THE STORYTELLING MACHINE

ASIAN AND AUSTRALIAN PERSPECTIVES ON CREATIVE TECHNOLOGIES

BETTY SARGEANT
PHD
B.A (HONS)
B.ED

Dr Betty Sargeant

2015 Melbourne Knowledge Fellowship Report

The Storytelling Machine:
Asian and Australian Perspectives on Creative Technologies

An ISS Institute Fellowship sponsored by
City of Melbourne, Melbourne Knowledge Program and
Copyright Agency Cultural Fund

December 2016

International Specialised Skills Institute

CITY OF MELBOURNE

COPYRIGHT AGENCY CULTURAL FUND

CONTENTS

The Storytelling Machine **does not display a traditional narrative involving a beginning, middle and end, but reflects contemporary storytelling practices.**

I. EXECUTIVE SUMMARY

There are positive and negative effects associated with people using computing technology; these effects depend on how the technology is being used and what content is being consumed. Emerging technologies can be appealing and they offer features that can benefit people who operate across a range of learning spectrums and abilities. Technology can also encourage and support people to engage in social and physical activities. Yet it is common that people access digital devices while they are alone and when engaged in digital pursuits people are commonly not engaged in high levels of physical activity.

Through adopting creative approaches to designing new technologies, artists and designers can improve our quality of life. In doing this, they can help members of the public to update their skills, supporting more people to become active participants in our knowledge economy. Creative technologists can also use their experimental processes to offer the public opportunities to engage with new and unique digital designs, leading to experiences that may connect people with each other and connect them with the environment in which they live. Creative technologists can form creative hubs that may galvanise wider community spirit, enrich our lives, and lead to positive social and wellbeing outcomes for the greater public. Creative technologists can also make their work accessible to diverse combinations of people with a range of experiences and skills sets. When we harness the alluring qualities that digital technology offers, we can more deeply engage people in entertainment and learning experiences, and this can lead to positive educational, behavioural and health outcomes.

Through this Fellowship, Dr Sargeant has had access to some of the latest art, literary and technology thinking, particularly in relation to digital media, interactive literature and creative technologies. Through this report, she contributes to knowledge surrounding the design and use of creative technologies. She specifically looks at ways that we can support the creative technologies industry and foster digital innovation that encourages experimentation and public participation.

During this Fellowship, Dr Sargeant has engaged in four central international activities:

1. She presented two artist talks at ISEA, the International Symposium on Electronic Art, City University, Hong Kong. She also attended exhibitions, presentations and workshops at this event.

2. She exhibited her work at the AFCC, the Asian Festival of Children's Content, National Library, Singapore. She also attended workshops and presentations, and engaged in meetings and talks at this event.

3. She engaged in discussions with the directors of festivals, and directors of cultural and arts centres in Singapore and in the cities of Taipei and Kaohsiung, Taiwan.

4. She spent six months as artist-in-residence at the Asia Culture Center, Gwangju, South Korea. During this time, she collaborated with artists from around the world, developed a new artwork and exhibited this artwork in the ACT (Arts and Creative Technology) international festival, Gwangju, South Korea.

On returning to Melbourne, Dr Sargeant disseminated the knowledge she gained during her international travels, presenting a series of public programs and a set of free public workshops, and engaging in a residency period at the Library at the Dock, Melbourne.

In conducting these Fellowship activities, Dr Sargeant has addressed the following question:

> ***How can we assist the creative technology industry so that it can continue to expand, and can continue to engage audiences of all ages in activities that support positive social, educational, health and economic outcomes?***

In the following report, Dr Sargeant puts forward a set of six recommendations. The information that led to her forming these recommendations is then presented in six related sections that make up the body of this report. Section one addresses the current Australian context; section two details *The Storytelling Machine*, the creative project that is at the centre of this Fellowship; section three analyses the current Asian context, particularly in relation to the built environment; section four reports on support for the creative technologies industry, particularly in relation to the supply of appropriate work spaces; section five reports on the presentation of creative technologies; and section six reports on the transfer of knowledge that has occurred over this Fellowship period.

This report is relevant for those managing government arts sectors and civic and cultural centres; those managing creative and cultural public programs; and artists and designers working in digital design, creative technologies and interactive arts projects.

Keywords
Art galleries, arts, arts centres, Asia, creative arts, creative technology, digital design, digital literacy, game design, Hong Kong, media art, public programming, Singapore, South Korea, Taiwan, technology.

II. RECOMMENDATIONS

Recommendation 1

The Australian Context: Support for the Creative Technology Industry

It is recommended that government bodies, not-for profit organisations, industry organisations and the commercial sector further support the creative technology industry. Emerging technologies have led to some unhealthy and addictive behaviours within our society. Yet creative approaches to new technologies can help us to be more socially and physically engaged across geographical and virtual spaces, and this can lead to healthier modes of living. With further support from government, civic centres and industry bodies, more people can become involved in this industry. This will further bolster our knowledge-based society, it will support skills enhancement in areas of future employment growth, and it may lead to healthier relationships between humans, and between humans and computers.

It is recommended that creative technologists become familiar with educational curriculums, such as the Australian National Curriculum and the Victorian Curriculum. Being familiar with these curriculums may help to establish a solid understanding of the deep connections between creative technology practices and STEAM focus areas. Creative technologists develop innovative problem-solving skills, they apply flexible approaches in order to give form to new ideas, and they use complex technology-based tools to accomplish specific goals. These practices can involve arts and technology professionals, as well as the wider public. These practices assist us in building the skills required for jobs of the future and they support growth within a knowledge-based society.

Recommendation 2

The Project: The Storytelling Machine

It is recommended that government bodies, not-for profit organisations, industry organisations and the commercial sector further support experimental creative technology practices. This may involve directed experimentation: artistic and technology investigations that involve a process of 'trial and error' in order to achieve a specific outcome. This process may also involve open-ended experimentation: practices that explore the limits of our knowledge and capabilities with the view to creating new systems and novel ways of working. This mode of practice may not lead to tangible or rational outcomes, yet these practices are vital to paving the way for future developments in this sector.

The Australian creative and cultural sector is valued at $86 billion.[1] There are real economic benefits to this industry. Further support for experimental practices would see this industry expand. This funding could help to extend the skills of local artists and designers and may result in future social, cultural, health-related, educational and economic benefits for wider society.

1 Based on the latest Australian Bureau of Statistics figures, 2014, www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/5271.0Main%20Features32008-09

Recommendation 3

Our Built Environment: The Asian Context

It is recommended that government bodies, not-for profit organisations, industry organisations and the commercial sector further incorporate creative technologies into our built environment and public space. This can help to engage the public in new art and technology experiences and can help to form positive and healthy patterns of behaviour.

As Melbourne's population density increases, public spaces become more important. These built environments can be used to engage the population in art and culture through the use of creative technologies. Creative technologies can be embedded within our built environment to help form deeper connections between societies, and between people and the geographical locations within which they are situated. This can be achieved through the use of play and game design, through co-design strategies that involve the public in the design process, and through systems that mediate communications across virtual and geographical spaces.

Recommendation 4

Supporting Creative Technologists: The Asian Context

It is recommended that government bodies, not-for profit organisations, industry organisations and the commercial sector offer a wider range of free and affordable workspaces for artists and creative technologists. This will support the creative technology industry so that society can continue to gain from the economic, social and health benefits that this industry offers.

Australian artists and designers often have flexible working conditions and many people in these sectors work from home or out of public spaces, such as cafes. With Melbourne's property prices rapidly increasing, there is a lack of affordable and appropriate workspaces for those in arts and design industries. There have been a number of co-working endeavours launched in Melbourne over recent years, but many are priced at a level that individual arts and creative technology professionals are unable to afford.

Co-working spaces are not only a base for individual working practices: they can be developed into community hubs. It is recommended that governments, the commercial sector and industry bodies support the formation of art and technology 'villages' or community hubs. These can operate as functional workspaces, as tourist attractions and also as a focal point for social cohesion. In an era when professional artists and creative technology specialists struggle to find workspaces that are both affordable and suitable to their business and creative needs, we risk losing the full health, economic and cultural benefits that this industry offers to society.

Recommendation 5

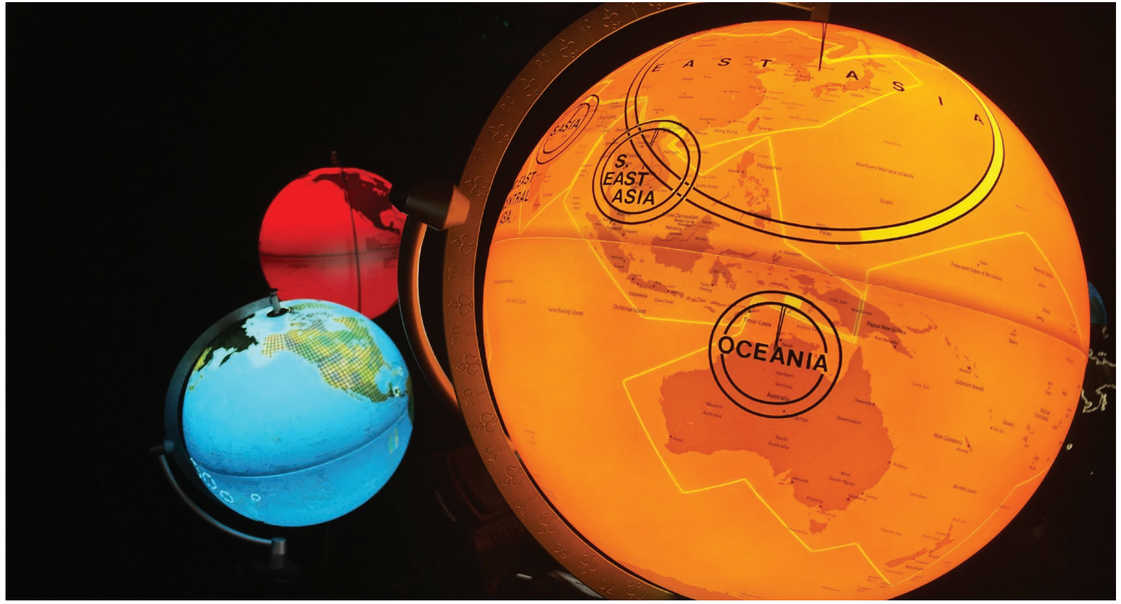
Approaches to Digital Art and Creative Technology

It is recommended that government bodies, not-for profit organisations, industry organisations and the commercial sector assist arts and creative technology practitioners by providing them with more professional development opportunities. In a field that is driven by rapid technological change, it is important to maintain skills development. Yet these professional development experiences are often expensive and time-consuming. Provision of more professional development support would facilitate the formation of an established knowledge economy, one where practitioners are working at the progressive forefront of technological innovation.

