

Australia's ArtSci Support Networks

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ABSTRACT

Reflecting on the history and development of art science (ArtSci) in Australia since the late 1980's, this article surveys examples of creative practice that have emerged through Australian ArtSci collaboration over the last 35 years and explores how funds have been mobilized to ensure such activity continues. These ArtSci creative practices and the structures that support them are examined against new challenges faced by Australian artists and scientists respectively. The challenges explored are the imbricated issues of cultural cringe, climate change denial, shifting policy directions in government funding and discourses of education and innovation that inform government policies. Given that practitioners of ArtSci globally must rely on institutional support to ensure equipment and expertise to perform necessary work of creative development, this paper offers insight into how practitioners and ArtSci communities in the Australian context have built and sustained support in the past and how they seek to maintain it in present and future.

Keywords: Australian Creative Industries Policy, Bioart, Media Art, ArtSci

1. INTRODUCTION

Since the early 1990s, Australia has developed a vibrant creative presence at the intersection of art and science, a field usefully abbreviated as ArtSci (Miller, 2014). With multiple artists producing visually and conceptually compelling work including Natalie Jeremijenko, Patricia Piccinini, Joyce Hinterding, Oron Catts and Ionat Zurr, and Stelarc among others, Australia has earned a respected position as an innovator in the international media art and ArtSci community. This is demonstrated by the ever-presence of Australian practitioners at leading ArtSci events such as at Austria's ARs Electronica and the nomadic International Symposium of Electronic Art.

The recognition experienced abroad has not always been enjoyed at home. Since 2004, successive Australian governments have moved away from supporting local innovations, emerging aesthetics and experimental trajectories in fields such as ArtSci collaboration, including the gradual defunding of organizations supporting ArtSci including the Australia Council for the Arts, Australian Network for Art and Technology, Synapse, SymbioticA, and CSIRO as well as state based funding authorities. The obstacles to ArtSci and its funding are multiple and include:

- (1) Establishing a common ground of respect and interdisciplinary exchange between practitioners and institutions of Art and Science.
- (2) Institutional and governmental focus on ArtSci purely in terms of financial gain instead of recognizing the value of cultural and scientific outcomes.
- (3) An enduring colonial and 'cultural cringe' mentality - a sense that emerging Australian cultural practice is unworthy of attention (Phillips, 2005).
- (4) The election of Australian political officials who view the field of science with deep circumspection - especially in relation to climate change.

As a net result of these interrelated factors, there has been significant reduction in research funding raising questions of how both art and science can sustain themselves against diminishing financial support. The following is a reflection on the history, continuity and success of Australian ArtSci practitioners, written with the aim of illuminating past and present tactics in the development and sustainability of ArtSci practice. It is hoped that this commentary provides useful information and inspiration for the present and future struggles to maintain the support of ArtSci in Australia and abroad.

As with the related field of media art, ArtSci has a robust history in Australia. By the mid-80s, Australia's government arts body: the Australia Council for the Arts had recognized the growth of interest and practice in these fields and commissioned an Art and Technology report to explore possibilities at the art science nexus. Following the report outcomes, the Australia Council for the Arts supported the incorporation of the Australian Network for Art and Technology (ANAT) with the remit of connecting artists with emerging science technologies and research (Leggett, 2004).

2. AUSTRALIAN NETWORK FOR ART AND TECHNOLOGY

When ANAT began in 1988, the momentum for ArtSci was largely focused on how art could be used to communicate and promote data produced by scientists to the general public. Yet for those in the arts community, ArtSci represented a potent means through which new technologies could be taken up as tools and mediums for artists to employ. Indeed, the great majority of ANAT's activity from its foundation and through the 1990s was facilitating workshops, summer schools and other training events that skilled-up artists in digital technologies. Attending these events were established practitioners such as performance artist Stelarc who for a decade

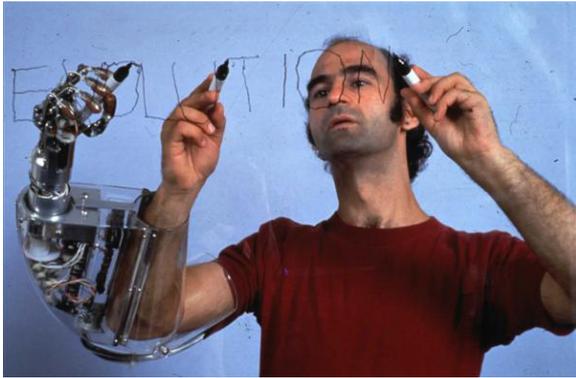


Figure 1. Stelarc. *Three Hands Handwriting Evolution*, 1982. Courtesy of the artist's website.

had been deeply engaged with concepts of body obsolescence and post humanism (Figure 1), as well as emerging newcomers including Patricia Piccinini whose hyper realistic works aimed to challenge definitions natural and artificial life.

