecologies. Her creative process explores the possibilities of manipulating physical materials as well as animation, video, light, technology, and sound.

Philippe-Janon's interests have led her across a diverse range of mediums and modes of art making. Her studio acts as laboratory where experiments with materials and mechanisms locate connections and blur lines between heterogeneous elements, between organic and artificial, climate and culture, macro and micro, chaos and control.'

Nadège Philippe-Janon, 2018

Discussion Topics

OBSERVE

- What objects has Nadège used to make ‘At the Core is Another’? What function do these objects normally have? What function do they have in the work?
- How has she arranged them? What does the arrangement remind you of?
- Describe some of the animated effects in the work. How has Nadège created these? What technologies has she used?

REFLECT

- In what ways does ‘At the Core is Another’ work like a system?
- Reflect on some of the interactions between the parts. What is your favourite interaction? Why?
- What is the purpose of the system in this work? Is it clear or is it mysterious? Is it self-contained or is part of a larger system? Or both?

RESPOND

- Thinking about the title ‘At the Core is Another’, how does the work explore ideas about connectivity and inter-relatedness?
- What systems in your everyday life does Nadège’s work remind you of?

Tricky Walsh

'Playable conjunction 5 (although)'; 'Playable conjunction 6 (hardly when, scarcely when)'; 'Playable conjunction 7 (no sooner than)' 'Playable conjunction 8 (whenever wherever)'

Materials: Gouache on paper
Dimensions: 96 x 76 cm (framed)
Date: 2018

Artist Statement:

'My painting practice has a focus on hard edge and geometry. These four works expand on an earlier series of paintings that examine both formal and chaotic geometric relationships. The paintings use compositional elements inspired by a broad palette of early twentieth century pinball design through to mechanical devices and both synthetic and non-Euclidean geometries.

'Playable conjunctions' (5 through 8) are definitively speculative, in both aesthetics and content. Each work is individually drafted according to a basic classical compass-and-ruler construction, and uses a fundamental geometric form as its starting point, before introducing colour as an additional dimension to construct discrete idealised architectural forms and optical patterning.

The use of language within each work provides a starting point for a possible narrative or conversation with the viewer. The conjunctions themselves provide a kind of entry for common speculative or science fiction literary tropes. "... Although..." "…Hardly when…" "…No sooner when…" "… Wherever…" Where they may lead is anyone's guess.'

Tricky Walsh, 2018

Discussion Topics

OBSERVE

- Tricky uses geometry to compose these paintings. What shapes and forms does this method produce? How does Tricky use colour to enhance the formal aspects of the work?
- What do the images remind you of? Are there any elements that you associate with systems? What are these?
- What words can you see in the paintings? What do they suggest? Why do you think Tricky has included them?

REFLECT

- Explore the meaning of the title ‘Playable Conjunctions’.
- How is the concept of ‘play’ or ‘playable’ explored in the works?
- Some of Tricky’s images refer to the design of old technologies such as pinball machines. How might this relate to concepts of play in the works?

RESPOND

- Tricky’s works include verbal conjunctions such as “...Although...” “…Hardly when…” “…No sooner than…” “…Whenever Wherever…” Experiment with responding to the ‘conjunctions’ to tell a story about what is happening in the work. See how many different stories you can come up with.
- What connections and ideas do they evoke?

Laura Woodward

'Writhe'
Materials: Water, acetal, acrylic, fasteners, nylon hose, santoprene hose, motors
Dimensions: Variable
Date: 2015

Artist Statement:

'Inspired by Ararat's surrounding landscape, 'Writhe' comprises nine identical mechanical units (each then comprising dozens of small mechanical components) which respond to and affect each other to contribute to the installation's larger ongoing kinetic system. Water pulses throughout the space, flowing, at times changing direction, and in doing so continuing the system's operation.

The installation draws together several strands of enquiry in my work: my ongoing fascination with water-powered mechanisms; the potential of shadows generated by viewers and kinetic components; integrating site-specificity and architectural-responsiveness; and the continual development of the ongoing, circularly-causal systems that drive my installations.

The timelines within 'Writhe' are generated by the movement of water between and within components. This movement creates changes in the system that speak more of a relationship between gravity, friction and weight than to any sense of measured time. The time it takes for one unit to change state varies from unit to unit, and it is affected by differences in the components. One unit may have more friction; another's pump turns slightly faster; a hose may be a few centimetres longer; a unit may hang in such a way that it tips more readily than another. All these material factors contribute to the duration of processes and cycles in the work.'

