THE FUTURE FOR THE FUTURE: WHAT LIES AHEAD?

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The Culture Academy (CA) champions the development of the next generation of Singapore's cultural leaders in the public and private sectors. CA's work focuses on 3 inter-related areas: Leadership and Capability Development, Research and Scholarship, and International Partnerships, which cut across all of CA's strategic priorities.

Notes

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PREFACE

THE FUTURE OF CULTURE

As the world becomes increasingly globalised and inter-connected, paradoxically, it has also become more polarised. Across businesses and sectors, there is a need to be able to capitalise on the opportunities brought on by the fourth industrial revolution, while simultaneously adapting to emerging challenges.

The culture industry is no exception. The future of culture depends on whether cultural institutions can remain nimble and agile in understanding, foreseeing and preparing for challenges and opportunities. But how will the sector respond to new trends? What will the operating environment be like, and what practices will remain relevant? What skills will cultural institutions need to prepare for, in order to remain an integral part of future society?

It is these questions that the Culture Academy's fourth annual thought leadership conference sought to address. This publication provides an overview of the issues discussed at the conference, and shares expert opinions on how cultural institutions can respond to innovation and digitalisation, as well as their perspectives on what communities of the future will look like.

The future, according to keynote speakers Dr Geoff Mulgan, Chief Executive at the National Endowment for Science Technology and the Arts (NESTA) and Ms Roh Soh Yeong, Director, Art Center Nabi, is no doubt one where technology becomes an indispensable part of life. This rapid digitalisation will not negate but enhance the role of arts and culture.

Ms Roh, whose essay detailed the banes and boons of an algorithmic world, lamented how the advancement of technology has in many ways created an "algorithmic society" and reduced complex human processes to mere formulas. Art, therefore, may be the key to transforming technology into a tool that serves humanity. In the same vein, Dr Mulgan reflected on the importance of arts and culture in society. He noted that the demand for creative roles, which permeate all sectors of the economy, has increased over the years. He shared NESTA's predictions that skills like problem-solving and deductive reasoning would likely to be highly sought after by the year 2030, and made the case for how education must prioritise creativity and give young people the space to imagine and create.

Dr Mulgan recommended that arts policy, which has been used over centuries to protect heritage and promote nation building or community development, just to name a few, shift in tandem to accommodate new trends. This can be done by exploring new methods of funding the arts, including through impact investment and having more support for entrepreneurs to harness the potential of digital tools.

After all, the potential of technology is limitless. In his experience at NESTA, he saw it go beyond creating new art forms and methods of building audience relationships to also opening up new ways of understanding the patterns and dynamics of the creativity economy.

Yet, using technology effectively is hardly as simple as just buying solutions off the shelf, Dr Noah Raford, Chief Operating Officer and Futurist-in-Chief at Dubai Future Foundation cautioned. Rather, he posited that the tremendous potential of audio-visual equipment and ICT innovation has brought about equally high pressure to engage audiences in new ways. In his experience, the most interesting innovations are never just extensions of status quo, but categorically entirely different. Using examples of several categorical innovations in the culture sector, he shared his take on how "modernisation" can take different forms.

There is also the challenge of making one's message heard, especially in light of the overwhelming amount of data and choice that we are faced with in the modern world. Noting the difficulties that organisations may have connecting with their desired audiences, Mr Nicholas Pan, Managing Director, Strategy & Commerce at VMLY&R Asia, put forth a compelling argument for the need to create not just better content, but also to ensure this is delivered through the right formats. This, he reiterated, would require a mix of both creativity and technology.

Ms Stephanie Winkler, Director (Research and Insights) of VICE Asia Pacific, supported this view. Her essay adds to the conversation by addressing some difficult questions: Will our addiction to technology have positive impacts on our sense of community? Are we doomed to be lonely? In doing so, she explored how brands and creatives can build authentic connections, especially with Asia's diverse youth audience.

Ms Lee Casey, Head of Communications and Engagement at the Science Gallery Melbourne (SGM), also provided a compelling argument for the importance of collaboration in the future.

Her story is an insightful one, about how she worked with digital natives to develop a gallery able to inspire youths to contemplate on relevant themes about Artificial Intelligence (AI), facial recognition software, mental health and human relationships.

A similar theme of being audience-centric is brought up again when Miss Tisa Ho, Executive Director of the Hong Kong Arts Festival, traced the evolution of the art scene over time. Using the field of classical music as an example, she eloquently detailed how the separation of professional artists from amateurs first began, and subsequently, led to the separation of artists from audiences.