While Stelarc's body of work provided a history of Australian ArtSci engagement, Piccinini's captivating practice did much to popularize Australia's emerging media arts profile by tackling themes and complexities opened up by ArtSci.

The installation of her sculpture: *The Young Family* (Figure 2) in the Australian Pavilion at the Venice Biennale in 2003 was arguably the most visited since the Pavilion was opened (Cregan & Scanlon, 2004; Michael, 2003;), and the work has been reproduced countless times in the media worldwide.

Extending beyond these artists' evocative engagement with ArtSci concerns, ANAT and a new generation of practitioners sought to move beyond traditional formats of sculpture and image making, and to work with the raw materials and technological instruments of science in an effort to unite artists and scientists on a level playing field. For example, in 1993-94 ANAT Directors Virginia Barratt and David O'Halloran curated the touring visual art



Figure 2. Patricia Piccinini, *The Young Family*, Mixed media. Australian Pavilion at the Venice Biennale, 2000. Courtesy of the artist's website.

component of the Great Australian Science Show. Reflecting on the exhibition, David O'Halloran noted "The artists...do not simply illustrate scientific principles with their work. They are dealing with attitudes and ideas about science" (O'Halloran quoted in Cooper & Pierce, 2004).

Recognizing the potential of artistic thinking to the sciences, ANAT looked to combine the diverse skills-sets and approaches of both artists and scientists to discover what different methodologies and types of knowledge might come about. This ambition became reality with the launch of the Synapse incubator program founded in 2004 by ANAT and the Australia Council for the Arts.

3. SYNAPSE

The Synapse residencies took their name from a structure within the central nervous system that allows nerve cells to pass electric and chemical signals to each other. 'Synapse' therefore describes an emptiness pregnant with possibility, a tiny gap across which a chemical process or electrical charge forges a pathways, giving way to new ideas and means of communication. Likewise, the Synapse residencies enabled long-term partnerships between artists and scientists with the aim of facilitating collaboration in order to form innovative pathways in a joint creative and scientific setting.

These disciplines are in no way at odds with each other, observes ANAT Director Vicki Sowry. “[T]he methodologies of the arts and sciences can be similar in their creativity and rigor”. The processes and practices of artists and scientists are both, Sowry states “experimental and speculative, leading to unanticipated and exciting outcomes” (Sowry, Australia Council, 2015). The successes of the synapse collaborations have opened up rich potential for respective gains in both fields. Interdisciplinary collaboration and open experimentation play a crucial role with neither artist nor scientist compelled to arrive at the production of new work from the partnership. “You are trying to encourage equal benefit. There has to be a level of trust,” says Sowry (ibid). Yet equal-sided collaborations are not always easily established.

For example in 2007, Melbourne artist Chris Henschke undertook a residency at the Australian Synchrotron. The then director at the Synchrotron asked of Henschke – “where is your easel?” expecting the artist to draw or paint the giant equipment (ibid). When Henschke explained his ambitions to collaborate with the scientists and on the Synchrotron itself, the response was “there is no way you will be touching that”. Reflecting on the situation years later, ANAT director Vicki Sowry explained that the Synchrotron’s marketing department at the time had set up the residency thinking it a good way to generate some news about the installation. But no one had really thought out what the residency would involve.

The director subsequently left the science installation, but the artist Chris Henschke has not. Henschke extended his engagement with the Synchrotron, building an understanding of the facility and the scientists who worked there. Through this, Henschke developed *Lightbridge* an interface that presents audio-visual data of the complex frequency harmonics generated



Figure 3. Chris Henschke, *Lightbridge Tunnel*, Synchrotron-light based test animation, 2010. Courtesy of the artist's website.

from the synchrotron’s beam status and position data (Figure 3), otherwise unimaginable visual information that has been of intense interest to the scientists with whom he collaborated. In recognition of his practice, in 2010, Henschke was invited to the facility of the European Organization for Nuclear Research, known as CERN.

