

Creative Industries Policy and Evidence Centre, led by Nesta—written evidence (CRF0024)

House of Lords Communications and Digital Committee inquiry “A creative future”

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Introduction

This submission from the Creative Industries Policy and Evidence Centre aims to answer the questions posed by the House of Lords Communications and Digital Committee Call for Evidence ‘A Creative Future.’ specifically:

1. Which areas of the creative industries face the greatest potential for disruption and change in the next 5–10 years, and what impact could this have?
a) What changes are expected in the way creative/cultural content is produced; the way audiences are engaged (for example through digital or immersive experiences); and the way business models operate?
2. What skills will be required to meet these emerging opportunities and challenges?
3. What actions are needed from the Government and local authorities to ensure there is an appropriate talent pipeline equipped with these skills? a) How can this be sufficiently flexible to take account of the pace of change in the sector?
4. What actions are needed from industry to support the talent pipeline development? a) What actions are needed from organisations in the creative industries to prepare for and accommodate the requirements of the future workforce?
5. What role do innovation and research & development play in addressing the future challenges facing the creative industries? a) What actions are needed from the Government, funding bodies and sector organisations to support innovation, and research & development?
6. How effective are the Government’s existing strategies at supporting the creative industries to meet the challenges and opportunities ahead?
7. What lessons can the UK’s creative industries learn from other countries, and other sectors?

About the Creative Industries Policy and Evidence Centre (PEC)

The Creative Industries Policy and Evidence Centre (PEC) works to support the growth of the UK’s creative industries through independent evidence and policy advice. Led by Nesta and funded by the Arts and Humanities Research Council as

part of the UK Government's Industrial Strategy, the PEC comprises a consortium of universities from across the UK (Birmingham, Cardiff, Edinburgh, Glasgow, Work Foundation at Lancaster University, LSE, Manchester, Newcastle, Sussex and Ulster). The PEC works with a diverse range of industry partners including Creative UK. The PEC has been awarded funding by the AHRC for an additional five years, and will have a new host organisation from mid-2023.

Responses

1. Which areas of the creative industries face the greatest potential for disruption and change in the next 5–10 years, and what impact could this have? a) What changes are expected in the way creative/cultural content is produced; the way audiences are engaged (for example through digital or immersive experiences); and the way business models operate?

1.1 Research from the Creative Industries Policy and Evidence Centre (PEC) and Nesta has shown that recent breakthroughs in artificial intelligence (AI) could have a large impact on the creative industries (Davies et al, 2020).

1.2 Digitisation has meant that a high proportion of creative content, e.g. images, sound and text is now created, distributed and consumed digitally. Large volumes of creative content is recommended to us on platforms like Spotify and YouTube using AI techniques such as machine learning. Digitisation also means that creative content can be directly analysed using machine learning.

1.3 The tools of AI have become more effective and also more accessible with extensive open source software available on sites like GitHub. Developments such as Generative Adversarial networks (GANs) and style transfer have enabled new ways to be creative and are influencing artistic activity. The convergence of creative domains driven by wider digital change, such as the use of games technologies in visual effects and architecture, also mean that AI breakthroughs in one area could spread to multiple creative domains.

1.4 The UK therefore has an opportunity to exploit the synergies from its strength in both AI and the creative industries. At the same time if AI has a large impact on creative activity, and the UK does not keep pace with developments, then its position in the creative industries could be undermined.

1.5 The UK is one of the world's leading research centres in AI, but other countries are rapidly increasing their research capability. The UK has one of the world's highest levels of AI research outputs on arXiv, the highest in Europe. Between 2015 and 2019 UK publications in AI grew at 365 per cent (a rate of growth that is similar to that of Italy, the US and Czechia). By contrast, among countries with the fastest growing levels of research: Taiwan grew at 1,490 per cent, Sweden at 958 per cent and Japan at 845 per cent over the same period. This partly reflects that these countries had lower levels of research activity to start with, but also shows that the UK's position in AI cannot be taken for granted.

1.6 As a result of this opportunity, and the associated risk, the PEC has recommended that the Government supports an AI and Creative Industries Centre within the context of its broader AI ambitions, to provide:

- a) Training and skill development in AI for the creative industries;
- b) A gateway to research and development (R&D) in AI for the creative industries;
- c) Commercial development for AI creative startups.

1.7 A UK AI and creative industries centre could provide the UK with an opportunity to realise the commercial potential of the synergies between two areas of strategic economic importance (as identified by both AI and the creative industries having sector deals in the 2018 industrial strategy), and conversely reduce the risk that developments in AI elsewhere undermine the UK's position in the creative industries.

1.8 The UK has in some ways under-invested in the application of technology in the sector as illustrated by the fact that of the 75 UKRI Centres for Doctoral Training (CDTs) announced in 2019, the only centre focussed on the creative industries is the centre in Intelligent Games and Game Intelligence (IGGI).