Recommendation 6

The Knowledge Transfer

It is recommended that government bodies, not-for profit organisations, industry organisations and the commercial sector work with artists to create public programs that involve a diverse range of people. There are benefits associated with programs that involve a trans-cultural array of people who display a spectrum of cognitive, physical and arts-related abilities. Most notably, such programs can feature cross-generational groupings; involving a diverse age range in learning about and developing technological innovations. These cross-generational events can lead to unexpected and novel outcomes, and can help maintain valuable social and intellectual connections for our ageing population.



Big Bang Data, **ArtScience Musuem, Singapore**

III. ABBREVIATIONS

ACC	Asia Culture Center
ACMI	Australian Centre for the Moving Image
ACT	Arts and creative technology
AFCC	Asian Festival of Children's Content
ALEA	Australian Literacy Educators' Association
ISEA	International Symposium on Electronic Art
ISS Institute	International Specialised Skills Institute
STEAM	Science, technology, engineering, the arts and mathematics
STEM	Science, technology, engineering and mathematics
TPAC	Taipei Performing Arts Center
VR	Virtual reality

IV. DEFINITIONS

Creative technology
The practice of using machinery or digital tools in order to form or present artistic modes of expression. The act of making creative technologies may include computer programming, electrical engineering, game development and/or experiential digital and electronic design.

Geographical space
Non-virtual locations that exist on the Earth's surface. Geographical spaces display physical, tangible characteristics.

Hacking
The act of repurposing a third party system, item or method of practice so that it operates differently to the way it was initially shaped or designed.

Knowledge economy/society
A community in which new information is continually acquired, created, disseminated and applied in order to enhance financial, cultural and civil development.

Virtual space
An imaginary location that is created as a result of digital computation. These locations can exist on individual computing systems and on multiple networked systems.

Virtual reality
A simulated, 3D digital environment that is experienced through the use of a stereoscopic headset.

Workshop
A meeting at which a group of people engage in intensive discussion and activity on a particular subject or project.

V. ACKNOWLEDGEMENTS

Dr Sargeant acknowledges the contributions made by the following institutions and individuals.

Fellowship Sponsors

The City of Melbourne: Melbourne Knowledge Week
Knowledge Melbourne is an initiative designed to showcase, enhance and connect the knowledge and innovation capabilities of Melbourne. Dr Sargeant particularly thanks Bianca Charleston for her interest and support throughout the Fellowship and Councillor Jackie Watts for her support.

Cultural Fund, Copyright Agency Limited
The Copyright Agency has been standing up for Australian creators since 1974. It connects users and creators of content, providing licences for the use of copyright material such as text and images. Through its Cultural Fund, the Copyright Agency supports Australia's writers, artists, publishers and arts organisations. The fund grants 1.5% of the Copyright Agency's licensing revenue to projects which aim to encourage and provide practical assistance to Copyright Agency members and the broader Australian cultural community, including professional skills development through mentoring and training programs; assistance in transitioning to the digital environment; projects aimed at developing new markets for members' works; and prizes and awards that celebrate excellence.

Fellowship Administrators

The International Specialised Skills Institute (ISS Institute)
The ISS Institute is an independent national organisation. In 2015 it celebrated twenty-five years of working with Australian governments, industry, education institutions and individuals to enable them to gain enhanced skills, knowledge and experience in traditional trades, professions and leading edge technologies.

Dr Sargeant thanks Louisa Ellum, Bella Irlicht AM and the ISS Institute staff (Fiona Waugh, Ken Greenhill and Paul Sumner) for their assistance throughout this Fellowship period.

Other Government Funding Bodies

Dr Sargeant acknowledges the financial support provided by the following government organisations:

The Asia Culture Center, Gwangju, South Korea. Dr Sargeant would particularly like to thank Yi Won Kon, Director of the ACT Studio Division; Sunwoo Peter Kim, ACT Center team member; and the individuals who have directly contributed to *The Storytelling Machine* project, including Jin-A Kim, Han Kunhee and Dong Hoon.

The Creative Victoria VicArts Grants scheme.

The City of Port Phillip Cultural Development Fund. Particular thanks to Sharyn Dawson and Councillor Serge Thomann.

Education and Training

The Exertion Games Lab, RMIT University, Melbourne. Particular thanks go to Professor Florian "Floyd" Mueller, Director of the Exertion Games Lab.

Organisations and Individuals that Contributed to this Project

Justin Dwyer and Gloworm Media, for managing the technical build of *The Storytelling Machine*. Dr Sargeant also thanks Mr Dwyer for his ongoing support.

Ben Kolitis, Emerging Technology Team Leader, Melbourne Library Service, City of Melbourne. Dr Sargeant thanks Mr Kolitis for his knowledgeable assistance and his continued friendly support.

Peter Walker, for his advanced TouchDesigner programming on *The Storytelling Machine*.

Andrew Ogborne, for composing and producing the musical score for *The Storytelling Machine*.

Louise Cadell, Gil Poznanski and staff at the Melbourne Library Service, particularly those working at the Kathleen Syme Library and the Library at The Dock.

Mary-Jo O'Rourke AE, for her editing contributions.

Judi Ho, Asian Festival of Children's Content, National Library, Singapore.

Angelita Hong Suen, Director, National Museum, Singapore.

Ching Lee Goh, Executive and Artistic Director, Culture Link, Singapore.

Huism Tan and Chris Koh, Head of Exhibitions and Curation, National Library, Singapore.

Judi Han, Manager, Artists Residency, Taipei, Taiwan.

Yi-Wei, Director, Taipei International Festival, Taiwan.

Wen Huang, Director, Fly Global, Taiwan.

Lauren Hu, Media and Culture Manager, Economic and Policy Section, Australian Office, Australian Consulate, Taiwan.

Chin Mu, Program Officer, Taipei Performing Arts Center, Taiwan.

Daphne Wang, Producer, National Kaoshiung Center for the Arts, Taiwan.

Mr Cheng, Department Chief, Kaoshiung Museum of Fine Arts, Taiwan.

Jeon Sejin, International Relations, ASSITEJ International Festival, South Korea.

Yi Won Kon, Director of ACT Studio Division, Asia Culture Center, South Korea.

Special thanks to Tamara Saulwick, independent theatre artist, for her sage advice.

Organisations and Individuals that may benefit from these Fellowship findings

Government – Federal
Communications and the Arts
Education and Training
Employment
Industry, Innovation and Science
Ministry for the Arts

Government – State
Arts and Culture
Creative Industries
Environment, Land, Water and Planning
Education and Training
Employment and Workplace
Small Business, Innovation and Trade
Training and Skills

City of Melbourne
Arts and Culture
Knowledge City
Melbourne Library Service
Transport, Planning and Local Infrastructure

Industries
Arts and Culture
Creative Technology
Digital Design
Education – Primary, Secondary, Tertiary
Electrical engineering
Software engineering
STEAM-related Industries

Report design by Kirsty Waugh
All images by Betty Sargeant

VI. ABOUT THE FELLOW

Dr Betty Sargeant

Artist, Author, Designer

Memberships

Association for Computing Machinery (ACM)
Australian Society of Authors
Electronic Literature Organization
National Association for the Visual Arts (NAVA)
Society of Children's Book Writers and Illustrators

Dr Betty Sargeant, PhD, BA (Hons), BEd, is an artist and designer. Her work has been exhibited in Asia, Europe, the United States and Australia. She was born in Melbourne, where she currently lives and works. Her Australian studio is in the Exertion Games Lab at RMIT University. Her specialties are: experience design, creative technologies, interaction design, concept development, storytelling, professional/creative writing, illustration, animation, interactive narratives, interactive exhibitions, design for children and research.

In 2015 Dr Sargeant was awarded a PhD in Media and Communication (RMIT University). Her PhD was ranked in the top three humanities, arts and social science doctoral projects for the 2015 Australian CHASS Prize.

In 2016 Dr Sargeant was the Melbourne Knowledge Fellow, artist-in-residence at the Asia Culture Center, South Korea, Fellow of the International Specialised Skills Institute and artist-in-residence at the Library at the Dock, Melbourne, Australia. In 2016 she also won the Consensus Innovation Award in recognition of her progressive design work.

During 2016 Dr Sargeant was funded to develop her project *The Storytelling Machine*. This is a media artwork for an all-ages audience. This project is being run in South Korea and Australia and will have its international launch at the ACT (Arts and Creative Technology) Festival, Asia Culture Center, South Korea. *The Storytelling Machine* animates and randomly curates drawings and text that are collected during public workshops. This project will tour more broadly from 2017.

Dr Sargeant is a Fellow of the International Specialised Skills Institute. In this role, she travelled extensively throughout Hong Kong, Singapore, Taiwan and South Korea. During this time she collaborated with arts and cultural centres, and met with centre directors, management and artists, establishing firm connections in these regions.

VII. DETAILS OF DR SARGEANT'S FELLOWSHIP ACTIVITIES

Countries Visited:

1. Hong Kong 14–23 May 2016.

2. Singapore May 23–31 2016.

3. Taiwan 1–7 June 2016.

4. South Korea 13–15 June; 18 July–20 August; 3 October–15 December 2016.

Conferences:

1. *It's A Kid's Thing*, Museums Australia Seminar, 28 April 2016, Melbourne Museum, Melbourne, AUSTRALIA.

2. International Symposium on Electronic Art (ISEA), May 2016, City University, HONG KONG.

3. Asian Festival of Children's Content (AFCC), May–June 2016, National Library, SINGAPORE.

4. Australian Literacy Educators' Association (ALEA) Victorian conference, August 2016, ALEA and ACMI, ACMI, Melbourne, AUSTRALIA.

Major Public and Industry Presentations:

1. Major Exhibition, *The Storytelling Machine*, Gwangju, November–December 2016, ACT Festival, Asia Culture Center, Gwangju, SOUTH KOREA.

2. Keynote Presenter, *The Storytelling Machine*, ALEA_ACMI, 9 September 2016, ACMI, Melbourne, AUSTRALIA.

3. Director's Address, *The Storytelling Machine*, Gwangju, ACT Artists' Camp, 12 August 2016, Damyang, SOUTH KOREA.

4. Artist's Talk, *Reimagining Picturebook: A Fictorial Fable*, 18 May 2016, ISEA, City University, HONG KONG.

5. Artist's Talk, *How Far is Up? The Remediation Look: From Picturebook to App to Animated Film*, 20 May 2016, ISEA, City University, HONG KONG.

6. Exhibition of Illustration Work, *How Far Is Up?* 14 May–3 June 2016, AFCC, National Library, SINGAPORE.

Public Workshops:

1. *The Storytelling Machine*, Melbourne, Kathleen Syme Library, 5 May 2016, Carlton, AUSTRALIA.

2. *The Storytelling Machine*, Melbourne, Library at the Dock, 23 August 2016, Melbourne, AUSTRALIA.

3. *The Storytelling Machine*, Melbourne, Kathleen Syme Library, 30 August, Carlton, AUSTRALIA.

