ART + SCIENCE RAPID ANALYSIS REPORT

As part of the British Council's mission we find new ways of connecting with and understanding each other through the arts. We encourage dialogue and collaboration, and some of the most exciting creative conversations that we facilitate take place between artists and cultural practitioners who are not only from different cultural perspectives, but also from different art forms and other disciplines. Science inspires artists and is a catalyst for creativity, and discussions between artists and scientists, reflecting on their respective approaches, are inevitably illuminating.

The UK is a leader in the field of art + science collaboration and exciting, creative conversations between art and other disciplines - technology, ecology, economics and science - are pervasive elements of our programme. The British Council has initiated many projects, led by our Education & Society teams as well as by Arts teams, that bring together the "two cultures". In March 2018, a request to arts managers globally elicited more than 50 British Council art + science projects across 27 countries, often created as part of wider seasons, including:

- The Science Museum's exhibition 5000 Years of Science and Innovation and Photography 1857–2017, in their Illuminating India season, part of the UK/India Year of Culture https://www.sciencemuseum.org.uk/what-was-on/illuminating-india
- A science fiction film season as part of the UK-Russia Year of Science and Education 2017. https://www.britishcouncil.ru/en/programmes/uk-russia-science-education
- Artience, part of UK-Korea, included Silent Signal - an exhibition of UK animator-scientist collaborations - and a 30 Hour Science-Art creation challenge. https://www.britishcouncil.kr/en/uk-korea-2017-18/events/artience
- In 2019, SPARK: The Science and Art of Creativity was Hong Kong's first Festival of Ideas celebrating creativity across the arts, sciences and education. https://www.britishcouncil.hk/en/spark

Science has featured prominently in global arts projects too: As part of the Shakespeare 400 programme, Shakespeare Lives in Science looked at the botanical and zoological basis for the poisons and potions that were weapons of choice for many of Shakespeare's characters. https://www.shakespearelives.org/poisons-potions/

And in 2019, Anyone//Anywhere marked the 30th anniversary of the birth of the web with a programme looking at the impact of this world-changing invention on every aspect of our lives. https://www.britishcouncil.org/anyone-anywhere

Nevertheless, despite the breadth and ambition of these projects, our sense was that activities has been mainly responsive, and in isolation. We haven't been strategically promoting and engaging with art + science as a vitally important interdisciplinary field, and we haven't been exploiting our own collective interest, experience and knowledge, to foster and evaluate success, and to generate a legacy for these projects.

As a first step, we felt we needed to gather some information about art + science in the UK generally. And so we commissioned this paper, by artist Dr Kat Austen (who has a chemistry focused PhD https://katausten.wordpress.com/), to help begin to deepen our understanding of collaborative and interdisciplinary work in art + science.

It is primarily an overview of the field and key players, and a rapid, rather than comprehensive, analysis; its focus and perspective is of the arts. So it doesn't, for example, reference the science engagement programmes that the British Council supports (eg Famelab, https://www.britishcouncil.org/education/science/public-engagement/famelab Café Scientifique, https://www.britishcouncil.es/en/programmes/science/cafe-scientifique and science festivals (eg in Northern Ireland, Greece, Bulgaria). The brief wasn't to provide us with recommendations as to what we should be doing. But we hope it can help spark conversations that will lead to actions.

Whilst the report is primarily for us, please feel free to share it with interested partners.

Gary Thomas
Film Programme Manager, Arts
Adrian Fenton, Senior Consultant, Public Engagement and STEM Education, Education & Society
July 2019

AfterGlow (boredomresearch, 2016), shown at Artience, Korea

ART + SCIENCE RAPID ANALYSIS REPORT

DR KAT AUSTEN

Introduction

This report looks at the current state of art + science in the United Kingdom, and its international reach through British practitioners - practice that should be understood in the broader context of the history of 'art and science'.

To this end, a loose taxonomy of actor types has been developed, which is presented in Chapter One, with examples of influential or important projects, actors or organisations from the field. This is used to elaborate within different types of outputs in Chapter Two, where the current state of the art is highlighted.

A brief overview of the international reach of UK art + science is given in Chapter Three, with reference to British Council activities.

Art. And Science.

The philosophical and theoretical demarcation between art and science is hotly discussed in realms where these two camps are perceived to come together, sparked by the Two Cultures discourse, referencing C P Snow's now almost infamous Rede Lecture in1959 on science and art and their differences[1]. Snow argued that at this point in western society, intellectual life was being split into two polar groups: what Snow called "literary intellectuals", and the sciences, particularly physical sciences. These groups, he argued, had a curious, distorted view of each other, verging on dislike. This is where a lot of the discourse on Snow's Two Cultures ends - with the "dashing metaphor" that he was aiming for. But Snow himself admits to his model's limitations, and he moves beyond identifying what he perceives as an intellectual schism, to a discussion of its foundations or lack thereof. He shifts focus to the possibility of bringing together the two sides of this divide, to allow for cross-pollination that will be of service to society in practical, intellectual and creative terms.