She shared how this has shifted in recent years with the creation of education departments in orchestras and concert halls, the promotion of classical music across different social classes, as well as the decentralisation of music halls from the heart of cities, all of which place emphasis on educating the audience just as much as the artist.

The implication is that the long periods of peace and prosperity we have enjoyed, has drawn us away from the chase to accumulate more objects, and towards a desire for meaningful connections and experiences—something that may only increase because of the isolation caused by the pandemic. In response, the arts scene is likely to evolve to support more audience participation and co-creation. It will, perhaps, pivot away from an artist-centric thinking, in favour of a more audience-centric approach.

In fact, examples of this are already taking root across the globe, as seen in Mr Gene Tan's piece on bringing to life the 2019 festival, From Singapore to Singaporean: The Bicentennial Experience. As Executive Director of the Singapore Bicentennial Office, he shared his three-year journey of conceptualisation that cumulated in a multi-sensory experience displaying Singapore's history of over 700 years in an immersive, cinematic and emotionally provoking display.

His experience showed that technology although necessary, was insufficient to secure the success of this exhibition. Rather, it was the devoted interdisciplinary team of film makers, artists, theatre directors, scriptwriters, and animation artists, who each brought their expertise to the table, that was pivotal in ensuring success of the festival.

The future of culture is a story yet to be written. Yet if the perspectives of these essayists offer even a glimpse of what is to come, we can be assured it will be a bright one. As innovation permeates through society, those in the arts, culture and heritage sectors remain wellpoised to leverage the resources available, to close the gaps in an increasingly polarised world and bring meaning to future societies.

THE FRONTIERS OF ARTS AND CULTURE POLICY

Dr Geoff Mulgan

Professor of Collective Intelligence, Public Policy and Social Innovation at University College London

There have been tremendous changes in the arts and cultural policy over the decades. In the sixties and seventies, arts policy referred to pre-modern art forms and state subsidy, and there was little interest in how the arts and the economy could overlap. The first cultural strategies were only developed in London in the 1980s, when the need arose to broaden the scope of arts policy to include modern media and art forms like video, film, music and digital work.

As part of the pioneering team, I wanted to see art engage more directly with businesses, and saw opportunities to apply new tools for policy. This included but was not limited to using equity, loans and grants, and by bringing some strategies used in the industrial sector to areas like recorded music. In the 1990s, cities began to view creativity as an engine for growth, leading to the development of "creative city" strategies. Together with Charles Landry, Peter Hall and a few others, I embarked on the creation of a network of creative cities. Then, the interest was in how cities could create clusters and hubs for what were rapidly growing creative industries some of these ideas were popularised and promoted by figures like urban studies theorist, Richard Florida through the 2000s.

My most recent involvement in arts policy was through Nesta, the UK's National Endowment for Science Technology and the Arts, where I served as CEO from 2011 to the end of 2019. This essay shares my experience at Nesta and explores how the organisation was able to push the frontiers of culture policy through research, funding, and experiment. It will describe new research on the relationship between the arts and the creative economy, and examine new ways of organising research and development in relation to the arts. Examples of innovative methods that have been used to organise finance for the arts will be discussed, along with the approaches to managing the growing capacity within arts organisations, and the priorities for the future.

Purposes and methods of art policy

The following is a list of how arts and culture policy has been used over the years:

- Nation building: most commonly done through literature, folk, radio and in modern times, also TV.
- Ideological promotion: this is most prevalent in communist countries, but has also been used at various points by other countries to spread desired values.
- High art for art's sake: this is reflected in subsidies for opera, theatre, music, and literature. It is usually also focused on big cities and elite audiences.
- Promoting social capital: this encourages amateur engagement in theatre and music, and usually has a much broader geographical spread.
- Protecting heritage: policy focused on buildings and districts.

- Promoting individual or group expression, and agency.
- Community development: primarily in urban areas and often where there have been economic problems or conflicts.
- Creative economy growth: this is a growing area of interest as the scale of the creative economy and in turn export earnings have become more apparent.
- Technology frontiers: linking arts policy to other digital strategies. This ensures the arts have a presence at the leading edge of emerging technologies.
- Happiness, social cohesion, belonging: when arts policy is used to promote wellbeing.