4. *The Storytelling Machine*, Melbourne, Library at the Dock, 10 September 2016, Melbourne, AUSTRALIA.

5. *The Storytelling Machine*, Melbourne, Library at the Dock, 17 September 2016, Melbourne, AUSTRALIA.

6. *The Storytelling Machine*, Melbourne, Library at the Dock, 24 September 2016, Melbourne, AUSTRALIA.

7. *The Storytelling Machine*, Gwangju, ACC Creation, Teacher Training Session, 6 October 2016, Gwangju, SOUTH KOREA.

8. *The Storytelling Machine*, Gwangju, ACC Creation, in conjunction with Korean Department of Education, 8 October 2016, Gwangju, SOUTH KOREA.

9. *The Storytelling Machine*, Gwangju, ACC Creation, in conjunction with Gwangju University, 26 October, Gwangju, SOUTH KOREA.

10. *The Storytelling Machine*, Gwangju, ACC Creation, OPEN LAB day, 29 October 2016, Gwangju, SOUTH KOREA.

11. *The Storytelling Machine*, Gwangju, ACC Creation, 3 November, Gwangju, SOUTH KOREA.

12. *The Storytelling Machine*, Gwangju, ACC Creation, 10 November, Gwangju, SOUTH KOREA.

13. *The Storytelling Machine*, Gwangju, ACC Creation, 15 November, Gwangju, SOUTH KOREA.

14. *The Storytelling Machine*, Gwangju, ACC Creation, ACT Festival Workshop Series, 24–26 November, Gwangju, SOUTH KOREA.

Public Engagement:

1. *Human Book*, Kathleen Syme Library, Melbourne Knowledge Week, May 2016, Carlton, Melbourne, AUSTRALIA. During this session, members of the public booked 15-minute timeslots with Dr Sargeant in order to discuss and learn more about specific creative technology topics.

2. *The Storytelling Machine Data Drop Box*, Library at the Dock, September 2016, Docklands, Melbourne, AUSTRALIA. A perspex box was within the library; members of the public could contribute drawings and text to *The Storytelling Machine* project by completing a paper template and placing it into the perspex box.

Artist-in-Residence Programs:

1. Asia Culture Center Residency, OPEN LAB, Creator, June–August and October–December 2016, ACC Creation, Gwangju, SOUTH KOREA.

2. Melbourne Knowledge Fellowship Residency, Library at the Dock, Makers Space, September 2016, Docklands, Melbourne, AUSTRALIA.

Meetings:

1. Professor Marty St James, Professor of Fine Art, University of Hertfordshire, England; meeting at ISEA, HONG KONG.

2. Cynthia Liu, President, Starts With Us, AFCC, National Library, SINGAPORE.

3. Colin South, Producer, Media World Pictures, USA, AFCC, National Library, SINGAPORE.

4. Wu Shuangying, Deputy Director, Hannan Publishing House, China, AFCC, National Library, SINGAPORE.

5. Kyle Hughes-Odgers, Artist, AFCC, National Library, SINGAPORE.

6. Dr Calef Brown, Author-Illustrator, AFCC, National Library, SINGAPORE.

7. Judi Ho, Administrative Executive, National Book Development Council of Singapore, National Library, SINGAPORE.

8. Angelita Hong Suen, Director, National Museum, SINGPORE.

9. Ching Lee Goh, Executive and Artistic Director, Culture Link, SINGPORE.

10. Huism Tan and Chris Koh, Head of Exhibitions and Curation, National Library, SINGPORE.

11. Yi-Wei Keng, Artistic Director, Taipei International Festival, TAIWAN.

12. Wen Huang, Director, Fly Global, TAIWAN.

13. Lauren Hu, Media and Culture Manager, Economic and Policy Section, Australian Office, Australian Consulate, TAIWAN.

14. Chin Mu, Program Officer, Taipei Performing Arts Center, TAIWAN.

15. Daphne Wang, Producer, National Kaoshiung Center for the Arts, TAIWAN.

16. Mr Cheng, Department Chief, Kaoshiung Museum of Fine Arts, TAIWAN.

17. Jeon Sejin, International Relations, ASSITEJ International Festival, SOUTH KOREA.

18. Yi Won Kon, Director, ACT Studio Division, Asia Culture Center, SOUTH KOREA.

19. Hyungjoong, Media Artist and Researcher, Seoul, SOUTH KOREA.

ACT Camp:

ACT (Arts and Creative Technology) Camp, 12–13 August, Damyang, SOUTH KOREA. This was a two-day residential program involving artist presentations, knowledge sharing, socialising and visits to cultural areas. In attendance were: Hyunwoo Bang and Yunsil Heo, media artists (SOUTH KOREA); Professor Cho Chung Yeon, Korean National University of Arts (SOUTH KOREA); Hiroshi Matoba and team, media artists (JAPAN/GERMANY); Ban Sung-Hoon, creative coder (SOUTH KOREA); VAKKI Park, media artist (SOUTH KOREA); Ben Chaykin media artist (USA); Jubilee Mayanja, creative coder (UGANDA); Kim Sun-min, VR Specialist (SOUTH KOREA); and Yi Won Kon, Director of the ACT Studio Division.

Workshops and Masterclasses Attended:

1. *Interactive practice in writing: Entering private human encounters*, 16 May, Innovation Tower, Hong Kong Polytechnic University, HONG KONG.

2. *Smart Cities and Media Architecture*, 21 May, ISEA 2016, Cattle Depot, HONG KONG.

3. *Story-Hacking: A Journey of Narrative Creation*, 27 May, AFCC, National Library, SINGAPORE.

4. *From Image to Story: Masterclass*, 28 May, AFCC, Singapore Management University, SINGAPORE.

5. *It Starts with a Line*, Nichola Choo and Tricia Goh, 29 May, AFCC, National Library, SINGAPORE.

Major Exhibitions Visited:

1. *Portal to an Alternate Reality*, John Craig Freeman in partnership with Zero 1 American Arts Incubator, US Department of State's Bureau of Education and Cultural Affairs, Consulate General, ISEA, Innovation Tower, Hong Kong Polytechnic, HONG KONG.

2. *XON KON*, Hugh Davies and Troy Innocent, ISEA, Innovation Tower, Hong Kong Polytechnic, HONG KONG.

3. *Musical Noise – City Ambient Sounds*, Lee Cheng, ISEA, Innovation Tower, Hong Kong Polytechnic, HONG KONG.

4. *Human Vibrations*, Open Sky Gallery, ISEA, Exhibition for ICC Tower, Hong Kong Maritime Museum (Viewing Center), HONG KONG.

5. *Cultural R>evolution*, Juried Exhibition, Connecting Space, HONG KONG.

6. *Atmoscape*, Dennis Del Favero with Stephen Sewell, Jeffrey Shaw, Elwira Titan, Peter Weibel, using ICinema's 360-degree 3D cinematic theatre, ISEA, City University, ISEA, HONG KONG.

7. *Giuseppe Castiglione: New Media Arts Exhibition*, Lang Shing, City University, HONG KONG.

8. *No References*, various artists, A revisit of Hong Kong Video and Media Arts from 1995, Cattle Depot, HONG KONG.

9. *Dark Matter*, Patrick Trudeau and Orbital Mechanics, City University, HONG KONG.

10. *Northern Resonances*, Roman Zavada (CA), ISEA, City University, HONG KONG.

11. *Just Dig/IT!* Maurice Benayoun, Osage Gallery, HONG KONG.

12. *The History Of Japanese Picture Books: From E-inagkyo to The Family of Fourteen*, May 24, Promenade, National Library, SINGAPORE.

13. *Book Illustrators Gallery*, AFCC, National Library, SINGAPORE.

14. *Future World: Where Art Meets Science*, teamLab, ArtScience Museum, SINGAPORE.

15. *Big Bang Data: What Does Data Mean to You?* ArtScience Museum, SINGAPORE.

16. *Perserverance – No Limitation*, Leland Lee, MOCA Studio, MOCA (Museum of Contemporary Art), Taipei, TAIWAN.

17. *A Personal Design Show*, Shi Jin-Song (CHINA), MOCA (Museum of Contemporary Art), Taipei, TAIWAN.

18. *A Field Guide to Getting Lost*, Josephine Bergqvist (Sweden), Max Grau (Germany), SUPER ADD (Taiwan), Tzu-Huan Lin (Taiwan), Yotaro Niwa (Japan/Germany), Hyangro Yoon (Korea), Yen Tech (USA), Digital Arts Center, Taipei, TAIWAN.

19. B*oundary Narratives: Dulan Impression*, Gallery Room, Kaohsiung Museum of Fine Art, Kaohsiung, TAIWAN.

20. *Ancient Characters Brought to Life*, Children's Museum, Kaohsiung Museum of Fine Art, Kaohsiung, TAIWAN.

21. *New Plant Paradise*, Children's Museum, Kaohsiung Museum of Fine Art, Kaohsiung, TAIWAN.

22. *New Imagination on the Extended Territory: The Internet is Serious Business*, various artists, Doosan Art Center, Seoul, SOUTH KOREA.

23. *Emerging Other*, various artists, Rijksakademie van beeldende kunsten and ARKO (Arts Council of Korea), ARKO Arts Center, Seoul, SOUTH KOREA.

24. *Imaginary Circle: Plastic Myths*, various artists, Asia Culture Center, ACC Creation, Gwangju, SOUTH KOREA.

25. *Here There and Everywhere: Eurasian Cities: Imagining New Eurasia Project Chapter 1*, various artists, Asia Culture Center, ACC Creation, Gwangju, SOUTH KOREA.

26. *Interrupted Survey: Fractured Modern Mythologies*, various artists, Asia Culture Center, ACC Creation, Gwangju, SOUTH KOREA.

27. *Image, Perception, the Alchemy of Light*, various artists, Asia Culture Center, ACC Creation, Gwangju, SOUTH KOREA.

28. *ACC in Archive*, various contributors, Asia Culture Center, ACC Archive, Gwangju, SOUTH KOREA.

29. *Come and Play in the Story Forest*, various designers, Asia Culture Center, ACC Children, Gwangju, SOUTH KOREA.

30. *Cultural Adventure: Cultural Journey Across Asia*, various designers, Asia Culture Center, ACC Children, Gwangju, SOUTH KOREA.

31. *New Tradition: Tradition Becomes Today*, various artists, Asia Culture Center, ACC Archive and Research, Gwangju, SOUTH KOREA.

32. *Light Barrier: Third Edition*, KimChi and Chips, Asia Culture Center, ACC Creation, Gwangju, SOUTH KOREA.

33. *Gwangju Biennale*, various artists, various venues, Gwangju, SOUTH KOREA.

Major Talks Attended:

1. *Large Displays in Urban Space and Elsewhere*, 18 May, ISEA, City University, HONG KONG.