Snow, from his 'Cambridge High Table' vantage point, confidently exclaims that "there seems to be no place where the cultures meet." That they are "in a vacuum, because those in the two cultures can't talk to each other."

However, Snow wasn't quite on the money here. While he could pepper his lecture with anecdotes from Cambridge, just down the road in London a space had been set up to encourage just those conversations: the Gaberbocchus Common Room, established in 1957 by Stefan and Franciszka Themerson, in the basement of the offices of the Gaberbocchus Press, the publishing company they founded in 1948.

http://www.themersonarchive.com/

In this interdisciplinary space, in direct contrast to Snow's view on the world, researchers from all walks of life came together to discuss problems from the perspective of multiple disciplines. The aims of the Common Room were similar to those of the Press: encouraging the formation of new ideas by bringing together anyone with an intellectual interest in the world. As Themerson wrote: "it seems that the artificial barrier dividing science from the arts is becoming obsolete, and it may be worthwhile to try to ignore it."[2]

There is a long history of intellectual development where the disciplines were not separated - Leonardo da Vinci being one glorious example of polymathic exploration of the world. Nevertheless, post Enlightenment there has been a gradual hyperspecialisation.

According to complexity theory, this hyperspecialisation is part of the predominant reductionist mode of knowing the world: "Intellectual divisions are clusters of shared themes, concerns, topics, methods and lineages, which often cross over or repeat themselves within various disciplines. At their most extreme, intellectual divisions (particularly when they are ignorant of each other) can lead to hyper-specialization and the creation of scholarly cul-de-sacs".[3]

https://en.wikipedia.org/wiki/Complexity_theory_and_organizations

So hyperspecialisation allows us to drill into just one question, one field. Hafferty and Catellani argue that hyperspecialisation may be a necessary evil of scientific enquiry but in isolation it doesn't make science - it's necessary to look at how this knowledge fits in context.

In an article on the Creativity Post blog, Dr Ben McNeil recounts how a lunch conversation with the Nobel Prize for Medicine winning immunologist Peter Doherty made him realise that hyperspecialisation is preventing researchers from being aware of each others' work. An ocean biogeochemist, McNeil had shared his recent publications with Doherty, but despite his interest in climate change, Doherty had found their style and language so alien that he couldn't engage in the content. He asked McNeil to explain his work in plain language over lunch. McNeil argues that different specialisations have developed different language specific to their field meaning that cross-fertilisation of ideas is very difficult - this is even within similar scientific disciplines and intellectual divisions, not just across disciplines.

http://www.creativitypost.com/science/does_hyper_specialization_in_science_stifle_innovation

This failure of communication and confounding of understanding across specialisations is a problem that philosopher Elijah Millgram likens to the Old Testament Bible story of the Tower of Babel in his book The Great Endarkenment: Philosophy for an Age of Hyperspecialization.[4] In the story of the Tower of Babel, guilty of hubris, humanity was punished by God - scattered them around the Earth and made to speak in different tongues, so they could no longer aspire to be beyond their place. Millgram argues that in our age of hyperspecialisation, the most pressing issue we face is that of social co-ordination.

In preparing this report it has become increasingly apparent that there are two situations in which art and science combine: those in which the combination is acknowledged and named as such, and those in which the combination happens quietly. Whilst this second situation is more difficult to track down, each has the potential to generate a synthesis of knowledge to create something new.*

And at their most interesting, art + science endeavours have been encouraged as part of an effort to redress these issues. They form part of a socially progressive movement - which includes citizen science, makerspaces, fablabs and hackerspaces - where disciplinary boundaries are often crossed and frequently ignored, to make the most of the wealth of knowledge amassed by our endeavours, often adding into the mix the element of human subjectivity.

Scope of this report

This report aims to provide a rapid analysis overview of art + science in the UK and the international context. The use of the terms "art", "science" and "art + science" can be understood as expressing general points along a continuum of intellectual engagement and activities, with the sole limitation that the scientific focus of the research overlapped only slightly with activities that could be better described as technology. The report endeavours to touch upon significant and representative activities in this wide-ranging remit and to create a typology of practice in this field; it is not intended to provide a comprehensive collection of all art + science activities.