Laura Woodward, 2018

Created by invitation for Ararat Regional Gallery, 'Writhe' was assisted by the Australian Government through the Australia Council, its arts funding and advisory body, with a New Work Grant.

Discussion Topics

OBSERVE

- ‘Writhe’ is a kinetic sculpture. Describe how it moves. What does it remind you of?
- Identify the individual components of ‘Writhe’. What are the different materials and mechanical elements that make it work like a system?
- What kind of system is it? Does it have a purpose and what are its main characteristics?
- How does ‘Writhe’ make you feel? Why do you think Laura has called her sculpture ‘Writhe’? What does this evoke?

REFLECT

- What technologies has Laura used to create ‘Writhe’?
- What environmental systems does ‘Writhe’ relate to?
- How is the meaning of water explored in the work?

RESPOND

- Identify some of the things Laura would need to consider to install ‘Writhe’ in the gallery. How does it interact with the gallery space?
- Is ‘Writhe’ a self-contained system, or does it depend on other systems to keep it running?
- ‘Writhe’ is quite a fragile sculpture – what might this suggest about systems in our environment?

Worksheet: Upper Primary – Lower Secondary

Select one of the artworks in *Systematic* and make some notes below.

Artist:

Title of work:

I observe….
(Write down everything you can see or hear in the artwork, including its materials and how it is installed in the gallery)

I feel…..
(Describe how the artwork makes you feel, including the effects on your body, your senses and emotions)

I think…..

(What ideas does the artwork make you think about?)

I wonder….

(What does the artwork make you curious about?)

I like this artwork because…

(Explain why you like the artwork, including which effects you like best and why)

Worksheet: Middle - Senior Secondary

Select one of the artworks in *Systematic* and make some notes below.

Artist:

Title of work:

Formal Framework

(Describe the formal elements of the artwork including the artist's materials and methods)

Conceptual Framework

(Describe the key ideas in the artwork including how it relates to other works in the exhibition)

Systems Framework

(Describe how this artwork relates to systems, including reference to relevant concepts, histories or technologies)

Contemporary Framework

(Identify which aspects of the artwork make it relevant to contemporary cultural issues)

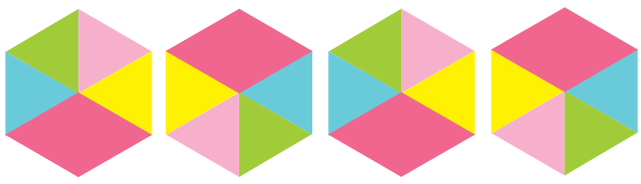
I like this artwork because….

(Finish this sentence with your thoughts about why you like the artwork and which elements you think are most effective)

Post-Visit Classroom Activities

After the exhibition, invite students to share their worksheet responses with the rest of the class. Which artworks did they like the best and why? Were there any artworks they found challenging? Ask them to reflect on the different systems they thought about during the exhibition. Which ones could they relate to their everyday life? Invite students to develop their responses into a written discussion of the methods, materials and meanings of their favourite artwork.

The activities below are suggestions for hands-on art activities that students could do in class, individually or as a group. They are designed as starting points for creative applications of systems concepts and ideas that students will have explored through engaging with the artworks in *Systematic.* Teachers are encouraged to be inventive and adjust these activities according to their students abilities and skill level.



Activity 1: 'New World' or 'Machine' themed photo collage or assemblage.

Method: Invite students to select a range of photographs from different sources and create a collage or photo assemblage based on the ideas of a 'New World', or a 'Machine' with multiple parts. Students can either make a collage from different images to make a composite image, or create a series of related images where they develop formal or conceptual connections between different images to explore the themes. The activity may work well as a large group activity where everyone in the class contributes their images to a large-scale artwork. Students could create a large 'machine' with a particular creative purpose, or a 'new world' with their visions of the future or other worlds.

Materials: Photographic images and parts of images can be gathered from available sources, such as magazines or newspapers at home or school, or students can search online. They will need scissors, adhesive and backing paper.

Ideas: Relationships between parts and wholes; connectivity between images, forms and concepts; arrangements and sequencing, patterns and codes; inter-dependency between meaning and method.

Related Artworks: 'Keeping Time'; 'Small World'.