2. *Schools and Educational Projects*, Institutional Presentations, 18 May, ISEA, City University, HONG KONG.

3. *DATA Bases, Interactive Narratives*, 19 May, ISEA, City University, HONG KONG.

4. *Games 3: Landscapes, Narratives, Aesthetics*, 19 May, ISEA, City University, HONG KONG.

5. *Memories*, 19 May, ISEA, City University, HONG KONG.

6. *Digital Literature*, 20 May, ISEA, City University, HONG KONG.

7. *Cultural Re>evolution*, Keynote Address, Natalie Jeremijenko, 19 May, ISEA, City University, HONG KONG.

8. *AI and Storytelling*, Steve Whitgate, 19 May, ISEA, City University, HONG KONG.

9. *The Not-so-normal Whimsical and Nonsensical World of Illustration*, Calef Brown, 15 May, AFCC, National Library, SINGAPORE.

10. *If We Don't Support Authors and Illustrators, Who Will?* 25 May, AFCC, National Library, SINGAPORE.

11. *Editors are your Best Friends*, 25 May, AFCC, National Library, SINGAPORE.

12. *Illustrations, Poems and More Nonsense*, Calef Brown, 25 May, AFCC, National Library, SINGAPORE.

13. *Picture Books from Here to Eternity*, Leonard Marcus, 26 May, AFCC, National Library, SINGAPORE.

14. *Graphic Design Tricks and Techniques for Picture Books*, Kylie Howarth and Soefara Jafney, 26 May, AFCC, National Library, SINGAPORE.

15. *Digitising Picture Books: Interactivity with Purpose*, Dina Rara, 26 May, AFCC, National Library, SINGAPORE.

16. *Fluidity Between Page and Screen*, 27 May, AFCC, National Library, SINGAPORE.

17. *Immersive Storytelling: Augmented Reality and Games to Engage Young Adults*, Saad Chinoy and Nataly Rios Goico, 27 May, AFCC, National Library, SINGAPORE.

***Here, There and Everywhere: Eurasian Cities*, neon exhibition sign, Asia Culture Center, Creation, Gwangju, South Korea**

01

The Australian Context: Support for the Creative Technology Industry

Contemporary creative and cultural industries involve high levels of cross-disciplinary practices. The lines between fine art, dance, music, literature and theatre are often blurred. Alongside this is the emergence of digital art practices. Many arts projects now involve a digital element. Creative approaches to technology are being used to help form many contemporary artistic practices. Creative technologists are those who use machinery or digital tools in order to form or present artistic or experimental modes of expression. The act of making creative technologies may include computer programming, electrical engineering, game development, and experiential digital and electronic design. Creative technologies are becoming an increasingly important factor within artistic and cultural industries.

There are of course both positive and negative effects associated with people using computing technology; these effects depend on how the technology is being used and what content is being consumed. There are concerns about how emerging technologies can negatively affect our physical, social and literacy skills and our wellbeing.[1] Therefore I saw an opportunity to investigate the ways in which creative approaches to technologies can improve our quality of life.

I am particularly interested in how creative technology professionals can use their expertise:

1. To help members of the public update their skills, supporting more people to become active participants in our knowledge economy
2. To experiment and explore novel ideas; experimentation is vital in securing the future growth of this industry
3. To offer the public opportunities to engage with new and unique experimental digital designs, leading to experiences that may connect people with each other, and connect them with the environment in which they live
4. To help form creative villages; these kinds of artistic hubs can galvanise wider community spirit, enrich our lives, and lead to positive social and wellbeing outcomes for the wider public
5. To maintain their practice within this rapidly changing technological environment
6. And to engage diverse combinations of people in arts and cultural projects, providing them with opportunities to share their existing knowledge while learning from others.

1 Munster 2011 and 2014.
2 Hourcade, Mascher, Wu and Pantoja 2015.
3 Munster 2011 and 2014.
4 Turkle 2011.
5 Turkle 2011.

These main focus areas are detailed within each section of this report.

1.1 The Advantages of Digital Technologies

- Digital technologies offer features that can benefit people who operate across a range of learning spectrums and abilities
- These technologies can present information in visual, audio and textual forms, and as such can have a broad appeal
- Technologies can allow for flexible learning opportunities within online and offline situations
- Touchscreen devices are designed in a way that facilitates those with limited or developing motor skills to successfully access and use the technology[2]
- People can use digital technologies to access remote locations, which means those with limited physical abilities, those who lack in transportation and those in isolated geographical settings can source entertainment, health and learning services via digital devices.

1.2 The Disadvantages of Digital Technologies

- Digital technologies are not available to all people all the time.[3] Some people have limited or no access to the internet. Others have limited or no access to digital hardware. This has resulted in a digital divide
- Digital technologies are commonly accessed while people are alone. In many Western cultures, phones and computers are personal, rather than shared, items. This has led to people developing habitual relationships with their digital devices and developing addictive behavioural patterns[4]
- Many people now feel more comfortable communicating online than through offline means.[5] This leads to concern about the development of antisocial behaviour patterns

Due to our high levels of engagement with digital devices, many people in Western cultures are not actively developing deep connections with their geographical locations or the people with whom they cohabit in these geographical locations[6]

- Digital devices can be addictive[7] and we do not currently have well-developed behavioural mechanisms in place to combat these addictions.

1.3 What We Know

- We know that digital technologies can bring people together socially by offering virtual communities[8]
- We know that people love interacting via digital technologies[9]
- We know that digital technologies can encourage users to engage in high levels of physical activity
- We know that digital technologies, particularly applications involving virtual and augmented reality, can engage us in physical activity and further connect us with the geographical landscape that surrounds us.

1.4 What We Need to Learn

The previous Melbourne Knowledge Fellow, Brad Hammond, highlighted the importance of creative technologies in developing STEM (science, technology, engineering and mathematics) learning outcomes.[10] He recommended that governments further support creative technologists. Yet as a society we have limited knowledge about how creative technologists can improve the wider population's physical, social and literacy skills and our wellbeing.

By 2025 "over 75% of adults and one third of Australian kids will be overweight or obese and at severe risk of type 2 diabetes and cardiovascular disease".[11] Similar statistical predictions have been made across other Western cultures.

Encouraging both social and physical activity via an appealing means such as digital technology may be of considerable value in a health-challenged future environment. This study found that creative technologies can be used to support positive behaviours that may increase our health and sense of wellbeing.[12]

In assessing the current Australian context, I have uncovered a need for us to establish programs that support our heath-challenged Australian cultures. In doing this, we can foster public programs that use technology as a means of creating more positive patterns of social and physical public engagement. This can help Australians to maintain positive, healthy living habits and may improve their access to and understanding of the range of ways they can use digital technologies.

These ideas support STEAM (science, technology, engineering, the arts and mathematics) learning outcomes, as creative technologies involve a blend of skills that cover computer science, technology, computer engineering and the arts. Through supporting the creative technologies industry, we can help the wider public to develop knowledge and skills in areas of future employment growth.

1.5 Findings 1

New and emerging technologies are appealing and have become an integral part of many people's daily lives. This has led to some unhealthy and addictive behaviours. Yet creative approaches to new technologies can help us to be more socially and physically engaged across geographical and virtual spaces, and this can lead to healthier modes of living.

Creative technologies are a growing factor in art and cultural projects. Creative technologists develop innovative problem-solving skills, they apply flexible approaches in order to give form to new ideas, and they use complex technology-based tools to accomplish specific goals. These practices lead to STEAM outcomes, and they can involve arts and technology professionals as well as the wider public. Creative technologies can play an important role in supporting STEAM teaching and learning. This in turn assists us in building the skills required within a knowledge-based society. It may be beneficial for practitioners to become familiar with STEAM curriculums so that they can further understand the deep connections between creative technologies and these focus areas.

With further support from governments, civic centres and industry bodies, more people can become involved in the creative technologies industry. These developments will further bolster our knowledge-based society and can lead to healthier relationships between humans and between humans and computers.

6 Turkle 2011.
7 Turkle 2011.
8 Turkle 2011.
9 Turkle 2011 and Sargeant 2015.
10 Hamond, 2015, www.melbourne.vic.gov.au/SiteCollectionDocuments/knowledge-fellowship-2014-report-brad-hammond.pdf.
11 Vic Health http://h30challenge.com.au/why.
12 For example, there are positive effects associated with playing some digital games www.wnyc.org/story/video-games-wellness-depression.

02

The Storytelling Machine Project

Shooting footage for *The Storytelling Machine* video locations, Juknokwon, Bamboo Garden, Damyang, South Korea

In order to address some of the unhealthy and addictive behaviours that are emerging as a result of our habitual usage of technologies, in October 2015 I embarked on an undefined experimental project. This project became *The Storytelling Machine* and it developed into central part of my Fellowship activities.

In December 2015 I was funded to create a prototype storytelling machine; the Copyright Agency Limited Cultural Fund funded these exploratory activities via its support for the Melbourne Knowledge Fellowship program. Creative Victoria (VicArts), the City of Port Phillip Cultural Development Fund and the RMIT Exertion Games Lab later provided further funding for these development activities. In July 2016 the Asia Culture Center, South Korea, invited me to be an artist-in-residence. The Center commissioned me to fully form *The Storytelling Machine* and to present it at its ACT (arts and creative technology) Festival in late 2016. In order to explore new ideas and bring these ideas to light, I needed considerable financial support and access to specialised facilities.

2.1 Description of the Project

The Storytelling Machine is an interactive artwork designed for an all-ages audience. The project involves an exhibition and public workshops. The exhibition features seven large projection screens, each showing original video footage of selected iconic locations around Melbourne, Australia and Gwangju, South Korea.[13] Audiences can draw characters and write short story texts; the machine then photographs the audiences' characters, instantly animates them, and places these characters and texts into the video settings shown on the projection screens. *The Storytelling Machine* presents a large collective story created from crowd-sourced content.

During the workshops, I invite participants to further their drawing and writing skills, and to develop their knowledge of digital design and creative technologies. They draw character illustrations and write autobiographical micro-texts. They then enter their contributions into the machine and watch as their drawing and writing instantly appear in animated form on the projection screens. Their animated character interacts with others' characters and with the locations featured in the video settings.

The Storytelling Machine project highlights people and their relationship to the environment in which they live. In creating this project, my intentions are:

- To reinforce a community's connection to the geographical landscape that surrounds it
- To teach people about digital technologies, creative processes and storytelling techniques; this project is linked with the Australian National Curriculum and the Victorian Curriculum
- To use digital design as a means to communicate an imprint of what it is like to live in contemporary cultures; in doing this, I raise issues around what it means to exist in both geographical and virtual landscapes
- To showcase unique geographical and architectural locations
- To combine stories from across different cultures and nations in order to foster deeper cross-cultural connections.

2.2 Description of the Exhibition

During the exhibition, audiences can walk around the seven projection screens. The machine shows an animated collective story and, each time audiences visit the machine, the animated story will be different. The machine randomly curates the story; it does not play an animated loop. The machine continually shows new combinations of characters and texts.