Learning from this experience, a reassessment of the program in 2007 saw the residencies extended from 3 to 4 months, and mandated that the applications be a joint enterprise between artists, scientists and host organization in an effort to ensure equal footing. Additionally, the applicants must establish contact with ANAT to discuss the nature of the proposed collaboration prior to application. Residents are expected to take a strong experimental and creative research focus and those with existing relationships connecting arts and science are strongly encouraged to apply. Residencies occur in a range of scientific institutions and host organizations, and are open to all Australian artists regardless of medium. The strategy has worked and today, approximately 80% of the artists who have been residents under the Synapse program have continued a relationship with their host organizations beyond the residency itself. This reaction to the needs of artists balanced against the funding landscape has been crucial to the success of ANAT as well as for the continuation of its programs such as Synapse.

4. ART CAST AS INNOVATION

Due to the actual and perceived financial successes of pairing arts and sciences, through programs such as Synapse, the 2000s saw increased interest in placing the arts in a context of innovation. Not only were the arts (when co-joined with science) regarded as a means to generate lucrative intellectual property, but institutions began to understand and embrace the role of art in creating better engagement and outcomes in the disciplines of Science, Technology, Engineering and Maths, hereafter acronymed as STEM (Berkowicz, 2015).

In 2008, a policy paper exploring "The Arts and Australia's National Innovation System 1994–2008" offered a series of recommendations towards valuing the arts as an integral part of Australia's national innovation system. The paper recommended that arts and arts organizations:

- (1) Develop an understanding of arts-based knowledge that connects it to innovation
- (2) Broaden commercialization of the arts and creative outputs
- (3) Develop the argument for the arts as social innovation
- (4) Educate an innovative workforce.

Although the report was encouraging in its broad support of the arts sector, the thrust of the document was toward innovation and monetization over creative exploration for cultural benefit. While this discourse around the value of ArtSci in terms of financial and education benefits contains both truth and merit, there was little discussion of the value of purely cultural or scientific outcomes.

In a strategic response to the report, Synapse's governing bodies subtly shifted the program's focus. While maintaining a conceptual and experimental rigor, the works that it funded

evidenced an accessible and even playful approach, an outlook deliberately aimed toward audience development and the promotion of scientific endeavor. For example, in 2008 artists Willoh S Weiland and Nicky Forster undertook a residency at the Centre for Astrophysics and Supercomputing at Swinburne University of Technology to produce a soap opera. *Void Love* was the second in a trilogy of works by the artists investigating the inter-galactic unknown and exploring the relationships between art and space. Working in collaboration with the scientific staff, the artists explored and highlighted the scientist's fascination, passion and obsession with the distant and intergalactic. Over four months, the artists mapped emotive responses from practitioners across the Square Kilometer Array project against soap opera narrative formulas. The final work features interviews with leading astronomers revealing their deep love for their fields of scientific research resulting in a kind of melodramatic yet sincere love story connecting the artists, the scientists and the objects of their study.

In a similarly emotive audio-concerned residency, in 2010, Melbourne sound artist Robin Fox worked in close collaboration with Bionic Ear Institute research scientists Hamish Innes-Brown and Jeremy Marozeau. The residency was to adapt music – or as Fox expresses it – “organized sound design for reception via current implementations of cochlear implants sound processing and emitting software and hardware”. Otherwise put, he composed music for users of cochlear hearing implants. Indeed, part of the residency involved assembling a concert of commissioned works composed specifically for reception via cochlear implants. The performed works brought new understandings for both the artists and scientists, but also created a new landscape of experience for a hearing impaired audience unaccustomed to having musical works developed with them specific abilities in mind.

While these works produced within Synapse provide a valuable snapshot of the benefits of ArtSci collaboration, it must also be noted that beyond ANAT and Synapse, other Australian institutions have been successful in achieving similar ArtSci exchanges with tangible audience outcomes. Throughout the new millennium, the university sector, a field that already includes artists and scientists, was also promoting interdisciplinary exchanges at the ArtSci nexus. Chief among these was SymbioticA.

5. SYMBIOTICA

Founded in 2000, SymbioticA is an arts research lab based within the School of Anatomy and Human Biology at the University of Western Australia. Initiated by the artists Oron Catts and Ionat Zurr, biologist Miranda Grounds, and neuroscientist Stuart Bunt, the lab investigates biology and the life sciences from an artistic point of view. From the outset, SymbioticA was created as an interdisciplinary research laboratory for creative bioresearch that critically engages with contemporary uses of biology. The lab has both arts residencies and academic programs open to practitioners from multiple fields of study including artists, designers, architects, scientists

and humanities scholars who wish to engage in creative bioresearch. Residents and students alike are provided with access to laboratories and are trained in scientific and technical knowledge related to their field of study. They are connected with mentors to ensure they are able to make the most of their experience. In addition to these academic and residency programs, SymbioticA conducts workshops within Australia and overseas that connects artists and audiences with contemporary biotechnologies.