Activity 2: Geometric Jigsaws

Method: Using geometry, invite students to draw and cut out multiple shapes that they can arrange as jigsaw pieces. Encourage students to develop shapes that will co-ordinate together to make a larger shape. Once they've arranged the jigsaw pieces, invite them to develop a colour pattern within the larger shape.

With a class-mate, students then disassemble the jigsaw and give the pieces to their class-mate whose job is to re-do the jigsaw and work out their class-mate's colour code. The idea is that once they've worked out the colour code they can do the jigsaw faster. If all the geometrical shapes are the same and the large shape is symmetrical, class-mates may develop a new colour pattern and offer it as an alternative. Students can then see how many patterns they can make with the colours and shapes. Alternatively, students may put the pieces together to make a new shape.

This activity could also be done in 3D with interlocking materials, such as foam. Students may like to explore using mirrors to create infinity mirror effects with their objects. Senior students may like to explore this idea using pixelated images or more complex geometries to create their larger shape and colour codes.

Materials: Ruler, pencils, colouring pens, paints etc, scissors, paper or 3D materials.

Ideas: Inter-connectivity; visual codes and sequencing; networks; relationships between parts and wholes.

Related Artworks: 'Playable Conjunctions'; 'the object compendium – as/sets'.

Activity 3: Kinetic Sculpture/ Installation

Method: Invite students to create a kinetic sculpture from any available materials, with the only requirement being they must build a work with a moving element or elements.

Students may wish to choose a theme for their sculpture that is relevant to their subject areas, for instance 'plant biology' or 'wind power' or they may wish to explore movement in a more abstract or conceptual way. Encourage students to select suitable combinations of materials that will allow them to achieve kinetic interactions and effects easily such as wind and light-weight materials, or suspended forms that move with their own weight.

Students will need to consider what natural or artificial energies they want to use to stimulate movement and forms and materials that are relevant to their concepts and ideas. Sculptures can be small or large, and involve any combination of materials. Encourage students to think through systems principles such as interactivity and the relationship between parts and whole when planning their sculpture.

Materials: Flexible, dependent on concepts and ideas.

Ideas: Synthesis and co-ordination of parts; connectivity and interaction; inter-dependence; relationships between parts and wholes; sustainability.

Related Artworks: 'Circle'; 'At the Core is Another'; 'Writhe'.

Activity 4: Re-purposing the Object

Method: Invite students to select a domestic object or objects that they use every day and 're-purpose' it into a sculptural form. The object could be any domestic item such as a paper clip, peg, colander, funnel or old hose, or a combination of all these, with the only requirement being that students identify the 'intended purpose' of the object, and completely 're-purpose' it into a sculpture. Encourage students to work with the physical properties of the object to re-invent it formally and/or conceptually or into a playful sculpture.

Students may like to combine several objects together to make a multi-object sculpture, or deconstruct an object and re-construct it in new ways. Whilst younger students may focus more on questions of function, more senior students may like to look at the conceptual elements of their object(s) such as its economic or technological history, and incorporate ideas on these aspects into their artwork. The 'new purpose' need not be definitive, and students should be encouraged to be playful and inventive in their approach.

Materials: Flexible, dependent on concepts and ideas.

Ideas: Re-invention; form and function; object design; spatial thinking; sustainability.

Related Artworks: 'Circle'; 'At the Core is Another'.

Activity 5: Mechanical Sculpture: Design a Writing or Pinball Machine

Method: Invite students to create a mechanical sculpture based on Bill Hart's concept of a hand-writing machine, or Tricky Walsh's references to pinball machines.

For the writing machine, invite students to make a 'prosthetic' writing machine that is built as a physical attachment to their hand/arm or any other part of their body. The function of the 'writing machine' must be that it writes or enables the wearer to write, but exactly what it writes or responds to, is up to its creator. Students can use any materials, but it must entail mechanical elements that allow for it to be attached to the body, and move and 'write' as required.

For the pinball machine, invite students to construct a manually operated game with a spring and ball mechanism that creates a random effect like a pinball machine. Students may wish to research pinball machines, and develop their own design using a box or other container, or they may work with the concepts of chance and play to create a machine/game with similar purposes and effects.

For both activities, encourage students to design their machine as a prototype, and construct it from basic materials such as cardboard, rubber bands, spring mechanisms, string, adhesives etc. The aim is to explore how mechanical function requires the co-ordination of multiple materials and formal elements, and effective design. Enthusiastic students may wish to develop their prototype into a more polished design.