The Storytelling Machine does not display a traditional narrative involving a beginning, middle and end, but reflects contemporary storytelling practices. The work currently features English and Korean texts. This machine will tour more widely from 2017. The more countries it visits, the more workshops we will run and the richer the collective story will become. It is expected that this machine will display a wide range of international languages over the coming years.

13 This project has, to date, been run in these two cities. It is expected to tour more widely from 2017.

***The Storytelling Machine* sign, a custom designed Korean (Hangul) typeface, with custom coloured laser cut acrylic, created by Betty Sargeant**

This collective story is a crowd-sourced entity. It operates as an expression of what it is like to live in digitally networked cultures, across virtual and digital environments. *The Storytelling Machine* presents a randomly curated anthology of story vignettes, reflecting an international perspective on the contemporary human experience.

This work exists in a physical form. It is not an online project that can be remotely accessed, although people can follow the project's progress and contribute their thoughts via *The Storytelling Machine* Facebook page. Audiences physically attend the exhibition and, in doing so, they can interact with this artwork, interact with others and engage in a creative technology experience.

2.3 Support for the Project

The Melbourne Knowledge Fellowship program provided me with the opportunity to travel in order to widen my professional knowledge. This program also provided me with an artist-in-residence experience that has allowed me to develop my idea with the guidance of Ben Kolaitis, Emerging Technology Team Leader at the Melbourne Library Service. Further funding support supplied the means to work with a group of experienced creative technology and media art professionals in order to prototype the machine. *The Storytelling Machine* core team includes audio-visual artist Justin Dwyer, creative coder Peter Walker and composer Andrew Ogburn.

Working in collaboration with the Asia Culture Center (ACC) has provided me with the opportunity to fully develop this artwork alongside a wider, highly skilled group. This includes curatorial manager Sunwoo (Peter) Kim, cultural liaison and South Korean workshop manager Jin-A Kim and video assistant Han Kunhee. In addition to this, I have been guided by a board of advisers that includes internationally renowned media artists Hyunwoo Bang and Yunsil Heo, Professor Cho Chung Yeon from the Korean National University of Arts, and Yi Won Kon, Director of the ACC's Arts and Creative Technology Division. This board has provided me with expert curatorial direction. Their recommendations helped create an environment that supports a direct experience between the artwork and the audience.

The outstanding support that we have had for this project has been largely due to two central factors. Firstly, we invited the public to contribute personal stories to this project. *The Storytelling Machine* involves a deep level of community interaction. Through our workshops, we improve participants' creative problem-solving skills, increase their knowledge in digital technology, and engage them within a social and creative working environment. Secondly, we have created bespoke software and hardware. The customised computing system that runs this artwork can photograph and instantly animate a drawing. Participants can draw a character of any shape, place the drawing into a custom-designed photo booth and then see their character instantly appear on the projection screens in animated form. This unique system allows for a swift and easy way to bring 'life' to static imagery. *The Storytelling Machine* involves a deep level of public interaction and a novel computing system.

2.4 Findings 2

Innovation in the creative technologies sector is generally the result of experimentation. Directed experimentation, such as that seen in *The Storytelling Machine* project, can have a measurable positive impact on society. We can measure the effects that this project has had on those who have participated in this interactive endeavour. Yet not all experimentation is directed; some is open-ended. It may be difficult to calculate the specific benefits of open-ended creative and technological experimentation, as the impact of these activities may be difficult to measure. The positive benefits for society may only manifest after the activities have concluded, potentially in a subsequent project. Yet this does not mean these activities should be left unsupported. Open-ended creative and technological exploration can be vital in maintaining an individual's professional skills, ensuring that they are working to the full extent of their abilities. This in turn sharpens our creative technology industry, thereby assisting us to continue building our knowledge economy.

The Australian creative and cultural sector is valued at $86 billion.[14] There are real economic benefits to this industry. Further support for experimental projects would see this industry expand. I would not have been able to develop *The Storytelling Machine* project without support from governments, civic centres and industry organisations. This project, and other more open-ended experimental endeavours, extend the skills of local designers and can result in social, cultural, health and educational benefits for wider society.

***The Storytelling Machine* exhibition at the Asia Culture Center, Gwangju, South Korea**

14 Australian Bureau of Statistics, 2014, www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/5271.0Main%20Features32008-09 .

03

Our Built Environment: The Asian Context

Looking down into the excavated site of the Asia Culture Center, Gwangju, South Korea

In order to design *The Storytelling Machine*, I needed to enhance my skills in specific areas. I needed to investigate the latest thinking in digital literacies and learning, and to understand innovations in digital media, experience design and creative technologies. I also needed to further understand the built environments that house and support these new design approaches. Consequently, I elected to visit Hong Kong, Singapore, Taiwan and South Korea during my Fellowship period.

Asia is our closest intercontinental neighbour and parts of this region are experiencing rapid economic growth. In 2012 Asia and the Pacific "surpassed Europe to become the world's largest trading region" and this region houses almost "37 per cent of world merchandise exports and 36 per cent of world merchandise imports"; these gains are mainly driven by large economies in East and North-East Asia.[15] Countries such as South Korea, Hong Kong and Singapore have been experiencing growth because they are "export-led" economies.[16] Many Asian sectors also have well-established connections with STEM fields, which assists them in developing and supporting new approaches to technology. Since achieving independence from Japan, South Korea, for example, has turned its attention to technological innovation as a key growth area for its economy.[17] As a consequence, South Korean society is keenly focused towards educating a generation that will drive a knowledge-based society. It therefore seemed pertinent for me to visit our economically expanding neighbours who are investing in the development of new technologies and in building knowledge economies and creative technology industries.

3.1 The Aims and Projected Outcomes of my Fellowship Travels

In planning my Fellowship travels, I established three central aims:

1. To learn new methods of practice
2. To interpret the scope of practices used by other practitioners
3. To interpret how these methods are applicable to industries and the local Australian context.

I also projected three outcomes:

1. To use new working methods in order to develop digital literacies within the community and to test and deliver these methods in a series of public workshops
2. To synthesise my new knowledge into a report that clearly communicates how we can support the creative technology industry with the view to building healthy knowledge-based cities
3. To deliver industry talks, professional development sessions and informal public engagement sessions in which I demonstrate the diverse benefits of creative technologies.

In order to achieve my goals, I began investigating the social and physical environments that support economic and technological growth in South Korea, Taiwan and Singapore and Hong Kong. The following are some of the findings that I gleaned from these research activities.

3.2 Our Built Environment

3.2.1 South Korea

South Korea has a population of 50 million and a landmass[18] that is less than half the size of the state of Victoria, Australia.[19] This is a densely populated country. Alongside developing Seoul as a progressive, design-oriented world capital, there have also been advances that support other regions of South Korea, perhaps in an attempt to diversify population spread. This has led to major developments in cities such as Gwangju, South Korea's sixth largest city.[20] Gwangju is the home of one of the world most respected art biennales, the Gwangju Biennale; it is also a UNESCO City of Media Art.

In 2015 the city of Gwangju opened the Asia Culture Center (ACC). This cultural and arts precinct was

15 UNESCAP, 2013a, www.unescap.org/stat/data/syb2013/ESCAP-syb2013.pdf, p. xiv.
16 UNESCAP, 2013b, www.unescap.org/publications/survey/surveys/survey2013.pdf.
17 Armstrong, 2014.
18 100,210 km².
19 4.8 million people on 237,629 km² of land.
20 With a population of 1.5 million on a landmass of 501 km².

An architecturally shaped walkway at the Asia Culture Center, Gwangju, South Korea

A landscaped walkway at the Asia Culture Center, Gwangju, South Korea

My studio, four levels below ground at the Creators Lab, Asia Culture Center, Gwangju, South Korea

designed by Korean-American architect Woo Kyu-sung[21] and is funded by the National Government of South Korea.[22] The ACC houses a centre for cultural exchange, an archive and research division, a centre for arts and creative technology, a theatre division and a centre for children. It is promoted as "the world's first integrated culture powerhouse", aiming to facilitate exchange between "national and international artists as well as the creation, collection, and exhibition of cultural contents".[23] Within the ACC, national and international artists adopt a lab-based approach in order to "design and develop new culture contents through the convergence of humanities, arts and science"; the open lab program allows "art experts" to collaborate with each other and to share their knowledge, experience and techniques with the public.[24] This arts and cultural precinct represents a progressive, bold venture.

The ACC precinct features meeting places, open plazas, gardens nooks, bamboo gardens and designed walkways; these are all on ground level. In this built environment, people skateboard, ride bikes, walk, socialise and practise their karaoke skills. The ACC's open plazas provide vibrant venues for organised and spontaneous concerts and public celebrations. Being on ground level, this area is accessible and it is a highly populated and used space.

The majority of the Center's internal structures exist below ground level. An extensive excavation process has created more open plazas, studio and exhibition spaces, a research and archive precinct, restaurants, shops, car parks, a cafe and administrative areas that are situated up to four levels below ground. My own studio is four levels below ground, yet it has large windows that span the width of the two-storey high ceilings. This provides views of open sky and bamboo garden areas. Many of the workspaces are underground, yet they do not feel enclosed. This design approach supports a healthy working environment.

The ACC is an architecturally and culturally progressive institution that maximises the potentials of its landmass. Yet the creative technology endeavours that this Center supports are mainly contained within the interior of its underground structures. There is perhaps potential for these designs to be incorporated into the open public spaces, so that we can use technology in order to further engage the public and to help grow positive behavioural patterns within knowledge cities. This would also draw clear connections between the programs that are run inside the Center and the huge amount of spontaneous community activity that occurs within its grounds.

3.2.2 Taiwan

The capital of Taiwan, Taipei, was awarded the title of World Design Capital in 2016.[25] In detailing its vision for the city, the Taipei World Design campaign stated that it prioritised aesthetic improvements that can lead to a "happier livable city".[26] This statement acknowledges the relationship between good design and positive mental health outcomes. The Taipei World Design accolade in part recognises the huge influx of government funds that have been directed towards the construction of new arts and cultural infrastructure in the city. One notable design that demonstrates how this city is reinventing itself[27] is the new (under construction) Taipei National Performing Arts Center (TPAC).