CHAPTER 1

WHAT IS ART + SCIENCE IN THE UK

Art + Science is a burgeoning field in the UK, with practitioners at the forefront of international art + science practice. A taxonomy of types of activities and actors, presented in this chapter, has been developed to help navigate the varied types of activities that fall into this realm. This taxonomy is by no means definitive, nor is it the only way that these activities can be divided up. There are indeed activities and actors that overlap these boundaries, which gives a rather poetic truth to the structure of a report intended to represent a field that, in essence, defies boundaries.

An ever present spectre in any report about art and science is the discussion over the distinctions between art as "real art", art as "illustration of science" and art as "public engagement". The report references activities that represent art + science interacting in different ways:

- science as subject or aesthetic
- art as communicator of science
- art as sense-maker of science
- art as innovator
- art + science for new knowledge creation

This rapid analysis report is not the place to embark on further discussion in this vein - not least because most interested parties will have exhausted this particular mine thrice over at the many workshops, colloquia and symposia where it cannot be avoided, and because there are plenty of other resources that address the topic. See for instance the excellent Frank James's introduction to a special issue on the historical context of the Two Cultures debate as a starting point into these discussions.

https://www.tandfonline.com/doi/full/10.1080/03080188.2016.1223651

Present activities Main Types

Art + Science Specialists: Organisations, Producers and Galleries

There are now a number of organisations whose sole practice takes place at what we may call the intersection of art and science. Many of these organisations self-describe (or are described) as arts organisations, and some are well known for their focus on scientific themes and collaborations eg Arts Catalyst in London and FACT, Liverpool, have international reputations for their work. Arts Catalyst's programme supports participatory approaches, with researchers and artists connecting diverse fields of knowledge to synthesise art and science into socially relevant knowledge. FACT has a slightly more technological and pedagogical focus, but also explores philosophical and existential aspects of science, such as their No Such Thing As Gravity exhibition in 2017.

https://www.fact.co.uk/projects/no-such-thing-as-gravity.aspx?selection=Exhibition&when=previous

Other organisations include: Invisible Dust, Shrinking Space, Supercollider, CAST, Anna Ledgard, Cape Farewell

http://invisibledust.com/
http://www.shrinkingspace.com/
https://supercollider.github.io/
http://c-a-s-t.org.uk/
http://annaledgard.com/
https://capefarewell.com/

Other, different types of arts organisation readily embrace art + science outputs and practices eg Kinetica, the arts fair and museum, has a long tradition of showing artwork that could easily be categorised as art + science, for instance in the past it has shown Patrick Tresset's work Paul, Anna Dumitriu's work, and Jasmine Pradisitto's Quantum holographic sculpture.

http://www.kinetica-museum.org/

There are art + science organisations and spaces that identify more closely with science eg Science Gallery London, whose founding director in 2018 was Dr Daniel Glaser, a neuroscientist.

https://london.sciencegallery.com/

ASCUS Art & Science in Edinburgh, provides a joint platform for artists, designers and scientists to work together.

http://www.ascus.org.uk/

Artist residencies in Science Institutions

Science organisations also run artist-in-residence programmes and curate art + science exhibitions. There are traditional residency programmes, such as the Artist Residencies at University of Cambridge's Gurdon Institute in collaboration with Kettle's Yard art gallery (ongoing), the Artist in Residence programme at the MRC Laboratory of Molecular Biology in 2015-16, which culminated in the Home in the Service of Science events, which aimed at inspiring new understanding of the research carried out there. Approaching residencies from another direction, award-winning poet Simon Barraclough worked as Poet in Residence at UCL's MSSL for a year, where he collaborated with MSSL staff and students, helping them author and compile a collection of poems Laboratorio. The newly established biomedical research facility, Francis Crick Institute is a collaboration between Medical Research Council (MRC), Cancer Research UK, Wellcome, UCL (University College London), Imperial College London and King's College London has collaborated with artists from the beginning. It is currently running the Deconstructing Patterns exhibition, which includes new commissions from artists working with Crick researchers, looking at the study of patterns in both science and art. The Eden Project in Cornwall has run artist residencies in collaboration with transdisciplinary international laboratory FoAM around their programme Invisible Worlds, the outputs of which were shown as part of the Eden Project's exhibition of the same name throughout 2018.

https://www.gurdon.cam.ac.uk/public-engagement/expts-art-science
https://www2.mrc-lmb.cam.ac.uk/homeinsci/gallery-2/
https://www.ucl.ac.uk/mssl/news/mssl-news/mssl-news-q4-2015/laboratorio-poems
https://patterns.crick.ac.uk/
https://fo.am/about/
https://fo.am/invisibleworlds/