Materials: Basic sculptural materials and binding elements (see above) dependent on choice of activity.

Related Artworks: 'Prototype for a Philosophical Prosthesis'; 'Playable Conjunctions'.

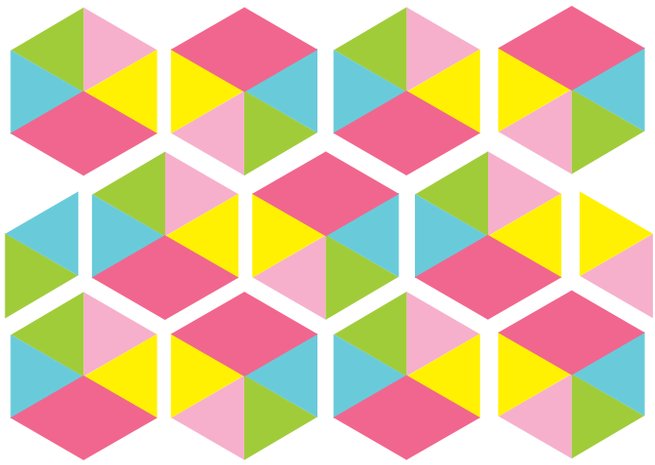
Artist Biographies

Tega Brain

Tega Brain is an artist and environmental engineer making eccentric engineering. Her work intersects art, ecology and engineering, addressing the scope and politics of emerging technologies. It takes the form of online interventions, site specific public works, experimental infrastructures and poetic information systems.

In recent years she has exhibited at the Victoria and Albert Museum, London, Haus der Kulturen der Welt, Berlin, the Science Gallery Dublin and Eyebeam in New York City. Her work has been widely discussed in the press including in *The New York Times, Art in America, The Atlantic, NPR, Al Jazeera* and *The Guardian* and in art and technology blogs like the 'Creators Project' and 'Creative Applications'.

Tega is an Assistant Professor of Integrated Digital Media, New York University. She is an affiliate at Data & Society and works with the Processing Foundation on the Learning to Teach conference series and p5js project. She has done residencies at Eyebeam Art and Technology Center, New York City, GASP Public Art Park, and at the Environmental Health Clinic, New York University. In 2013 she was awarded an early career fellowship from the Australia Council for the Arts.



Ian Burns

Ian Burns has had numerous solo exhibitions in venues in the United States, Australia, Spain, Ireland, France and Austria. His work has also been exhibited in major galleries and museums in Germany, the United Kingdom, New Zealand, the United States, Slovenia, Norway, Italy and the United Arab Emirates.

His works are included in major public collections including the Museum für Moderne Kunst, Frankfurt am Main, Germany, the Museum of Contemporary Art, Sydney, the National Gallery of Victoria, Melbourne, the Art Gallery of South Australia, and the Australian Centre for the Moving Image as well as many important private collections such as the 21C Museum, Kentucky, USA, the Jumex Collection, Mexico, the Berge Collection, Spain, the Detached Collection, Australia and the Chartwell Collection, New Zealand.

His work has been reviewed and featured in major international art magazines including *Frieze Magazine, Flash Art, ArtForum, Art Review, Sculpture Magazine, Art in America, Modern Painters, ArtNews, The New Yorker* and *Tema Celeste* as well as in major newspapers including *The Sunday Times, The Irish Times, Der Standard, The Age, The Sydney Morning Herald, The Australian* and *The New York Times.*

Ian Burns is based in Queens, New York.

Patrick Pound

Patrick Pound is a Melbourne-based artist and Senior Lecturer in Art at Deakin University.

In 2018 *Patrick Pound: On Reflection* saw Pound's collection-based works installed with 82 works from Te Papa Tongarewa at the City Gallery in Wellington in a vast palindrome of a display. 2018 also saw *The Point of Everything* collection-based intervention as part of the Adelaide Biennial of Australian Art at the Art Gallery of South Australia. In 2017 the National Gallery of Victoria staged *Patrick Pound: The Great Exhibition*, a major survey of Pound's collection-based works, including interventions with the collections of the NGV across the entire ground floor of the NGVA (Federation Square). As part of Melbourne Now (2013), *The Gallery of Air* was an installation at the NGV of hundreds of things each of which held an idea of air, and is now in their permanent collection.