To achieve these extraordinarily diverse goals, governments have employed an equally diverse range of tools which still remain in use today:

- Grants for amateurs (a major focus of the precursor of the Arts Council in the UK, for example)
- Grants for professionals, whether for individuals or for groups such as orchestras and theatre companies
- Using buildings, both iconic & catalytic, from galleries to community centres to serve as access points

- Promoting culture in schools, universities, art colleges
- Funding festivals, carnivals, and other public events
- Funding events, bursaries, and productions outside the nation
- Using planning and other policies to promote clusters and districts, usually in inner urban areas
- Using money in different ways including but not limited to bursaries, grants to equity, loans, crowdfunding
- Promoting new business models such as hybrids and micropayments
- Supporting administration, entrepreneurship, and digital skills in the sector
- Promoting export/trade, sometimes linked to national branding exercises
- Promoting intellectual property law
- Investing in R&D
- Developing measurement tools for things like cultural value, social value, and economic value, which can support the case for more funding
- Mobilising data to map and visualise patterns

The sheer diversity of these tools already points to the complexity of this field, demonstrating how far it has come from its existence as simple grants programmes around half a century ago.

Research and data

Today, there is far more research and data dedicated to understanding the dynamics of the creative field. This includes the study of the relationships between subsidised arts and the broader creative economy.

Since the late 1990s, the UK has become increasingly interested in the interactions between the arts and sectors like advertising, architecture, antiques, crafts, design, designer fashion, film, interactive leisure software, music, performing arts, publishing, software, television, and radio. These, according to a government report by the Department for Digital, Culture, Media and Sport (DCMS 2001), have origins in individual creativity, skill and talent, and bring immense potential for wealth creation through the generation of intellectual property.

A team at Nesta, helmed by Hasan Bakhshi, conducted a more detailed analysis of the creative economy. This focused on job roles that are predominantly creative and included new industries—like the market for video games, which has rapidly overtaken the film industry in scale (Higgs, Cunningham and Bakhshi 2008). Their data indicates that the UK creative economy employs 3.2 million people. Of these, approximately 1.2 million work in creative occupations outside the creative industries, while around 1.1 million work within the creative sector. Employment for creative roles, whether in or out of the creative industry, grew at a faster rate than the workforce as a whole.

Other studies only further support the importance of creative roles. For example, another 2015 Nesta study (Osborne, Frey and Bakhshi 2015), found the creative sector was partly protected from the threat of automation, with 86 per cent of the "highly creative" jobs in the US, and 87 per cent in the UK, at no or low risk of being displaced by automation. Also, a 2019 study (Bakhshi, Djumalieva and Easton 2019) which analysed millions of job advertisements to find the changing patterns of demand, found that creativity was the best predictor of an occupation's chances of growing.

Together, this data proves that it is important for education to prioritise creativity and give young people the chance to imagine, invent and create. It also reinforces the growing importance of certain kinds of skills and attitudes, providing reasons for why schools need to provide broad project-based learning that fosters the acquisition of skills, rather than relying on memorisation for knowledge transfer. The skills that we believe will be in greater demand in 2030 are as follows (Schneider and Bakhshi 2017):

- Judgement and decision-making
- Fluency of ideas
- Active learning
- Systems evaluation
- Originality
- Learning strategies
- Deductive reasoning
- Complex problem solving

Looking to the future, I hope that there will be more imaginative use of new data sources to better understand the complex links between creativity and education, in the economy as a whole, in the creative industries, and in the more narrowly defined arts.

R&D and Experimentalism

Nesta has been involved in running and designing experiments in many fields, from business support to education, and continues to promote it as a tool to support policymaking. For example, a survey (Hopkins and Laurence 2020) aimed to close the gap in arts policy by documenting all the experimental tools that governments and others could use to study it.

Nesta understands that many artistic activities involve a level of experimentation and R&D, but we remained particularly

interested in systematic R&D around emerging technologies like Artificial Intelligence (AI), Virtual Reality (VR) and Augmented Reality (AR). We found very few precedents for systematic funding for R&D, and there was often little knowledge in the arts world about how to design experiments that could generate more general knowledge.

This led to the set-up of the Digital R&D Fund for the Arts, jointly funded by the Arts Council and Arts and Humanities Research Council and run by Nesta. It brought together arts organisations, tech firms and researchers to test out new uses of technology—at times to improve the audience relationship and raise revenues, but also to advance art in itself.

Over 50 projects were supported covering a range of fields, from the different uses of mobile phones to data, and with many looking at potential new business models. One project brought old statues to life across the UK by offering people a chance to scan a QR code to activate a voice recording from actors. In another project, the Holocaust Museum captured the memories of holocaust survivors in holographic format for а areater interactivity. There have also been projects using haptic tools so theatres can increase accessibility to those with visual or hearing impairments.

It will take more time to persuade the main arts funders to make R&D a normal part of their work, but the programme did channel a significant amount of funds to support R&D for immersive technologies. It also marked the first time that the arts had been properly integrated with R&D in technology, and paved the way for a programme called the "Audience of the Future" with Punchdrunk, the Royal Shakespeare Company and others.