Hacker and Maker Spaces

Citizen and DIY Science overlap with arts through hackerspaces, maker spaces and fablabs. For instance MadLab (Manchester Digital Laboratory) is a grass roots space that opens up digital fabrication and coding to community members. They also foster and support science fiction and graphic novel writing, and DIY bio. Whilst many of these endeavours are more bottom-up, usually less strategic and more organic, flowing from the interests of practitioners who scramble for funding rather than from strategic allocation of funds and activities by large organisations. However, MadLab - and groups it hosts - collaborated on Pararchive, an open access community storytelling platform, funded by the Arts and Humanities Research Council (AHRC) and developed with other partners including the University of Leeds, Carbon Imagineering, the BBC and the Science Museum. This kind of cross-over is not unusual; grassroots hubs are often a hotbed of innovation, but require institutional collaborations to gain access to the majority of funding streams.

https://madlab.org.uk/about-us/

Pararchive was funded from October 2013 to March 2015. It has spun off (pardon the pun) into community storytelling platform Yarn, which is still active, codesigned with communities in Manchester, Bute, Stoke-on-Trent and Leeds. It organises components of stories - including information from institutional archives - as "passages" which can then be woven (pardon the pun again...) together to create a narrative.

http://yarncommunity.com/

Bottom-up Collectives

The Superposition began as an experiment to see if a pop-up lab space (ASMbly), supported by a series of evening talks and collaborative events, could foster art science collaboration to move beyond traditional forms of science communication towards a dialogue between art and science. In five years, Superposition has become a grassroots network which functions as a loose collective - of between 20 and 50 people at different times - and series of spaces for artists, scientists and makers to collaborate.

http://www.thesuperposition.org/asmbly2017/

Collaborations are often extended, taking place over a year or more, and leading to long-standing working relationships. The network acts as support and a way to engage collaborators for artists, scientists and makers, fostering a discussion of the role of the maker as a methodology to critically look at the art and science in projects that fosters dialogue between disciplines. Superposition is currently working on refining their experience into what could be considered as best practice for art + science, and a publication is forthcoming.

University Art + Science Programmes

The footprint of academia in the art + science space is large and growing. As interdisciplinary endeavours have been increasingly encouraged by funding bodies within the UK and Europe, there has naturally been a migration towards this in universities and research establishments. In recent years, however, there has been a more direct focus on embracing art + science specifically. Degree courses are offered, for instance Birmingham University which follows the US model where a Major is selected either from Arts and Law, Science or Social Sciences. University College London launched its degree in Art and Science in 2012, and offers core courses alongside modules from other degree programmes. Between 2010 - 2015, the University of Westminster ran Broad

Vision, an undergraduate research programme led by Heather Barnett, which opened up the opportunity of interdisciplinary research to undergraduates.

https://www.ucl.ac.uk/basc/about-us
http://broad-vision.info/
http://heatherbarnett.co.uk/

The University of the Arts London, Central Saint Martins, offers an MA in Art and Science, and works with many of the main players in art + science in London, including GV Art, Wellcome and Arts Catalyst. University College London is developing a Masters in Arts and Sciences to complement its undergraduate BASc programme.

https://www.arts.ac.uk/subjects/fine-art/postgraduate/ma-art-and-science-csm

Both the University of Birmingham and the University of Leeds offer Fellowship programmes that support interdisciplinarity. Short fellowships at Leeds' Cultural Institute allow cross-institutional access, and have been set up to allow for free exploration of ideas without pre-defined targets.

https://www.birmingham.ac.uk/undergraduate/courses/liberal-arts/liberal-arts-and-sciences.aspx
https://www.leeds.ac.uk/info/130553/cultural_institute/569/cultural_institute_fellows

The Cultural Institute also partners with cultural institutions in the region, through the fellowships, with Creative Labs, which pairs creative professionals and researchers along themes, and through the DARE partnership with Opera North, which supports research, skills development, collaboration and engagement, and bestows a yearly prize. DARE hosted the launch in 2016 of Culture Forum North, which has a focus on creating partnerships between the cultural sector and Higher Education in the North of the UK, and supports art + science research that puts cultural activities in the spotlight, such as the role of theatre in addiction recovery, or the role of culture in cities.

https://www.leeds.ac.uk/info/130553/cultural_institute/482/leeds_creative_labs
http://www.dareyou.org.uk/
http://www.cultureforumnorth.co.uk/case-studies/researching-role-theatre-addiction-recovery/
http://www.cultureforumnorth.co.uk/call-research-guide-future-culture-cities/