Israeli artist and researcher Guy Ben-Ary describes SymbioticA as the first and perhaps only studio in the world where artists enjoy identical lab access and status as scientists. “Artists can be one of the members of the school and have equal rights and access to every lab, without asking for favors and trying not to annoy anyone” he says (Ben-Ary, quoted in Durham, 2016). After studying law in Tel Aviv and working in programming, Guy Ben-Ary came to SymbioticA and has remained ever since. He has been an artist in residence there since 2000 and is the manager of CELLCentral in the school of anatomy and human biology. Guy Ben-Ary’s own work *cellIF* (“self”) involves the creation of music from stem cells taken from his own body. He calls it ‘a rock star in a petri dish’ (Figure 4). His cells

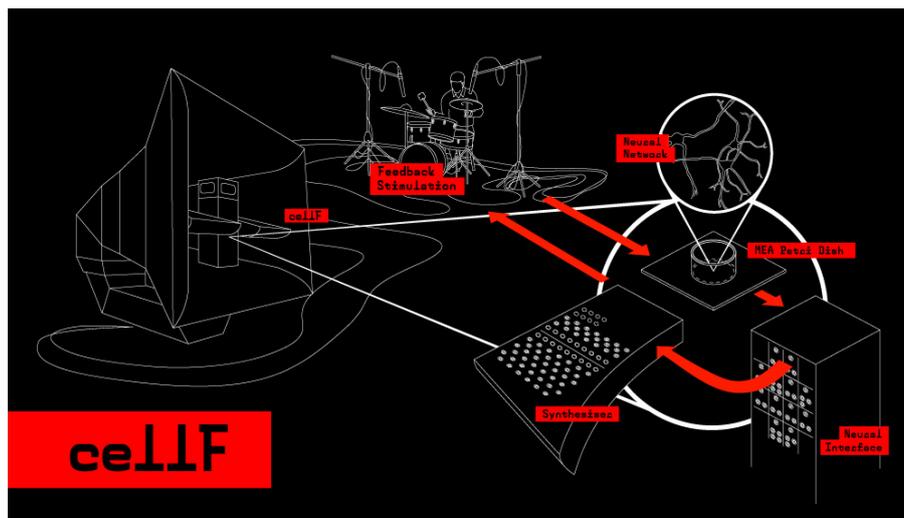


Figure 4. Image summary of *cellIF* by Guy Ben-Ary. Courtesy of the artist’s website.

are grown on an arrangement of electrodes that are then connected to an array of analog modular synthesizers. This sound is then amplified on 16 speakers, which the audience can walk through, a kind of psycho-geographic stroll through an audio-scape of the artist's brain in real time.

The success of Ben-Ary's works – like SymbioticA itself – has been in making tangible the deeply conceptual. In breaking free scientists, engineers and artists of their traditional silos to collaborate more meaningfully, SymbioticA has helped to pioneer a model that many universities, industries and other STEM institutions are beginning to understand and embrace – that art has the capacity to create better STEM leaders and outcomes.

6. FROM STEM TO STEAM

A growing criticism of the STEM sector in recent years has been a lack of diversity leading to homogenized and rote thinking – a situation that has notably improved by placing artists in science contexts. A 2008 report released by the Dana Foundation Arts and Cognition Consortium found “tight correlations” between arts training and improvements in cognition, attention, and learning based on multiple three-year studies across seven universities. Additionally, it was noticed that by integrating the arts into the STEM subjects – a conjoining often referred to as STEAM (Science, Technology, Engineering, Art, Maths) – the culture and working environments are significantly more gender and idea diverse. These findings are confirmed by Jill Bennett, Professor and Director of the National Institute for Experimental Arts at the University of New South Wales. Bennett claims that Australian institutions have been at the forefront in establishing more gender and culturally diverse laboratory environments to the benefit of both art and science. “Artists are very good at designing potential uses and interactions,” Bennett remarks, but insists that the exchange

extends far beyond the decorative overlay of data visualization or PR and communication. While Bennett admits, “Not every research question requires artists on it”, she also observes of artists, “[w]e're sometimes able to completely reframe a research question and suggest new pathways. And I think that's the holy grail for a lot of arts-science collaborations: can it change the pathway of science?” (Bennet, quoted in Durham, 2014). Herein lies the key benefit to the ArtSci exchange; the expanded thinking that is able to emerge in diverse and interdisciplinary research settings. But in Australia as elsewhere, despite the growing recognition of these benefits; art, science and ArtSci struggle to maintain support.