In a meeting with Chin Mu, program officer at TPAC, we discussed the design of this partially constructed arts precinct. The designers are focusing on creating an "experience" for its visitors and their aim is to create a connected "continuous human flow"; this will be achieved by channelling the crowds that flow through a nearby train station and shopping precinct into and through the TPAC site.[28]

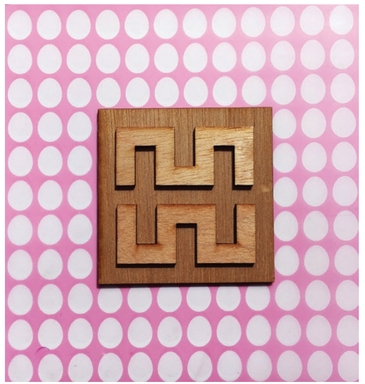
21 Kwon, 2015, www.koreatimes.co.kr/www/news/culture/2016/09/135_191406.html.
22 The Center has four floors above ground, four floors below ground and a site area of 134,815 m² while the Center area is 161,237m², Asia Culture Center, no date.
23 Asia CultureCenter, no date.
24 Asia Culture Center, no date.
25 http://wdc2016.taipei/en.
26 http://wdc2016.taipei/en/world-design-capital-wdc.
27 http://wdc2016.taipei/en/world-design-capital-wdc.
28 Taipei City Government, no date.

In contrast to the ACC, TPAC "floats" above the ground.[29] Large pylons support the built structures, allowing much of the built environment to be suspended above ground level. This design creates large ground-level areas that can be used by the public as cultural and community spaces. There is a "public loop" that aims to draw people into the Center and engage them in creative processes.

Chin Mu and I discussed the potential to incorporate creative technologies into the flexible indoor and outdoor areas within this precinct. During these discussions, I proposed building interactive game and technology experiences into the architectural settings. There are many ways that creative technologies can be directly incorporated into our built environment.

3.2.3 Hong Kong

Dr Troy Innocent is an Australian designer who creates interactive game experiences. He co-produced XON KON alongside Dr Hugh Davies. XON KON is a street game designed for the city of Hong Kong. This game engages the public in finding wooden game pieces that are hidden around the city. Members of the public collect and trade game pieces, ultimately co-constructing a three-dimensional miniature city that is situated in a physical gallery space. This game involves both online and offline interaction that directly connects players to the geographical environment in which they are situated. This geo-game is an ideal way to link people to spaces such as arts precincts. Creative technologies and media arts projects have the potential to enliven our relationship with our built environment and there is emerging interest in this kind of playful interactive design.



XON KON a laser-cut wooden game piece created by Dr Troy Innocent and Dr Hugh Davies, for ISEA Hong Kong

3.3 Findings 3

Governments and commercial sectors have the opportunity to create built environments and public spaces that further support positive social and physical behaviours in densely populated cities. These built environments can incorporate creative technologies. Such technologies can be embedded within our built environment in order to help form deeper connections between the public and specific geographic locations.

One way in which this may operate would be to commission a series of bespoke designs that were situated within the built environment of Melbourne's Federation Square. This complex could house more permanent exhibitions and more impermanent creative works. These works might focus on using digital and non-digital means to reignite people's relationships with each other, and with the natural and built environment that surrounds them. Through using creative technology approaches in a space such as Federation Square, we can harness people's love of technology and use it to provide novel solutions to some of our current social problems. These solutions may be in the form of street games (which operate via online platforms and through offline interaction), co-design practices[30] (where the public is involved in creating the core design of a creative work) and light and projection events (which involve the public in providing content for the artwork).

29 Taipei City Government, no date.
30 Markopoulos, Read, MacFarlane and Höysniemi, 2008.

04

Supporting Creative Technologists: The Asian Context

In order to support the arts and creative technology industries, governments, corporations and individuals have already begun working together to provide free and affordable workspaces in many locations across Asia. As in Melbourne, rental prices are prohibitively expensive for arts and design professionals working in many North and North Eastern Asian cities. Therefore a raft of alternative solutions has been established that support the growth of this valuable sector. Below are two examples of how governments and organisations are providing affordable workspaces for individuals who are working in art and design industries.

4.1 Providing Affordable Workspaces: A Taipei Solution

During my time in the capital of Taiwan, I stayed in the inner-city district of Datong, Taipei, at a small complex called Changee Creative House. This five-storey complex is located in a multi-function building run by a group of local artists. This organisation offers affordable co-working spaces and studios for designers, video-makers, writers, engineers and artists. It also offers five accommodation rooms for short-term rental to touring artists and designers. The Changee Creative House provides access to high-speed internet, studio-style workspaces, meeting

Sculptural light at Changee Creative House, Taipei

areas and all of the facilities we expect in a home: a kitchen, laundry, bathrooms and bedrooms. This is a fully designed space that is both aesthetically driven and highly functional.

Changee Creative House is located in the centre of the emerging arts and cultural district of inner-city Taipei. This kind of initiative is one that recognises the changing shape of our working environments. Employment in many countries, including Taiwan and Australia, is becoming more flexible and companies are spending less on providing fully-fledged work facilities, particularly for the increasing numbers of people who are engaged in contracted work.

Tim Ryan is an Australian designer who lives in Taipei and runs his business out of the Changee collective workspace. When describing Taipei, Tim explains that, “most people live with their parents until they get married” and newlyweds often move into the groom’s parents’ home, so “operating a business or working freelance from home really isn’t an option and the cost of renting any sort of space by yourself is prohibitive”. He goes on to state that, “unaffordable rental prices in Taipei, for both residential and commercial properties, have resulted in the emergence of numerous flexible co-working spaces for people working in the creative industries and those initiating tech start-ups”. Taipei has a large array of low-cost co-working environments that are offered to individuals and small start-ups.[31]

31 The Changee organisation runs a number of different co-working spaces: Changee, 2015, http://changee.tw. There are also some very well-known subsidised and competitive co-work ing spaces in Taiwan, such as the Taipei Artist Village and Treasure Hill. In addition to this, there are also a wide variety of spaces available throughout Taipei and Taiwan: Horwitz, 2015, www.te chinasia.com/10-great-coworking-spaces-taiwan. More Taiwanese co-working spaces are available on Mandarin language sites such as: Start-up Taipei, 2015, www.startup.taipei /archives/place_type/space.

The Changee Creative House also responds to the role that travel plays in contemporary flexible working arrangements. Many artists and designers travel in order to reach new audiences. The Changee Creative House offers affordable, short-term accommodation for touring and travelling artists, providing them with the usual facilities required in accommodation, as well as access to the practical facilities found in a home (notably a kitchen and laundry) and access to meeting areas. This work-residence operates as a community hub, helping to create connections between touring and local artists and designers.

4.2 Flexible Workspaces: The Cattle Depot Artist Village, Hong Kong

The Hong Kong Cattle Depot Artist Village is managed and run by the Hong Kong Government. Its formal name is Ex-Ma Tau Kok Animal Quarantine Depot, in acknowledgement of the precinct's history.[32] In 2001 the Cattle Depot was restored and repurposed for use by an arts community that was being relocated from another government-run facility. The Cattle Depot now houses independent arts groups and creative individuals in a series of studios, rehearsal spaces and flexible environments.[33] The rental fee is highly subsidised and, in conversations that I had with artists at the centre, it appears that some artists have free use of these facilities.

The Cattle Depot arts community runs annual festivals and public arts events. It is located in a residential area of Hong Kong and this helps in involving the general public in art activities. During my visit to the Depot, there were a series of exhibitions being viewed by local and international visitors, a small children's birthday party being held within the community's grounds and neighbourhood children playing in some areas of the site. Although the government places official limits on public access to the Depot, it appears that these restrictions may not always be enforced.

The single-storey layout of the Cattle Depot allows for easy access. Unlike high-rise and factory-style studios, such as the Hong Kong Fu Tan Artists Studios, the Cattle Depot has an open and accessible feel. Yet access to the Depot has been a contentious issue over time. In an article from 2010, long-time local residents complained that they had been restricted from entering the centre. One elderly local resident explains, "We also want to enjoy art".[34] Yet their access to the centre was restricted. Artists based at the Depot also contributed to this discussion: "Even though artists and residents are just separated by one block, we cannot really communicate and interact with each other".[35] The access restrictions in place at the Depot have brought to light the desire for the artists and the wider community to have a level of interaction. It appears that, in order to run a positive and effective art and design hub in Hong Kong, there needs to be a level of public access to the area and some communication between the artists involved and the wider community.

4.3 Findings 4

Australian artists and designers often have flexible working conditions and many people in this sector work from home or out of public spaces, such as cafes and local libraries. With increased property prices in Melbourne, there is a real issue around a lack of creative spaces for those in arts and design industries. In addition to this, those in the creative technology industry often require semi-permanent workspaces that allow them to leave specialised equipment in a locked location; this enables them to work productively within a compatible environment. We can perhaps learn from Taiwanese approaches to affordable workspaces in order to further the growth of our local creative technology industry.

Creative co-working spaces may be more than a base that supports art practices. They can be community hubs. When forming a community hub, it may be important to understand the variety of ways that local residents and the public can be invited into these creative centres. This public interaction may be through organised festivals, exhibitions and open days. Public access can help add value to a local area by reinforcing a creative and artistic atmosphere within a community. These art hubs can operate as tourist attractions and also act as a focal point for social cohesion. New developments in areas such as Docklands would be ideal locations for a series of artist villages. Provision of highly subsidised workspaces for arts and creative technology endeavours could help to galvanise a community within these emerging residential areas.

There are opportunities for governments, industry and commercial sectors to provide more free and affordable workspaces and to help establish artistic hubs for those working in Melbourne's creative and cultural industries. This will support these industries so that society can continue to gain from the economic, social and health benefits that the arts and cultural sector offers. In an era when professional artists and creative technology specialists struggle to find workspaces that are both affordable and suitable to their business and creative needs, we risk losing the full health, economic and cultural benefits that this industry offers to society.

32 Between the 1890s and 1999, this depot was an animal quarantine and abattoir, Commissioner for Heritage's Office Development Bureau, 2012.
33 Commissioner for Heritage's Office Development Bureau, 2012.
34 Tsoi, 2010, https://hk-magazine.com/article/6025/lonely-arts-hub.
35 Tsoi, 2010, https://hk-magazine.com/article/6025/lonely-arts-hub.

05

Approaches to Digital Art & Creative Technology

During my Fellowship travels, I attended numerous workshops, talks and exhibitions. The following is a snapshot that illustrates a range of arts and creative technology approaches that have informed my working practices and influenced the design of *The Storytelling Machine*.

5.1 Literature and the Digital Realm

During the ISEA conference in Hong Kong, I attended an interactive digital writing session[36] led by Anastasios Maragiannis and Janis Jefferies.[37] Mr Maragiannis and Professor Jefferies state that, "With the advent of Web 2.0, the screen has moved from an informational navigation tool to a community and this marks a new form of social phenomenon". During this workshop, Mr Maragiannis and Professor Jefferies invited participants to tweet short texts. Participants' texts were then curated and presented in a cohesive list. Twitter and 140-character communications are altering our writing and creative practices, causing us to change the style and manner in which we express ourselves.

According to Mr Maragiannis and Professor Jefferies, "A context of abundance changes everything. Suddenly filtering and curation become more important than ever". As we obtain more and more content, it becomes increasingly important to have a means of searching for and finding the data we are looking for.