In 2017 the Royal College of Art's Systems Research Group took part in a collaboration with the Centre for Quantum Photonics at the University of Bristol and the V&A, in an Institute of Physics funded project to produce artworks with early stage quantum computers. The outputs include artworks by Systems Research Group tutor Libby Heaney that contain superpositions and entanglement - a proposition for creating art that is undocumentable, and indeed unobservable. This builds on a historic relationship between the RCA and IoP teaming art with physics both to create communication of the science - such as their 2014 Physics Happens in a Dark Place, new artworks, and new knowledge from bringing the two together.

http://systems.rca.ac.uk/about/
https://www.rca.ac.uk/news-and-events/news/rca-show-brings-complex-physics-to-life/

Artists working with Science, Scientists working with Art, and In-betweens

Often art + science work can arise from the work of one person rather than as a collaboration. For instance, the FinanceFolkstone project is driven by the vision of Economic and Monetary Historian Christopher Houghton Budd, and explores current urban regeneration in Folkestone, Kent, along with an exploration of economic and monetary life. Similarly, Chris Thorogood, Head of Science and Public Engagement at the Oxford Botanic Garden & Harcourt Arboretum, has, in summer 2018, published a book of his paintings of unusual flowers - an activity he pursues alongside his research into evolutionary genetics and plant taxonomy.

http://www.financefolkestone.com/
http://www.christopherhoughtonbudd.com/welcome/
https://www.plants.ox.ac.uk/people/dr-chris-thorogood

In this category, artist practitioners can also be seen to actively pursue collaborations according to their own interests. The beautiful work of Sadhana Dance is inspired by and intended as a route into science. Generated in collaboration with scientists from different disciplines, performances weave together classical Indian dance methods with a deep understanding of scientific and medical practices to create works as beautiful as they are meaningful. Similarly, immersive theatre groups such as Coney and LAStheatre have collaborated with scientists to turn visitors into participants of their immersive plays, sometimes with scientists as actors - as in LAStheatre's Deadinburgh, which created a zombie apocalypse in Edinburgh that prompted audience members to learn about epidemics by interacting with content and researchers from collaborating universities, including Edinburgh and Herriott Watt, in order to finally make an ethical decision similar to that faced by Derbyshire plague village Eyam - contain an epidemic for the sake of others, or flee in the hope of escaping it yourself.

https://www.sadhanadance.com/
http://www.lastheatre.com/portfolio/deadinburgh/

For Cast Iron Radio's Body of Songs project, musicians and animators collaborated with medical scientists to produce exciting new pop songs and animation. Composer Georgia Rodgers creates site-specific works by composing in view of acoustic science. An interesting example of musicians collaborating with scientists for the sake of the scientific output is the Sync Project - a US-based endeavour to develop music as a treatment for pain and sleep problems, which recruited British musicians Peter Gabriel and Jon Hopkins as advisors.

http://bodyofsongs.co.uk/
https://polarpatterns.wordpress.com/
http://syncproject.co/

Random International are a collaborative studio for experimental practice in contemporary art. Their work seamlessly interweaves scientific research and methods into the production of breathtaking and often interactive contemporary art installations both within the UK and abroad.

https://www.random-international.com/swarm-study-xiii

Artist filmmaker John Akomfrah creates moving and nuanced video installations that synthesise perspectives from the natural sciences, history and sociology, working with archive collections and natural history units. By synthesising different types of knowledge, aesthetics and footage that he creates and communicates new insights into the human condition. He has enormous global reach: his three-channel video installation Vertigo Seas was first shown at the Venice Biennale in 2015.

https://www.theguardian.com/artanddesign/2016/jan/25/john-akomfrah-vertigo-sea-bristol-arnolfini-london-lisson-gallery-auto-de-fe-the-airport-tropikos

Funding

The shape of art + science in the UK is greatly influenced by funders and their ambitions. With arts funding under strain, there has been pressure on the cultural sector to find economic value to cultural activities. A 2010 report for the Department for Culture, Media and Sport recommended that the cultural sector "articulate the value of culture using methods which fit in with central government's decision-making" - ie through its economic impact. A follow-on report suggested a more holistic view be taken on the value of cultural work[5] (Donovan, 2013). This may be in focussing more on public engagement (as discussed, for example, at the Engage! Symposium at the ICA in 2013), or by crossing over into the innovation space by allying with industry.

https://contemporaryartengage.wordpress.com/ica-symposium/

The Wellcome Trust has been one of the main funders specifically for art and science activities in the UK, and their focus has been influential in shaping the field's development. Wellcome, primarily focussed on health and medical research, has until recently explored these themes and their interaction with art. Art and science funds supporting production of artistic projects have been replaced by the Public Engagement Fund. The Trust has taken steps to explore this tricky intersection, for instance with workshops like their Art of Health workshop (for which I wrote the summary report) in Mumbai in 2016, which saw a vigorous discussion between different stakeholders about the role of art in relation to Wellcome's area of interest.