Pound has also been included in numerous group exhibitions including *The Photograph and Australia*, Art Gallery of New South Wales, Sydney, 2015; *Melbourne Now*, National Gallery of Victoria, Melbourne, 2014; *Episodes - Australian Photography Now,* Dong Gang Photography Museum, Korea; *The Small Infinite,* John Hansard Gallery, UK, 2014; *Inside Running,* Fremantle Arts Centre (2013); *Liquid Archive*, Monash University Museum of Art, 2012; *Present Tense,* National Portrait Gallery, Canberra, 2010; and *Photographer Unknown,* Monash University Museum of Art, Melbourne, 2009.

His work is held in numerous public and private collections including National Gallery of Australia, National Gallery of Victoria, Art Gallery of New South Wales, Art Gallery of South Australia, Te Papa Tongarewa, Auckland Art Gallery, and the Dunedin Art Gallery.

Pound is represented by Station, Melbourne, Darren Knight Gallery, Sydney, Hamish McKay Gallery, Wellington and Melanie Roger Gallery, Auckland.

Bill Hart

Bill Hart is Head of Discipline, Art and Lecturer in Time Based Media at the University of Tasmania's School of Creative Arts where he teaches and lectures in topics around moving image, animation and interactivity, and the general problem of how to make art with technology. He studied physics and mathematics and later visual art at the University of Tasmania. He has explored the uses and applications of computing for over 30 years in theoretical physics, oceanography, system and network design, scientific visualisation, digital imaging and software art. As an artist he works through a deep engagement with technology to explore the application of new technologies to the visual arts through digital image making, robotic drawing, animation with generative systems. He believes art can be both serious, complex and philosophical, but also accessible, sensuous and engaging.

Tricky Walsh

Tricky Walsh works both collaboratively and in a solo capacity. Their* projects focus on both spatial and communication concerns and while they use a diversity of media (architecture, painting, drawing, sculpture, installation, sound, film, comics, radio) it is foremost the concept at hand that determines which form of material experimentation occurs within these broader themes.

They have been awarded a Qantas Foundation Art award and won the 2009 Hobart Art prize for their sculpture *The Wasp project.* They have been commissioned to make works for Monash University Museum of Art, the Tasmanian Museum and Art Gallery and the privately funded Detached Cultural Organisation and were included in the 2013 Mona Foma festival, organised by the Museum of Old and New Art. They have been a recipient of Australia Council and Arts Tasmania funding, and have undertaken residencies in London, New York, Jogjakarta and Paris and China. They are represented by Bett Gallery, Hobart, Tasmania, and MARS Gallery in Melbourne and have exhibited extensively throughout Tasmania, Australia and Overseas.

*Tricky Walsh is a non-binary artist whose preferred pronoun is 'their'.

Jacob Leary

Jacob Leary is a multi-disciplinary artist with a practice spanning a range of mediums including painting, sculpture, prints, video and installation. His recent creative outputs emerge from his current PhD research (University of Tasmania) and its particular focus on 'object essences' as outlined by aspects of speculative realism. His research into the ontological foundations of the 'as-structure' of art has produced a logic with which to see art objects as a manifestation of an alien presence with their own form of agency, a contingent and contradictory force.

In 2018, Leary was highly commended in the Glover Prize for landscape painting and commissioned to produce *Paint Dreamz* for Moonah Arts Centre Haveago gallery, and a new body of work for Melbourne Art Week as part of *Subterrain - The Organic Sublime in Contemporary Practice*. In addition to *Systematic* and a solo show, *Very* (Private Projects) in 2018, Leary's work will appear in *The Field Revisited (still)* at Contemporary Art Tasmania. In 2017 Leary presented his second solo show *Something Terrain* at Flinders Lane Gallery and has recently undertaken a range of commissions through Arts Tasmania and Mona Foma. In 2016, Leary exhibited in *Brainstorm* at the Tasmanian College of the Arts as part of DarkMofo and at Contemporary Art Tasmania as part of their 'Artist to Artist' program. Leary has won numerous awards for his work, including the John Fries Memorial Prize (2012), a national award for emerging visual artists and he was a finalist in the Redlands Art Prize (2016). He has been the recipient of multiple grants including a Contemporary Art Tasmania Studio in 2012 and an Australia Council grant for emerging artists in 2013. Leary's work has been collected by Artbank, University of Tasmania, Justin Art House Museum, RACT Collection, Tasmanian Government, Islington Collection and Ormond College. He is represented by Flinders Lane Gallery (Melbourne) and Private Projects (Hobart).