This workshop has helped me to more deeply consider ways that automated curatorial systems could provide us with more than just what we like, expect or may be interested in. Current social media platforms such as Facebook rank and curate the communications that are fed to us. Facebook uses digitised curatorial processes to reaffirm the user's sense of self.[38] But this type of affirmation may not be challenging us or encouraging us to grow and expand our thinking.[39] This workshop made me understand the potential for creative technology projects to incorporate new curatorial systems that present a wide variety of contrasting textual content. In presenting contrasting points of view, this may challenge our established understandings of others and help us to expand our views of the societies in which we live. This workshop helped me to form some of the fundamental concepts that underpinned *The Storytelling Machine* project.

5.2 Turning Cities into Media Stories

During the ISEA conference in Hong Kong, I attended a talk and workshop that focused on how art can instigate change within a city by using the built environment as an urban gallery. This event was run by media art luminary Susa Pop[40] and Dr Tanya Toft. According to Ms Pop, we can: "Use the urban environment to co-create our cities, develop sustainable urban media art projects, connect audiences with place making, and use emerging technologies to further understand our relationship with our built environment". Ms Pop goes on to note that by promoting "citizen agency" and "engagement and active participation", we are "building shared encounters". She looks specifically at how urban media environments can operate as platforms for social interaction.

Ms Pop's approach centres on "context, presence and change" and deals with infrastructure that has high visibility. She states that the art must have something to say and must be socially relevant. There must also be, according to Ms Pop, a focus on how art creates access for public audiences. The audience is a key aspect of her approach to producing art. Ms Pop asks:

- Who is the audience?
- How do people understand what the message is without the work being too lightweight?
- What are the history and future planning of the place in which the art is being located?

36 Monday 16 May 2:30–5:30 pm at the Hong Kong Polytechnic University.
37 Anastasios Maragiannis is Principal Lecturer in Design at the University of Greenwich, London and Professor Janis Jefferies is Professor of Visual Arts and Research at Goldsmiths, University of London.
38 Turkle, 2011.
39 Online platforms are not always a supportive playing field, as users can become victims of negative tirades, Turkle, 2011.
40 Pioneer of the Urban Screen movement, director of Public Art Lab (Berlin), initiator of Connecting Cities, Initiator of the Media Façade Festival.

According to Ms Pop, she will not produce work that involves religion, politics, sex or crime. She notes that this is a "rule of [European, government-funded] public art". For Ms Pop, art needs to contribute to community-building; it should be part of our urban environment so that we live in an aesthetic culture. Yet she acknowledges that there is a "pragmatic model at play"; artists are required to strongly rationalise and justify the impact of their work in order to secure arts and cultural funding.

This workshop has helped me to understand how some creative technology and media art producers are borrowing from 'user-centred' design methodologies. This kind of approach is commonly seen in the field of computer science and in design fields such as architecture. Ms Pop's approach to media art places the 'user' or audience at the centre of the design. Ms Pop encourages artists to consider the needs of their audience and to consistently build audience participation into a project from the early stages through to delivery. This approach differs from traditional working methods commonly used in the creative arts where it is common for practitioners' own experiences, and the act of creating a performance or shaping a designed form, to be the central parts of the method of practice.[41] This can involve high levels of experimentation. This traditional approach to making creative and artistic works may be called a 'design-centred' (as opposed to a user-centred) method of practice.

5.3 teamLab, ArtScience Museum, Singapore

The Singapore ArtScience Museum houses a large-scale permanent exhibit, Future World: Where Art Meets Science. This exhibition was created by a Japan-based group of "ultra-technologists" named teamLab in collaboration with the ArtScience Museum. teamLab is known for its "innovative use of digital technology as a medium for art".[42] The Future World exhibition consists of 15 major art installations and interactive projects designed for an all-ages audience.

One of the major exhibits at Future World is called Sketch Town. In this exhibit, virtual towns are built using contributions created by the audience. Visitors can colour in paper templates, which are then scanned and placed onto a large display screen that shows the virtual town. There is a level of animation given to the publics' colour-in drawings. This exhibit allows members of the public to co-create art and to express themselves through the act of colouring-in. I knew of this interactive exhibition prior to visiting Singapore. I was very interested in seeing the ways in which the designers had created the different interfaces for Sketch Town. I was particularly interested in studying their paper-based templates and the interface that scans the public's contributions.

In making *The Storytelling Machine* I am looking to extend the technologies used in Sketch Town, and those used in a similar design created by the Disney Corporation.[43] My central aim in making *The Storytelling Machine* is to allow people to draw their own characters of any shape, rather than just providing them with a colouring-in experience. My team's design provides members of the public with further opportunities to freely express themselves through the act of drawing. The teamLab exhibition has helped to inform and direct my working practices.

41 Candy, 2006.
42 teamLab and ArtScience Museum, 2016.
43 Disney Corporation, 2012.

***Future World*: teamLab and the ArtScience Museum exhibition, Singapore**

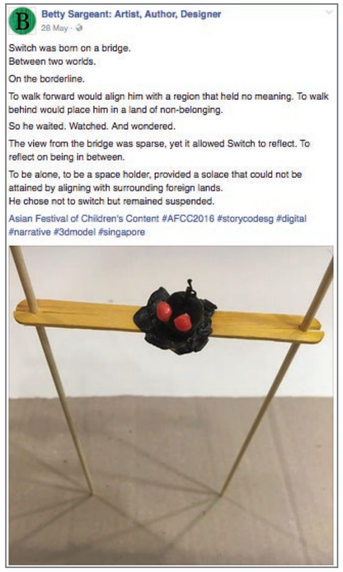
5.4 Storycode: The Singapore Chapter

My contribution to the Singapore Storycode project as seen on Twitter

Storycode is a global community of over 600 story and technology creators. It is an international organisation interested in "story-hacking" and new forms of narrative creation.[44] There are 19 Storycode chapters that operate across six continents. During the AFCC festival in Singapore, I attended a workshop run by Marco Sparmberg, director of the Singapore chapter of Storycode.[45] Since attending this workshop, I am now a member of this community.

During the workshop, participants were invited to create a story text. We then drew 2D characters and finally handcrafted a 3D story environment. Throughout the workshop, we documented our working processes, filling in paper-based forms and templates. We then presented our work to other participants and finally published the work online via Instagram, Facebook and Twitter.

This experience gave me the opportunity to be a part of a highly practised and established workshop process in which participants create new types of tangible and virtual stories. This experience has influenced my working practices, allowing me to understand how paper-based templates can provide a structure that may help workshop participants express their ideas more clearly and quickly. This workshop combined digital and non-digital working methods. It was socially engaging and involved both online and offline social interaction. The Storycode movement helps to form creative communities across geographical and virtual spaces.



My contribution to the Singapore Storycode project as seen on Facebook

44 Hacking can be defined as the act of repurposing a third party system, item or method of practice so that it operates differently to the way it was initially shaped or designed. In this instance, story-hackers are restructuring the ways in which stories are created and presented.

45 27 May 2016, National Library, Singapore.

5.5 Findings 5

Digital technologies are influencing the ways in which we express ourselves and are influencing creative and artistic working practices. New technologies are affecting how we make, present and consume creative works. Most notably, digital modes of practice are involving high levels of co-creation and co-design activities. This kind of creative cooperation is occurring between different artistic practitioners, and between artists and the general public. Co-design and cooperative methods of practice are taking place across networked platforms (such as Twitter, Facebook and Instagram), as well as in geographical locations (in workshop environments). Creative technologists are in a position to offer audiences participatory experiences involving new and unique approaches to digital expression and digital design.

Governments, civic centres and industry organisations can support arts and creative technology practitioners by providing further professional development opportunities. In a field that is undergoing rapid change, it is important to provide opportunities for those in creative industries to update their skills. These professional development experiences are often expensive and time-consuming. Provision of more professional development support would facilitate the formation of an established knowledge economy, one where practitioners are working at the progressive forefront of technological innovation.

06

The Knowledge Transfer

Throughout this Fellowship, I have had access to some of the latest art, literary and technology thinking, particularly in relation to digital media, interactive literature and creative technologies. I have returned to Melbourne after my Fellowship travels and disseminated this knowledge through a series of public programs.

6.1 Public Engagement and *The Storytelling Machine*

During my Fellowship period I ran workshops at the Kathleen Syme Library and at the Library at the Dock. I also engaged directly with the general public through an artist-in-residence period at the Library at the Dock. During both of these activities, the public had access to a prototype of the new creative technology tool, *The Storytelling Machine*. Throughout these sessions, members of the public could contribute their own stories, in the form of drawings and text. They could also follow and engage in the development of this artwork via various social media channels, notably *The Storytelling Machine* Facebook page.

During the workshops, I engaged in discussion with participants on how to program and design creative technologies. I also engaged in discussion with library staff on ideas and innovations relating to emerging technologies and their applications in public programs. With support from the Library at The Dock staff, I placed a perspex box in the library's foyer so that people could contribute their own drawings and writing to *The Storytelling Machine* at any time during library hours. There is a raft of ways that I have involved the public and industry professionals in this Fellowship project.

6.2 The Workshops: The Advantages of Diversity

The Melbourne public workshops involved participants aged from seven years old to those in their eighties. The main focus of *The Storytelling Machine* workshops was to collect drawings and writing from the public, so we opened these workshops up to literate children, teenagers and adults of any age.

The first workshop was held prior to my Fellowship travels. This workshop operated as a co-design session where participants contributed drawings, text and also ideas on the aesthetic construction of *The Storytelling Machine*. This involved a thirteen-year-old and an eleven-year-old who assisted in co-presenting and co-leading the workshop. These youngsters may be considered emerging leaders in the areas of writing, drawing and design.[46]

During these sessions, it was discovered that younger workshop participants and the young workshop leaders helped older participants to feel at ease. In some cases, younger members of the group casually explained aspects of the technology to older participants. In return, older participants answered questions that younger participants asked, often around meanings of words or ways to approach different tasks. When a younger and an older person teamed up during workshops, the outcomes were often more detailed and these teams of participants showed high levels of enjoyment; they laughed, talked in animated ways and deeply discussed ideas about technology and the internet.

All of the six Melbourne workshops involved cross-generational participation. Through combining different age groups, we allowed younger and older people to use their existing knowledge in order to help others. This cross-generational approach also provided opportunities for participants to expand their knowledge base and to meet new people outside their age bracket. The creative technology sector is an area that is often advanced by people aged between twenty and forty. Through these workshops, we were able to involve this demographic, as well as those outside it.

My experience in leading these workshops has shown me the advantages of combining different age ranges in workshop situations. This method of working can: unearth novel approaches to activities; elicit deeper, more thought-out responses; and help to create enjoyable cross-generational experiences. The idea of combining different age groups did

46 It should be noted that these activities were conducted under ethics clearance from RMIT University and in keeping with Commonwealth legislation relating to working with children.

not stem from practices that I observed during my Fellowship travels. It was an experiment that I was already interested in conducting and the residency period allowed me to trial this idea.