https://wellcome.ac.uk/sites/default/files/Art-of-Health-Mumbai-Wellcome-Oct2016.pdf

Other funders of note are the Leverhulme Trust and the Science and Technology Facilities Council who fund artist residency programmes. Arts Council England fund arts activities generally and art + science specifically (such as a series of events around Shelley's Frankenstein, and Mark Ware's collaboration with psychologist Nichola Street to explore the effect of nature on our internal states), and revenue support organisations including Arts Catalyst, FACT and Invisible Dust. Scientific funding bodies such as the Biotechnology and Biological Sciences Research Council (BBSRC), Medical Research Council and institutes such as the Institute of Physics also dedicate some funds to relevant art + science projects.

https://www.artscouncil.org.uk/news/art-and-science-fuse-celebration-bristol%E2%80%99s-cultural-history
https://www.artscouncil.org.uk/news/can-art-make-us-feel-better-how-art-reflects-nature-can-be-good-our-wellbeing

Finally, we turn our gaze onto those funding streams that look to innovation as the justification of art + science. Of these, the European Commission is one, with the ICT and Art programme as was, now named STARTS, focussed on knowledge transfer to industry as the goal of art combining with science or technology. This funding stream has touched the UK - for instance the pan-European project WEAR Sustain which explores e-textiles and sustainability has two UK consortium partners. The AHRC runs the Science in Culture programme, which includes creative industries research that identifies opportunities for industry.

http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-32-2018.html
https://wearsustain.eu/consortium-partners/
https://www.sciculture.ac.uk/

CHAPTER 2

ART + SCIENCE CURRENT PRACTICE

Forms of output

Exhibitions, events and performances

Groundwork, is a three year programme by CAST (Cornubian Arts & Science Trust) that has brought a selection of excellent art + science projects, alongside more traditional art projects to Cornwall. In the summer of 2018 the final exhibition displayed many compelling examples of the state of the art in terms of art and science - creating works of beauty that also prompt new questions or hint at new knowledge. The programme includes two video works by Andy Holden, which focus on the lives of birds, created in collaboration with his ornithologist father, first shown during his Natural Selection exhibition, commissioned by Artangel. A new video work by art + science duo Semiconductor, produced after visits at the Goonhilly Earth Station, was juxtaposed with Simon Starling's Black Drop, which explores the relationship between astronomy, photography and the beginnings of moving image technology.

http://www.groundwork.art/
https://www.artangel.org.uk/project/natural-selection/

London LASER (Leonardo Art Science Evening Rendezvous) was a regular meeting bringing together people working in art + science, now reborn as London LASER Labs at Central Saint Martins, convened by MA Art and Science students. Between 2014 and 2017 it held 23 sessions featuring some of the UK's leaders in art + science, alongside visitors from further afield, including curators Christian de Lutz and Regine Rapp from Art Laboratory Berlin, and artist Kuai Shen, originally from Equador.

http://www.londonlaser.net/archive/

Festivals are one place where projects of all sizes can gain public awareness. Music festivals now frequently host science communication events alongside their usual programme. Of the many science communication endeavours that cross over into the realm of interactive art, a leading organisation at festivals and museums is Guerrilla Science. Now based in London and New York, they have created a distinct aesthetic that crosses interactive art and immersive theatre with scientific demonstrations.

http://guerillascience.org/

Under Her Eye at the British Library was an event and exhibition organised by Invisible Dust in June 2018 to explore the intersection of art, feminism and climate change. With author Margaret Atwood heading up an impressive line-up of researchers and practitioners, the event was important in prompting dialogues between the disciplines and sectors on a theme-based basis. Public events such as this, sometimes teamed up with exhibitions, tread the line between intellectual engagement and entertainment / public engagement. Indeed, in the realm of art + science, these boundaries are permeable and ephemeral - and any attempt at taxonomy must embrace this as an integral part of this burgeoning field.

http://invisibledust.com/project/under-her-eye-women-in-the-art-and-science-of-climate-change/

Online
The Extinct.ly platform was launched at the Serpentine Gallery's Extinction Marathon, in London, in 2014. The project, built on the initial concept "Ongoing Collapse" by London-based designer and artist Tobias Revell, documents extinction events around the globe, and projects from all disciplines aimed at averting collapse. It was a cutting edge commission aiming at creating online artworks that synthesise art + science.

http://extinct.ly/

A more recent example with a completely different approach is We Need Us by Julie Freeman, a fascinating web-based artwork that comments on citizen science as a practice by creating a live interface to the metadata generated by activity on the Zooniverse platform.