New forms of finance

Arts finance has been surprisingly lacking in innovation in recent years. Despite my attempts to set up funds to invest equity and loans in arts organisations through the city government of London, arts funding over the years has still taken the form of grants, and while other fields had moved ahead—notably through social finance and impact investment—the arts have been left behind.

In 2014, I collaborated with Hasan Bakhshi for a paper that described a range of new types of finance that at the very least warranted experiment (Bakshi 2014).

This diagram summarises how we believe the money from an art impact fund can be used.



Figure 1. An arts impact fund can bring together philanthropic and commercial investors to provide loans, leading to the development of an accelerator for startups. It will allow for several different crowdfunding projects and perhaps also the development of an R&D fund for the arts. 2014. Image courtesy of Nesta.

The amounts remain relatively small compared to the mainstream of arts finance, but they show how money can be made to go further. The latest fund was announced in March 2020 with £20m in funding for investment.

Skills and capacity

The next strand of work focused on growing skills and capacity. The goal was to help the arts sector better understand the big changes underway in technology, business and society and assist with specific adaptations like digital transformation.

For the Arts Council, Nesta produced a horizon scan of the next few years of culture looking at possible changes to technology, business models and audience demands (Armstrong et al 2018). This was designed to help conversations with arts organisations think through how they could best be prepared for likely changes. A regular Digital Culture survey provided hard data on how well arts organisations were using data tools and other technology. This data was fed into training programmes to fill the gaps. The latest one (Bandopadhyay 2020) showed a complex picture, with many organisations less confident in the use of digital tools to strengthen audience relationships and more risk averse in experimentation.

We also created the Creative Enterprise Toolkit to help artists and others become entrepreneurs. This has been translated into many languages and used in a diverse range of countries like Russia and Brazil. We believe creative people may need only a little help with basic skills in things like marketing or financial management to become much more successful.

So, what lies ahead?

As we started by suggesting some of the changing goals and means of arts policy, it only seems appropriate to end by wondering about some of the possible paths to take in the future.



World Happiness Report 2019

Figure 2. Factors that affect how different countries rate their happiness. 2019. Image taken from the *World Happiness Report 2019*.

One factor which could have a big impact on the future of arts is the growing interest in happiness. As this chart shows, the world is becoming better at measuring happiness, and better at understanding what influences it. Studies conducted on the world's happiness posed the question: "If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?" This answer contributed to 34 per cent of the wellbeing score—more than income (26 per cent) or healthy life expectancy (21 per cent) (Helliwell, Layard and Sachs 2019).

Cultural policy could play an important part in this space, as at various points in the past it did prioritise strengthening community, horizontal bonds and feelings of belonging. This has only become less prominent in recent years. What would policy look like if wellbeing was a priority? As it is the making of art or music, not the consumption of it that drives wellbeing, it is likely that one effect would be a renewal of support for the mass involvement in the production of culture.

Another issue is time. If life expectancy continues to rise, and working hours continue their very long-term decline, the implication is that billions of hours may be liberated for creativity and the social economy. If so, what follows? Would this put a higher premium on mass involvement in creativity and turn libraries into centres of production rather than consumption?

Although I will refrain from offering any overall conclusions from this survey of the state of the field, I end with the hope that the challenge to arts policy is clear to all. There is a need to accept the pluralism of goals and tools that will become relevant at different points of time, to keep an eye on the cutting-edge technologies and art forms, but also to hold onto the many aspects of the arts that change at a slower rate—if at all.

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POST-ALGORITHM: ART AND LIFE IN THE AGE OF AI

Soh Yeong Roh Director Art Center Nabi

Skills and capacity

Algorithms are prevalent in all aspects of our lives, be it in our institutions, bureaucracies, or even in our computers. They are also not new; artefacts suggest they have been dictating religious rituals and ceremonies since the start of civilisation. Arguably, algorithms have existed as a crucial component of human society since humans began living together, and are embedded in our customs, ethical codes, and laws.

But what is an algorithm? It is a procedure or a set of rules for problem solving. In mathematics and computer science, an algorithm is a finite sequence of well-defined, computer-implementable instructions. It comprises a series of components, and a set of certain rules that govern them. These components are settled in a framework called modularity. Algorithms take in input, follow the procedures, and produce the results automatically, without disputes or controversies. Because of the modularity, algorithms can easily be standardised. Like blocks of lego, they can be used repeatedly, combined and layered. This allows the same formula to be used more than once, allowing algorithms to generate volumes of new information about the world.

A world created by such standardisation is what we call the algorithmic world.