6.3 Wider Community and Industry Engagement

There is a range of ways that I engaged with wider community and industry bodies during my Fellowship period. Prior to my travels, I was a member of the Human Book project at the Kathleen Syme Library. This event allows the general public to converse one-on-one with a range of 'experts' from a variety of fields. My encounters with members of the public during this event involved discussion of *The Storytelling Machine* project and I also provided people with industry and professional development advice. This event created an opportunity for the public to have close access to new ideas and to ask a range of questions relating to specific topics of interest.

Following on from my Fellowship travels, I returned to Melbourne and engaged in public presentations outside the library context. For example, I was keynote speaker at the ALEA_ACMI conference at the Australian Centre for the Moving Image (ACMI).[47] This conference was organised by the Australian Literacy Educators' Association (ALEA) and ACMI. My keynote address described my Fellowship activities, with a focus on *The Storytelling Machine* project.

In this keynote, I detailed the ways in which *The Storytelling Machine* can provide the public with experiences of positive social engagement. I also highlighted the benefits of running public programs for cross-generational participants. Finally, I noted the links between this project and STEAM learning outcomes, highlighting how teachers can use creative technologies in the classroom to facilitate specific curriculum outcomes. In doing this, I reinforced the ways in which arts teaching and learning can support the formation of a knowledge-based society.

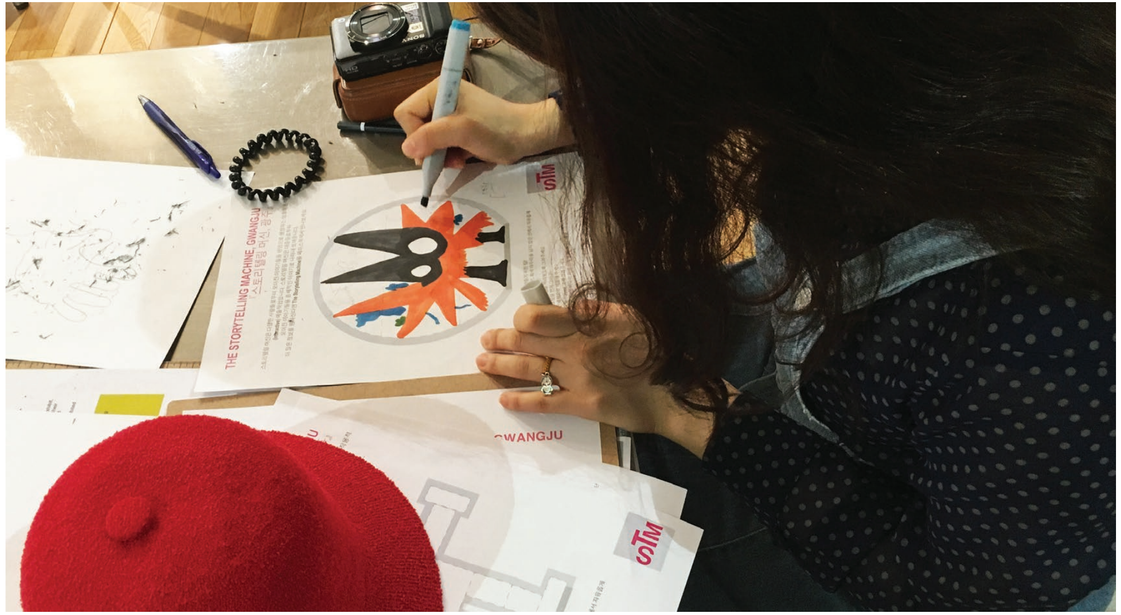
6.4 Findings 6

There are benefits associated with providing public programs that involve a diverse range of people. My workshops involved a trans-cultural array of people who had a broad range of cognitive, physical and arts-related abilities. Most notably, the workshops combined cross-generational groupings. These events led to:

- Participants engaging in social interaction with people outside their age demographic
- Participants sharing their knowledge
- Participants learning from those outside their age demographic
- Participants combining their knowledge, adopting novel approaches and creating innovative outcomes
- More enjoyable workshop experiences.

Diversity in public programs can lead to enriched social and educational experiences for participants. It can provide the public with access to arts and technology thinking, and with access to those in the community who hold diverse ideas and who encapsulate a range of lived experiences. By broadening access so that programs involve a range of different people, we can enrich a person's arts and technology experience. Through including combinations of people from different generations, we can help to maintain meaningful connections for our ageing population and we can utilise their rich level of skills and experiences to heighten the workshop processes.

47 September 2016, ACMI, Melbourne.



The Storytelling Machine **workshops provided members of the public with opportunities to improve their drawing, writing and digital design skills**

07

References

Anderson, B, 1991, *Imagined Communities: Reflections on the Origin and Spread of Nationalism*, Verso, London, New York.

Armstrong, C, 2014, *The Koreas*, 2nd edition, Routledge, New York.

Asia Culture Center, no date, *Information Booklet*, Ministry of Culture, Sports and Tourism, Korea.

Asia Culture Center, 2016, *ACC Creation: 1v23456C*, Asia Culture Center and Ministry of Culture, Sports and Tourism.

Australian Bureau of Statistics, 2014, *Australian National Accounts: Cultural and Creative Activity Satellite Accounts*, Experimental, 2008–09, www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/5271.0Main%20Features32008-09

Candy, L, 2006, *Practice Based Research: A Guide*, CSS Report, no. 1, Creative and Cognition Studios, Sydney, pp. 1–19.

Changee, 2015, http://changee.tw

Commissioner for Heritage's Office Development Bureau, 2012, *Ex-Ma Tau Kok Animal Quarantine Depot guide map*, Commissioner for Heritage's Office Development Bureau, Hong Kong.

Disney Corporation, 2012, *Full Animation Magic show in the Animator's Palate restaurant on the Disney Fantasy*, Inside the Magic, www.youtube.com/watch?v=tjYAdUEgOOs

Druin, A, 1999, 'Cooperative inquiry: Developing new technologies for children with children', *Proceedings from CHI 1999*, ACM, pp. 223–230.

Druin, A, 2002, 'The role of children in the design of new technology', *Behavior and Information Technology*, vol. 21, no. 1, Taylor and Francis, pp. 1–25.

Hammond, B, 2015, *Fostering Creative Technologist and Maker Communities*, Melbourne Knowledge Fellowship Report, City of Melbourne, www.melbourne.vic.gov.au/SiteCollectionDocuments/knowledge-fellowship-2014-report-brad-hammond.pdf.

Horwitz, J, 2015, '10 Great Co-Working Spaces in Taiwan', *Tech Asia*, www.techinasia.com/10-great-coworking-spaces-taiwan

Hourcade, JP, 2008, 'Interaction design and children', *Foundations and Trends in Human Computer Interaction*, vol. 1, issue 4, ACM, Hanover, MA, pp. 277–392.

Hourcade, JP, 2015, Child Computer Interaction, http://homepage.cs.uiowa.edu/~hourcade/book/child-computer-interaction-first-edition.pdf

Hourcade, JP, Mascher, SL, Wu, D, and Pantoja, L 2015, 'Look, my baby is using an iPad! An analysis of YouTube videos of infants and toddlers using tablets', Proceedings from CHI 2015, Seoul, Republic of Korea, ACM, http://dx.doi.org/10.1145/2702123.2702266

Kwon Mee-yoo, 2015, 'Asia Culture Centre to open in Gwangju', Korean Times, www.koreatimes.co.kr/www/news/culture/2016/09/135_191406.html

Markopoulos, P, Read, JC, MacFarlane, S, and Höysniemi, J, 2008, *Evaluating Children's Interactive Products: Principles and Practices for Interaction Designers*, 1st edn, Morgan Kaufmann, San Francisco, CA.

Munster, A 2011, *Materializing New Media: Embodiment in Information Aesthetics*, Darthmouth College Press, Hanover, NH.
Munster, A 2014, 'Materiality', in ML Ryan, L Emerson and B Robertson (eds), T*he Johns Hopkins Guide to Digital Media*, 2nd edn, Johns Hopkins University Press, Baltimore, USA, pp. 327–330.

Sargeant, B 2013, 'Interactive storytelling: How picture book conventions inform multimedia book app narratives', *Australian Journal of Intelligent Information Processing Systems*, vol. 13, no. 3, Special Issue on Edutainment, AJIIPS, pp. 29–35.

Sargeant, B 2015, 'What is an ebook? What is a book app? And why should we care? An analysis of contemporary digital picture books', *Children's Literature in Education*, vol. 45, issue 175, Springer.

Sargeant, B and Mueller, F 2014, 'How Far is Up? Encouraging social interaction through children's book app design', *Proceedings of the 19th ACM CHI Conference on Human Factors in Computing Systems*, ACM, pp. 483–486.

Smeets, D 2012, 'Storybook apps as a tool for early literacy development', PhD thesis, University of Leiden, viewed 26 June 2013, https://openaccess.leidenuniv.nl/handle/1887/20363

Smeets, D, and Bus, A, 2013, 'Picture storybooks go digital: Pros and cons', in SB Neuman and SB Gambrell (eds), *Quality Reading Instruction in the Age of Common Core Standards*, International Reading Association, Newark, DE, pp. 176–189.

Smeets, D, and Bus, A, 2014, 'The interactive animated e-book as a word learning device for kindergartners', *Applied Psycholinguistics*, vol. 22, no. 1, Cambridge University Press, pp. 1–22.

Start-up Taipei, 2015, www.startup.taipei/archives/place_type/space

Taipei City Government, no date, *Performing Arts Center Prospectus*, Department of Cultural Affairs, Taipei City Government.

teamLab and ArtScience Museum, 2012, *Future World: Where Art Meets Science* exhibition brochure.

Tsoi, G, 2010, *Lonely Arts Hub*, HK Magazine, https://hk-magazine.com/article/6025/lonely-arts-hub

Turkle,S, 2011, *Alone Together Why We Expect More from Technology and Less from Each Other*, Basic Books, New York.

UNESCAP, 2013a, Statistical Yearbook for Asia and the Pacific, www.unescap.org/stat/data/syb2013/ESCAP-syb2013.pdf

UNESCAP 2013b, *Economic and Social Survey of Asia and the Pacific*, www.unescap.org/publications/survey/surveys/survey2013.pdf

VicHealth, no date, 'Why should I do the H3O Challenge?', *H3O Challenge*, viewed 10 January 2015, http://h30challenge.com.au/why

Yokata, J, and Teale, WH, 2014, 'Picture books and the digital world: Educators making informed choices', *The Reading Teacher*, vol. 67, issue 8, pp. 577–585.

Zomorodi, M, 2016, *The Secrets to Making Video Games Good for You*, Note to Self, WNYC, www.wnyc.org/story/video-games-wellness-depression