http://www.weneedus.org/

Workshops and participatory research
Participatory research workshops that synthesise art + science create new perspectives and knowledge. The Earth Addiction workshop at Furtherfield, by Martin Howse and Jamie Allen, explored the boundaries of addiction and how as a phenomenon it can be applied to our relationship to what we often consider to be environmental resources. By discussing, researching, and enacting Earth addiction, the process shed light on environmental relationships and insights into addiction from multiple perspectives.

https://shiftregister.info/
https://www.furtherfield.org/

In a similar vein, Arts Catalyst's programme often combines citizen science and artistic research to create new understandings. Their Test Sites series focuses on multi-disciplinary and participatory explorations of three specific sites around the UK (to which I contributed in the Calder Valley, alongside Ruth Levene). A workshop with Tom James, focuses on learning skills as speculative design - in this instance how to collectively generate low-cost, off-grid gas in the event of Russia "turning off the gas".

https://www.artscatalyst.org/test-sites

Artistic research meets scientific research
Artistic and interdisciplinary research can push deeper into self-reflection of art + science practice. A conference by the Society for Artistic Research, based at the University of Plymouth, explored the theme Artistic Research Will Eat Itself, with presentations and workshops blurring the lines of research between art and tech/sciences through pursuit of knowledge-making. Ralo Mayer's work Space: Unsettlements (presented as Extra-Terrestrial Ecologies: the Astronaut, the Robot, the Alien as Retroflectors) synthesises insights from science with speculations from science fiction to explore our relation to ecologies both in outer space and on Earth.

https://sarconference2018.org/
http://was-ist-multiplex.info/

At the same conference, a panel discussion (Artistic Research Inside/Outside the Academy: Communal, Resistant, Spontaneous & Becoming) explored filmmaking as a means to research. Filmmaking has been used as a research tool and as a research output by pioneering practitioners David Carless and Kitrina Douglas[6] , who report that moving beyond the medium of text allows them not only to capture new insights, but also to convey them beyond what is possible with traditional scientific publishing.

And finally, an example where art + science research has led to innovation in business. Sensory Spectacle is a business established by a graduate of the Central Saint Martins MA in Art and Science, Becky Lyddon. Her dissertation project focussed on people with autism and how they interpret the world. Lyddon went on to create interactive, experiential works that echo how those with autism experience the world. Her business now offers workshops bringing together researchers, artists and practitioners to learn how better to connect with those who have sensory processing difficulties.

https://www.sensoryspectacle.co.uk/

CHAPTER 3

UK ART + SCIENCE INTERNATIONALLY

International borders are somewhat permeable to transient and itinerant artists, who collaborate, exhibit and perform internationally. Whilst this report does not focus on internationally based British artists (one of the most noteworthy being Katie Paterson, now based in Berlin), most of the artists highlighted above have an international profile within the art + science community.

http://katiepaterson.org/

British art + science organisations have a solid reach outside of the UK. FACT has a long-standing relationship with Arts at CERN on the Collide residency. Their programme also reaches to China, where earlier this year they presented Unfold in the Minsheng Art Museum. The Wellcome Collection is highly influential internationally, and has supported, for instance, the successful Dharavi Biennale collaborative art project in Mumbai co-directed by Nayreen Daruwalla from NGO SNEHA (Society for Nutrition, Education & Health Action) and David Osrin, a global health researcher and Wellcome Trust Senior Research Fellow based in Mumbai and a Professor of Public Health at University College London.

https://www.fact.co.uk/news-articles/2017/12/2018/01/fact-and-arts-at-cern-announce-third-collide-international-award.aspx
http://www.dharavibiennale.com/

Arts Catalyst now focus their activities closer to home, but they have previously worked globally on critical questions at the art + science nexus and their reach still extends beyond the UK – are hosting Mongolian artist Tuguldur Yondonjamts as artist in residence. Rob La Frenais, previously curator at Arts Catalyst, is now a visiting research fellow at Emerge, the experimental media research centre at the University of Bournemouth, and has an extraordinary reach internationally, including most recently curating alongside FACT No Such Thing As Gravity, presented with support from the British Council in Taichung, Taiwan.

https://research.bournemouth.ac.uk/centre/emerge/

This is not unusual, however. British curator Hannah Redler Hawes, who previously headed the arts programme at the London Science Museum, now works with the Open Data Institute and Science Gallery London, is part of the Hybrid Bodies Project, a Canada-based multi-disciplinary initiative researching the experience of organ donation recipients and donor families, which aims to improve their experience. The team are developing an ongoing series of conferences and exhibitions. The project brings a sensitive and creative approach to a complicated, embodied experience that touches on the very essence of life, death and self - a field in which art and science together have the potential to make very beneficial advances in our understanding and practice.