7. SUSTAINING ARTSCI

Following the 2013 election of Prime Minister Tony Abbott, the Australian government severely defunded both its arts and science agencies: the Australia Council for the Arts and the Commonwealth Scientific and Industrial Research Organisation (CSIRO) respectively. Additionally, the government abolished the Climate Commission: an independent body established to communicate “reliable and authoritative information” about climate change in Australia (Arup, 2013). The cuts signaled a deep antipathy toward both Australian cultural practice and the science of climate change – subjects that Abbott had previously expressed profound suspicion toward (Crabb, 2008; Crowe, 2015). Announced soon after was a separate government discretionary fund favored toward traditional European forms such as opera, ballet and classical music as opposed to Australian contemporary and experimental practice.

The result, according to social commentator Ben Eltham, was a toxic combination of neoliberalism and cultural cringe in which: “Abbott and his Conservative ministers seemed more interested in fighting culture wars than in governing

the country” (Eltham, 2016). This attack on Australia’s cultural independence reached an absurd nexus when the Prime Minister repealed Australia’s honor system in favor of Britain’s ‘Knights and Dames’ model awarding the first accolade on Australia Day to Britain’s Prince Phillip. This regression to colonial subservience was too much even for Abbott’s own party (Gallop quoted in Duffy, 2015) and the Prime Minister and members of his cabinet were soon-after expelled from the leadership, but the damage to Australia arts and science communities was irreversible. While a community groundswell saw the Climate Commission immediately re-launched as an independent non-profit organization fully funded by public donations, the billions of dollars cut from art and science institutions has (at the time of writing) not been returned.

In December of 2015, Australia’s newly elected Prime Minister Malcolm Turnbull launched the National Science and Innovation Agenda, ushering in he proclaimed, “the ideas boom”. Outlining the four pillars of innovation as: Culture and capital, Collaboration, Talent and skills and finally, Government as an exemplar, the purpose of the innovation agenda he continued, was to “help create the modern, dynamic, 21st-century economy Australia needs” by providing incentives for and rewarding innovation, entrepreneurship and risk-taking (Turnbull quoted in Chong, 2016). The rhetoric deployed by the newly reformed government sounded very encouraging for ArtSci, yet the example that the government set was to continue significantly defunding and dismantle existing infrastructures of science, research and the arts through which the innovation it claimed to support is driven. In an era in which Australia’s economy fared better than most nations, and when increased or sustained funding was enjoyed by sectors such as military and mining, these cuts could only be interpreted as a direct attack on the fields of both art and science. Ultimately, the ArtSci community in Australia is

yet to see a material re-engagement with ideas and innovation to match the political rhetoric.

While the reaction from the arts sector to these rolling cuts has been one of vocal outrage, the response by the scientific community has been measured. However, both fields recognize they must re-engage the community at a basic level, and that the grand challenges are not just delivering transformative breakthroughs that reshape the future, but educating wider society of the importance of culture and innovation in the present. One of the ways this has occurred is through the art charity Climarte and their Art+Climate=Change festival, an organization and event that seeks to “harnesses the creative power of the arts to inform, engage and inspire action on climate change” (Climarte, 2016). The inaugural festival event 2015 was held to critical acclaim (Saddington, 2015). The political developments following the election of the Australian Coalition Government also motivated numerous representatives of Australia’s art, science and academic communities to vocalize that not only art and climate science but science itself must now be vigorously defended (Jones, 2015).

8. CONCLUSION

There exists great promise at the overlap of ArtSci; of furthering aesthetic and scientific knowledge through the intersection of these two rich fields of discovery. Human civilization has long understood art and science are much more than complimentary; but that the mental and conceptual leaps demanded of both fields make them inextricably linked. The intertwining of these fields must continue to allow for a rich and mutually beneficial reframing of perspective. However, like many experimental, emerging and interdisciplinary fields, ArtSci increasingly struggles within ever encroaching frameworks of economic rationalism in which the only perceivable notion of value is financial capital.

The enduring lesson from the difficult challenges experienced in maintaining support for art, science and their collaboration is the crucial significance of ensuring the output of both is broadly understood. The great challenge in achieving this is that both fields rely on deep histories of knowledge and complex disciplinary context. Furthermore, many artists and scientists themselves struggle to immediately understand the implications of their own work. Both art and science are intrinsically experimental and process-based endeavors and collaboration between them not only ensures the respective practices are rigorous and inspired, but also compels practitioners of each to rehearse explaining elaborate ideas across distant borders of understanding. When made tangible, both art and science have the potency to evoke the profoundest inspiration. This process remains central to the sustainability of both science and art: the powerful translation of ideas into public knowledge to build cultural confidence and societal strength of knowledge.

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