Many good things happen in the algorithmic world. As algorithms bring order to chaos, they allow for resources to be deployed in proper ways so civilisations can form. Algorithms also dictate how we should behave in public in fact, schools prepare us for such an algorithmic world by teaching us things like how to keep time, wait in queues, and do assignments.

The algorithmic world has progressed and prospered in line with humanity's pursuit of efficiency, and some might even say that algorithms have developed in tandem with our pursuit of happiness. After all, with algorithms, we have been able to reduce hunger and extend our life expectancies. It has enabled many services in our lives to grow in quantity and fall in price—and while the economy grows fast, algorithms grow faster.

Problems in the algorithmic world

However, the algorithmic world has its dark sides as well. This opacity of algorithms is ever-increasing as we move from simple societies to the modern world where knowledge and expertise are specialised. In this concealed algorithmic world, life is not transparent. Obtaining the information about the system is difficult, if not impossible.

A major question is the "black box" problem: if we do not know which algorithms control us and how they work, how do we participate in the decisionmaking process?

While opacity is a serious challenge in itself, what is even more problematic is that it makes us passive. After all, if we do not understand the decisions made by the system, then we cannot reflect on them. We will not take responsibility for the outcome and this "thoughtlessness" can lead to "banality of evil" (Arendt 1963), meaning that that in the process of following rules we think are familiar, we may unwittingly inflict terrible things on someone else's lives or on our own.

While political leaders and specialists make algorithms for us, we have no way of knowing that what they make is what we want. After all, what guarantees that their objective concurs with ours? This has been the persistent problem of representative democracy and bureaucracy—in addition to the "black box" problem, there is also what some computer scientists call a "value alignment" problem, all of which diminishes the attractiveness of the algorithmic world.

The third problem with the algorithmic world is how it treats outliers. To understand, just think about your school days and how punk kids were treated by the authorities. No matter how much fun they had, those outliers were cast aside. Many of those misfits later become artists and entertainers, and in some scientists cases even great and entrepreneurs who changed the rules of the game. They rejected the prevailing algorithms, and the algorithms rejected them in return. The result was unpredictable-some ended up in jail while others became superstars.

In some ways, the algorithmic world of modernity is as Foucault says, a "prison with panopticon" (Foucault 1977). When we are imprisoned, we internalise the algorithms, and follow the rules voluntarily even in the absence of coercion.

How AI deepens the problems of the algorithmic world

The advent of Artificial Intelligence (AI), or machine learning to be precise, intensifies the problems of the algorithmic world. Opacity vastly increases with rising complexity of AI's decision-making structure. It is practically impossible to know, let alone to reflect on, how a certain outcome is made through algorithmic procedures.

Biases in data are inscrutable as well. Even though we know they exist, we have no idea how large and skewed they are, and we do not know how to correct them. Furthermore, inherent biases in algorithms themselves are virtually undetectable except by AI experts. The "black box" in machine learning algorithms has become so large that it makes us humans feel small and impotent. Ironically, this feeling of impotence makes us rely on the machine even more.

But this begets the question: How can we be sure that the objective of the algorithm aligns with our goal? Stuart Russell illustrates this dilemma with what he calls the King Midas Problem (Russell 2019). "Suppose you ask your AI robot to go and fetch you a cup of coffee quickly," he says. "Your robot will rush to the Starbucks next door and knock out all the people in the queue to get you that coffee." How can you specify all the possible scenarios that can happen in the real world when fetching a cup of coffee? Though the robot has algorithms learning installed. deep

the mistakes it makes until it is properly trained could be costly. As a solution for this value alignment problem, Russell proposes "provably beneficial AI," which consults humans at each decisionmaking stage. This is an emerging concept among researchers.

The challenge comes when on one end of the spectrum there are somewhat obtuse humans who do not always know what they want, while on the other end, there is a super-efficient computer that is ready to execute any command thrown at it. This combination of the two is worrisome as it may result in the algorithm not just performing the wrong actions, but also at the speed of light and on a planetary scale. Moreover, like the commonly used ethical dilemma of the trolley problem, many problems in the real world do not have a single right answer or solution we can conveniently engineer.

The underlying rationale for modern algorithms maximisation. is utility This is a concept that originates from utilitarianism, In utilitarianism, the pros and cons are weighed for a cost-benefit analysis and the path chosen is the one that brings about the maximum wellbeing or happiness for everyone. In machine learning algorithms, however, utility maximisation is reduced to cost minimisation, or a minimisation of errors. Only half the story is told, because cost minimisation is necessary but not sufficient for utility maximisation. In other words, although it may improve efficiency, cost minimisation does not always lead us to maximum wellbeing or happiness.