https://theodi.org/person/hannah-redler/
http://www.hybridbodiesproject.com/

British Council activities

The British Council itself promotes diverse, interesting art + science projects that bring to the fore in an international arena the excellent work done in Britain in this field. British Council Indonesia commissioned Leeds based artistic collective Invisible Flock to collaborate with the Indonesian organisation Digital Native to create the interactive sensory environment Nada Bumi (Earth Tones) across Indonesia for 10 days. The project brought together data and sensing with felt and lived experience, and storytelling, to create a unique way of augmenting sites in extreme environments in the country.

http://invisibleflock.com/portfolio/nada-bumi/

As well supporting collaborative commissions, the British Council supports activities that bring UK art + science to other countries. British Council Peru brought cutting edge artists and art + science practitioners to Peru as part of their Radar Creativo programme, giving an opportunity for the community to interact with visitors in a conference or at workshops. Although focussed on art and digital technologies, the selection of artist and researcher Libby Heaney introduced quantum physics to the mix. Heaney also travelled to Spain for a collaboration with Sonàr +D and Somerset House to present the same project.

https://www.britishcouncil.pe/en/radar-creativo/radar-creativo-phase-2-november-2017

The British Council's UK-Korea Creative Season 17-18 including an Artience strand. In partnership with Daejeon Cultural Foundation, this included an exhibition of six animator/scientist collaborative films made for Animate Projects' Silent Signal project. Silent Signal artist Vicky Isley (boredomreasearch) and scientist Dr Bentley Crudgington mentored student participants in 30 hour Science-Art creation workshop challenge. Artience was a collaboration between British Council Korea's Arts and Education & Society teams.

https://www.silentsignal.org/
http://boredomresearch.net/wp/
https://animalresearchnexus.org/people/bentley-crudgington

The interactive project the Cave of Sounds, which was presented by the British Council at Technopolis in Athens, is a collaborative music making installation designed by an artist with a background in mathematics, Tim Murray-Browne.

https://www.britishcouncil.gr/en/events/cave-of-sounds

CONCLUSION

In this brief, broad foray into UK art + science we can see that it is indeed a burgeoning field, with a strong core of established praxis at the centre, and with unlabelled, unexpected actors at the periphery.

Locational exclusions have already been mentioned. Thematically, the focus has been art + science, where art takes various forms and science largely excludes technology. Not included are some very admirable and interesting projects in the realm of technology such as Abandon Normal Devices festival or architecture. Tom James (see Ch. 3) is part of Spacemakers, a "utopian urban regeneration agency" who make real-world projects come by ignoring barriers to disciplines, knowledge-making, knowledge-using and agency. They join Turner Prizewinners Assemble in the list of artists intervening in urban spaces across disciplinary boundaries, to the benefit of cities.

https://www.andfestival.org.uk/
http://www.spacemakers.info/
https://assemblestudio.co.uk/

As detailed in the introduction, art and science can interact or intersect in different ways. Like the interpersonal relationships upon which collaborations are necessarily built, relationships between disciplines require navigation of diverse aims and goals, values and philosophical frameworks. The dimensions of interaction can been from creation of beautiful artworks, to the facilitation of new science, to the communication of one or the other. Judging success of these endeavours cannot be done by a universal set of rules, first because their objectives vary wildly. They may be assessed on their aesthetic value, their emotional content, the new knowledge they create, the engagement they generate with the public, or even by the enthusiasm of their creators.

As yet, there has been no longitudinal analysis of art + science collaborations nor their impact within and beyond the collaborators.

The ongoing Norwegian climart project aims to understand the impact topically related visual art on public perceptions of climate change, and commissioned British artist Michael Pinsky to creation Pollution Pods, which confronted the visitor with high levels of common atmospheric pollutants in biosphere-like pods.) Interesting would be a similar, broader study to explore the impact on public perception of themes commonly approached by art + science in the UK, such as microbiology, climate change and pollution.

https://www.climart.info/
http://www.michaelpinsky.com/project/pollution-pods/

Although the British Council has yet to formalise an approach to its work in art + science, a snapshot audit indicates a considerable, and fruitful, blurring of the boundaries between art + science and science communication.

Data on the demographics of art + science activities in the UK are not available, and a study into the demographics of the UK art + science professional practitioners is needed to inform policy and strategies to increase inclusion and diversity.

But whether or not projects succeed achieve their objectives, the bringing together of different world views and diverse knowledge-bases has the potential to enrich both the practitioners and their practices.

References

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