Nadège Philippe-Janon

After commencing her studies in Environmental Science, Nadège Philippe-Janon went on to study Fine Art at the Queensland College of Art and received First Class Honours at the Tasmanian College of the Arts. Since then she has been awarded numerous grants and residencies including a Marie Edwards Travelling Scholarship to support self-directed research at the Citè International des Arts, Paris, and an Asialink grant to create new work and conduct research in Hokkaido, Japan.

In 2018 Nadège was awarded a Claudio Alcorso travelling scholarship to participate in an intensive residency exploring sustainability with SOMA in Mexico City. Recent exhibitions include: *Mock Sun* Contemporary Art Tasmania (2017), *Real Life Fantasies*, West Space VIC (2017), *New Alchemists*; touring – Salamanca Arts Centre, TAS; University of Queensland Art Museum, QLD; Devonport Regional Gallery, TAS; Flinders University City Gallery, SA (2017/18), and *Sound Traces,* Tenjinyama Gallery, Japan (2016). Nadège was the 2017 recipient of the *Shotgun* program, a partnership project between Contemporary Art Tasmania, Detached Cultural Organisation, and the Museum of Old and New Art (Mona).

Laura Woodward

Laura Woodward lives and works in Melbourne, Australia. She has been creating sculptural kinetic installations for several years, exhibiting in solo and group exhibitions throughout Australia. Woodward's current explorations focus on the potential of system-based kinetic installations. These systems develop through the inter-receptive relationship between materials, movement, time and the artist's hand, with the system's inherent logic driving its formal and systematic emergences.

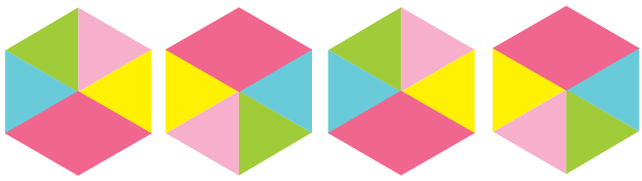
Solo exhibitions include *Resonate*, Airspace Projects Marrickville and Stockroom Gallery Kyneton, 2016; *Writhe,* Ararat Regional Gallery, Victoria, 2015; *Introverted,* Margaret Lawrence Gallery, Southbank, Melbourne, 2013; *The Saltus* at Place Gallery, Richmond, Melbourne,

in 2011; and *Underwing*, Linden Centre for Contemporary Arts, St Kilda, Melbourne in 2010. Completed public commissions include *Voices* at Craigieburn Central Shopping Centre, and *Murmer* at Docklands, Melbourne, both in collaboration with Jem Freeman.

Woodward's work has been recognised through numerous grants, prizes and exhibitions including an Australia Council Emerging Artist New Work Grant in 2010 and Australia Council Mid-Career Artist New Work Grants in both 2013 and 2014. In 2018 her work was short listed and exhibited in the international Aesthetica Art Prize in York, UK. Woodward teaches Sculpture and Spatial Practice at the Victorian College of the Arts. She owns Ironside Studios and co-owns the design and fabrication business Like Butter in Melbourne.

Dr Eliza Burke - Curator

Dr Eliza Burke is an independent curator and writer based in Hobart. Her work is fuelled by an interest in the creative potential of hybrid and collaborative forms across the arts and sciences and inter-disciplinarity as both a concept and practice. She has a PhD in Comparative Literature and Cultural Studies (2004) and an MFA in Art Theory (2015) and has held a variety of project co-ordination, research and teaching roles across the arts, health and education sectors. Solo-curated exhibitions include *Full Void* (Tasmanian Museum and Art Gallery, 2017), *Ghost Biologies* (Contemporary Art Tasmania, 2016) and *Trace* (Rosny Barn and Schoolhouse Gallery, 2010) with recent curatorial roles in *Broken Bodies* (Plimsoll Gallery, 2017) and *Tempest* (Tasmania Museum and Art Gallery, 2016). Her critical writing includes articles, reviews and essays in publications such as *Artlink, Art Guide Australia, Feminist Media Studies*, and *Australian Feminist Studies.* She currently teaches, researches and curates in the interdisciplinary field of Arts and Health at the University of Tasmania.



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Tricky Walsh: Courtesy of Bett Gallery, Hobart and MARS Gallery, Melbourne.
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