The underlying principle of utility maximisation in algorithmic decisionmaking leads us to more fundamental questions like: How is utility defined and denoted? And whose utility we are maximising? The challenge is that utility maximisation does not give a detailed account on the objective itself. Also, the objective of cost minimisation in AI algorithms is regarded as exogenous and does not elucidate the validity of the goal itself. In this regard, utility maximisation is rightfully criticised as instrumentalism, which is not surprising since utilitarianism has been at the receiving end of criticism for its benign ethics of seeking maximum happiness since its inception in Jeremy Bentham's time.

Errors matter

The incredible efficiency of machine learning algorithm is forcing us into an increasingly standardised world. Traditional, institutional, and social norms are being turned into new statistical and computational norms. As Matteo Pasquinelli points out, "the ultimate limit of AI models is found in the inability to detect and to predict a unique anomaly, such as a metaphor in natural language. The main effect of machine learning on society as a whole is cultural and social normalisation." (Pasquinelli 2019, 1-17).

Decreasing diversity in the cultural sphere can be a serious concern simply because without diversity, culture cannot flourish. Recent studies show that recommendation services like Spotify decrease an individual user's range of consumption, while simultaneously increasing dissimilarity across individuals. This trend is called balkanisation of tastes. Balkanisation only expands because recommendations are optimised to drive consumption. In other words, efficiency from the viewpoint of commercial interests means that we are limited by our past data and by the average established by users with similar consumption profiles.

It would appear that little serendipity or surprise awaits us in the algorithmic world. But is that true? Computer engineers try to emulate serendipity and surprise by inserting random components or artificial errors into algorithms. The question is if this will feel the same as an organically derived, real error. It is also an open question because our tastes and aesthetics are also changing as we evolve alongside machine algorithms. This is obvious from how children nowadays have little gualms about carrying out animated conversations with Alexa, Siri, and other digital objects. In fact, they treat these digital beings as real as physical beings.

Ultimately, AI kills errors. It starts from cleaning the data, eliminating anomalies, outliers and odd errors, all in the name of ensuring efficiency. But what are errors after all? They come from you and me and our limited knowledge of the world. They represent the complexity of the world and of human beings. When we push the bounded rationality of mathematical decision-making models too far, they also show the limitations of rationality. It is because of these errors that we can see the folly of rationalising everything with algorithms. Decades ago, this form of AI, called Symbolic AI, and the questions that came with it, eventually caused the AI winter, a period of reduced funding and interest in artificial intelligence research (Simon 1984).

Since then. AI has been reborn with neural networks and machine learning algorithms which substitute intelligence with pattern recognition. Unlike Symbolic AI, these new AI algorithms do not require rationalising, theory, or science in the traditional sense. It is a new breed of rationality based on statistical inference where information becomes logic. Accordingly, the nature, scale, and the implication of error is rarely discussed. Research is focused on tricks that minimise errors. As Pasquinelli noted in his criticism of machine learning algorithms: "A paradigm of rationality that fails at providing a methodology of error is bound to end up, presumably, to become a caricature for puppetry fairs, as it is the case with the flaunted idea of Artificial General Intelligence (AGI)." (Pasquinelli 2019, 1-17).

Art as antidote for algorithms

Artists by nature are anti-algorithm. Art resists programming both social and technological. By rethinking, reshaping and repurposing what is given, artists constantly pursue what lies outside the box. They are de facto anomalies of our society. The more out of the box they are, the more we praise them as being original and creative. We value artists precisely because they liberate us from programs and algorithms.

John Cage is an artist renown for his antialgorithm programming. He shocked the audience with his piece 4'33" (Joel Hochberg 2010). The performer, a pianist, appeared on stage impeccably dressed, bowed to the audience, and sat down to play. Then he stayed motionless for exactly 4'33". One could hear the noises made by the audience-they were coughing and shuffling, feeling uneasy and bewildered. Cage was following the protocol of a concert, or at least the attire and stage manners, but he flipped the program by presenting the noise, or errors, as the artistic content to be appreciated. In those few minutes, John Cage showed the essence of art as anti-algorithm.

Artists inspire us because they show us ways to overcome algorithms. While efficiency is the supreme goal of our society, art reminds us there are other important values as well, like autonomy and aesthetics, just to name a few. And indeed, goodness of heart, truthfulness, and beauty—three prime values we all yearn for, are unfortunately unattainable by algorithms. They require not formulas, but the human heart, mind, and body. Life in the 21st century calls for a revival of what it means to be human in the face of cascading algorithms. Art is a good place to start.

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AUDIENCES AND WESTERN CLASSICAL MUSIC: PAST SEPARATION, PRESENT AND FUTURE RECONNECTION

The separation of audiences in the past

Although musicologist Christopher Small once said, "Our present-day concert life consists of a talented few producing music for the untalented majority" (Small 1998, 8), in the past, music life was very different.

In early European societies, music was part of everyday life. There was no distance between music creators, performers and audiences, and no audience gathered for the sole purpose of silently listening to music. By the first half of the 17th century, two phenomena began to change this: the birth of conservatories and the creation of the first operas with paid admission (Small 1998, 71).

The word "conservatory" is itself derived from *conservati*, which literally means "the saved". The term was often used to refer to orphanages, and the Ospedale della Pietà, Ospedale di San Lazzaro dei **Tisa Ho** Executive Director Hong Kong Arts Festival

Mendicanti, Ospedale degl'Incurabili, and Ospedale di Santa Maria dei Derelitti the first institutions to offer musical training—were also protective asylums for young women. As described by Jane Baldauf-Bardes describes them in *Women Musicians of Venice: Musical Foundations, 1515-1855,* these institutions, founded in the 14th century, served as alternatives to the convent.

Italian composer, Antonio Lucio Vivaldi, taught at the Ospedale della Pietà and wrote many pieces for the women there. In 2015, the Hong Kong Arts Festival presented *Chiara's Diary – My life at the convent in Venice*, featuring compositions for one of the orphans, Chiara, whose own compositions were discovered along with her notes and diaries in the archives of the orphanage. Back in the 17th century, Chiara and others were known and admired for their talent, attracting tourists and patrons from across Europe to hear them perform.



Figure 1. Chiara's Diary – My life at the convent in Venice, featuring compositions for one of the orphans. Image courtesy of Hong Kong Arts Festival.

Still, professional musicians frequently composed and performed with amateurs and patrons. For example, Frederick the Great of Prussia, not only employed Franz Joseph Haydn but also played the transverse flute and composed more than four symphonies and 100 sonatas himself. The first performances of Ludwig van Beethoven's symphonies were also interpreted by amateur musicians. This was the tradition of chamber music: it would be played inside of homes, even if some of these homes were the homes of kings.

In the 1830s, informal promenades began appearing in European cities. These were earliest form of mass concerts. Admission was inexpensive and there were no seats so people stood or walked around, socialising and enjoying music at the same time (Cafiero 2005, 28-30, 43-44). It was only after 1850 that these were gradually replaced by formal orchestral concerts with classical programmes (Weber 1977, 183).

The first half of the 19th century also saw classical music included as a subject in general schools. However, in the second half of the century, separation between music-makers and audiences became accentuated by the growing complexity of compositions and the growing virtuosity of professional performers.

The first batch of professional symphony orchestras was founded in 1842. Back then, paying audiences in halls were seated and stayed silent (Weber 1977, 18, 37). Some efforts were made to bring opera and classical music to a broader audience, such as through the English Opera Company, which offered low prices and a full English-language repertoire, but these were exceptions (Gooley 2013, 537-538). For the large part, the practice of fixing musical compositions in scores, freezing repertoires, and the increasingly imposing figure of the conductor, served to distance classical music from the general public.

Between the 1850s and 1860s, a group of deceased composers rose to importance in musical culture. In the words of William Weber. "Their works came to dominate the concert repertoire, and their names were put up on high for all to behold" (Weber 1977, 175-176). Between 1817 and 1826, 56 per cent of the works played by the Philharmonic Society of London were by living composers, and just 43 per cent by deceased composers. Between 1853 and 1862, the proportions flipped and just 30 per cent of the works were by living composers, 70 per cent were by deceased ones. This act of playing the works of just a few deceased composers and rarely playing those of the living ones, is what Small argues to be a key factor leading to the distancing from and disinterest in music (Small 1998, 155).

When it comes to addressing challenges with music education and musical elitism, Small, amongst others, holds that every human being is born with the gift of music and that it is no different from the gift of speech. Small states that many people of Western industrial societies believe they are incapable of participating in musical life "because they have been actively taught to be unmusical". With the loss of amateur orchestral music practice, the feeble musical education provided in general schools, and the rooting of the idea that classical music is destined to be played by and for elites, it is inevitable that music has become detached from the lives of the majority. In fact, it is arguable that this manner of approaching Western classical music—to view it with a specialist lens—has spread to other parts of the world alongside larger geopolitical movements.

How classical music became accessible

There have been various efforts to make classical music more accessible, in part because of the ageing populations and growing need to reconnect. This has led to three major trends across the globe: the creation of education departments in orchestras and concert halls; the advent of projects based on the principles of El Sistema, and the decentralisation of music halls from the heart of cities.

Education in Orchestras and Concert Halls

In the 1980s, Richard McNicol, a London Philharmonic Orchestra flutist and music teacher, began revolutionising music education in the United Kingdom, setting the stage for how it is practised today. His work focused on revitalising the relationship between classical music and youth and he was responsible for the huge success of the LSO Discovery education programme. In 2002, Sir Simon Rattle took McNicol to Berlin to spread the movement, starting orchestra music education programmes in Germany, and in other orchestras and concert halls across various European cities, including Concertgebouw Amsterdam. the Philharmonie de Paris, and Carnegie Hall in New York City—the current home to the Weill Music Institute. Credit to this work, today, the majority of orchestras and concert halls have their own education programmes.

El Sistema and Community Education Programmes

In 1975, a project called El Sistema began promoting classical music engagement across social classes in Venezuela. Its founder, the maestro Antonio Abreu, shares the project is based on the belief that "[M]usic has to be recognised as an... agent for social development in the highest sense, because it transmits the highest values—solidarity, harmony, mutual compassion. And it has the ability to unite an entire community." (Bernstein 2014, 367).

To date, El Sistema has inspired projects in more than 60 countries (Tunstall & Booth 2016). We can see the fruits of the project through Gustavo Dudamel, Music and Artistic Director of the Los Angeles Philharmonic, and Rafael Payare, Music Director of San Diego Symphony. The results can also be found beyond the stellar music careers of El Sistema's students and in the words of Joanne Bernsteins: "The impact of the programme can be felt beyond the orchestra room. In a community with limited resources, YOLA (Youth Orchestra Los Angeles) at HOLA (Heart of Los Angeles) has brought classical music into the neighborhood [centres] and to the homes of hundreds of families" (Bernstein 2014, 367),

This movement complements the wave begun by McNicol. It breaks the barrier of social class—one of the greatest stereotypes in Western classical music attendance, instead, prioritising how to bring this musical genre to people of different walks of life.

Decentralising the Orchestra

United Nations According to the Department of Economic and Social Affairs, "Today, 55 [per cent] of the world's population lives in urban areas, a proportion that is expected to increase to 68 [per cent] by 2050" (United Nations 2018). This means cities are growing and creating larger suburbs. If classical music venues want to survive and earn a place in the everyday lives of citizens, they must follow the trend of decentralising and moving away from city centres, while still building solid education programmes.

Cité de la musique, a Paris-based group of classical music institutions that began in 2015 and is located in the middle of Parc de la Villette in the 19th arrondissement, is one example of the decentralisation efforts of concert halls in that region. Casa da Música, which opened in 2005 in Porto is another. In fact, by illustrating the possibilities of serving a wider community, it catalysed a discussion about the purpose of arts infrastructure development and redefined its reason for existence: to serve the public. Decentralisation efforts are also apparent in the United Kingdom's creation of the LSO East London Academy, which opened in 2019 to provide young people with free music training, regardless of their financial situations.

Notably, for decentralisation to be most effective, it must combine the first two trends of offering solid music education programmes while still benefitting every social class.

Thoughts for the future

The performing arts has taken huge damage from the wrecking ball of COVID-19. When I had the honour of speaking at the Academy pre-pandemic, I discussed the desire for meaning in contemporary society, and the possibility that the human connections offered at live performances could be shared with the more fragmented and isolated parts of the population through digitalisation. I also described the value of shared experiences and suggested that to be in the same space at the same time, and to be moved by creative expression is a way of connecting us with both each other and ourselves.

Today, isolation is far more severe, and at times the sole form of connection is through digital means. In this context, I am inspired by and in awe of the responses of artists and arts lovers, and overwhelmingly grateful for the wealth of performances available online today, whether archival or newly created. To me, this speaks not only of the desire to connect but also the need to do so. against all odds, in any way possible, and under whatever circumstances. This also gives me hope that Western classical music, along with many other genres in the performing arts, will be able to meaningfully enrich the lives of many more if it is taken out of isolation and embraces all who come to share in the experienceregardless of their social status. For this, the need is for policy support to make the means and measures available and accessible, and an understanding that the rewards of community building and enhancement of human capital may far exceed the investment.

After all, Mr Ong Teng Cheong, one of Singapore's founding fathers and its first elected President, advocated music for all as part of nation building. He is also credited for developing the blueprint for the nation's cultural institutions. including the National Arts Council and the Esplanade - Theatres on the Bay. As Secretary General of the Singapore National Trades Union Congress, he took a personal interest in introducing music into the lives of Singaporean workers, the orchestration of commissionina Singaporean songs to be played by the Singapore Symphony Orchestra. Of all of his legacies, this promotion of music is one that stands out until today, and is one that the nation can continue to build on.

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