1.9 This recommendation has the strong support of industry and research stakeholders. For example, in an open letter in support of the centre signed by leaders in the creative and tech sectors including Google, WPP, Double Negative, XL Recordings and the National Gallery, and separate letters from research experts in the University of Arts London and the University of Edinburgh. This pilot would also support other pioneering work such as the AHRC's Boundless Creativity campaign in demonstrating the role of the creative industries in stimulating innovation and would fit naturally into the plans for Turing 2.0

2. What skills will be required to meet these emerging opportunities and challenges?

2.1 There are a number of skills gaps across the creative industries that we will need to address should we want to take advantage of the opportunities offered by new technologies (Giles et al, 2020).

2.2 In fact, in the future, the development of novel technologies means that creative skills themselves (from design, to directing, to writing, to games development) are likely to become increasingly important across the whole economy.

2.3 The PEC's research on creative skills¹ (Easton and Djumalieva, 2018) has shown that:

- **Creativity is likely to be even more important in the future job market.**

Although it may seem ubiquitous, far from every job advert requests 'creativity' as a requirement. In fact, job adverts for Creative Occupations in the DCMS's

¹ <https://pec.ac.uk/research-reports/creativity-and-the-future-of-skills>

official list are still far more likely to ask for it. Strikingly, jobs asking for creativity are also far more likely to grow as a percentage of the workforce by the year 2030. This reinforces the finding from previous research that policymakers should be investing in the workforce's creative skills.

- **Employers don't just value creativity alone: they need talent with project management and organisational skills too.**

Our analysis suggests that strong project management and organisational skills when combined with creativity will be a particularly potent mix in the future. This should be a key takeaway for anyone involved in training or education policy.

- **Creative occupations don't have a monopoly on creativity.**

Creativity is not confined to the list of creative occupations compiled by the DCMS. Education and skills policymakers should look beyond sectoral boundaries when formulating policies to invest in the workforce's creativity. We also find jobs that have a lot in common with Creative Occupations due to the technical skills required. Examples of these jobs include engineers, manufacturing and business development roles. This is something for the Department for Education and other skills leads to consider when developing reskilling policies

2.4 PEC research in partnership with the Creative Industries Council (Mateos-Garcia, 2021), and the AHRC/DCMS Boundless Creativity report (DCMS and AHRC, 2021) have both supported these findings by identifying technical (including ICT skills) and management skills as areas where the sector has significant skills issues across the UK.

2.5 Alongside creative skills, a common finding in studies on the future of work is that employers will increasingly demand digital skills across the whole economy. However, research from the PEC has shown that digital skills alone are unlikely to be enough in the future - but that digital skills that combined creative know-how ("createch" skills) are the most likely to predict future growth: for example, those skills used by graphic designers and photographers, audio visual and broadcasting equipment operators are likely to be predictors of future growth. It may seem counterintuitive that digital skills alone do not predict future growth in those roles that use them, but this is because those digital jobs that do not involve creative thinking can be some of the easiest roles to automate.

2.6 Skills policy currently has a tendency to divide digital and creative skills, and digital and creative pathways from one another. Our research suggests that not only should digital skills be embedded in many creative courses, but that course designers of future courses should consider how the two may have, for some roles, become inextricable from one another.

2.7 In addition to the broad economic need for creative and technical skills across the economy, the sector itself has a number of skills gaps. PEC and Creative Industries Council research (Bakhshi and Spilsbury, 2019) has shown that, unlike the rest of the economy, the most severe skills shortages within the creative industries are in high skilled occupations such as programmers, software developers, architects, and designers. These roles are also very likely to be dominated by the self-employed, including by talented freelancers from

overseas - prior to Brexit, we estimated 10% of employers in the creative industries had hired a freelance worker from the EU in the past 12 months.

2.8 Despite evidence on the importance of EU freelancers to UK creative businesses, the UK's post-Brexit immigration system currently has limited pathways of entry for skilled freelancers, unless they are deemed 'exceptionally talented' or have a significant amount to invest in a new business. With the Government now introducing a number of routes for skilled and entrepreneurial freelancers, there may be an opportunity to limit damage to the creative industries from this focus on full-time employment status.

2.9 In addition, as we head towards a 'createch' future, it will be vital that our skills and education pathways are set up in a way that works for this freelance workforce, and that we ensure that these roles are of good quality, have equitable working practices and are accessible for a diverse group of people (Giles et al, 2020). This is something that the PEC's Good Work Review, currently live, will explore (<https://pec.ac.uk/news/good-work>).

5. What role do innovation and research & development play in addressing the future challenges facing the creative industries? a) What actions are needed from the Government, funding bodies and sector organisations to support innovation, and research & development?

5.1 It is now more important than ever to ensure that the definition of R&D used by the government supports the sector's contribution to the UK economy, so that it retains its world-leading status. However, research by the PEC points to the existence of **market failures** in creative industries R&D² (Bakhshi, 2022). That is, left to their own devices, markets will underfund R&D. There are two reasons for why this is the case:

- **Positive knowledge externalities:** As in other sectors, firms may not be able to fully appropriate the returns from their investment in R&D, e.g. due to positive knowledge spillovers to competing firms
- **Asymmetric information:** In creative markets where uncertainties about the future success of R&D are especially great, asymmetries in information between company and investor, or other imperfections in financial markets, may create barriers to R&D investment by raising the cost of risk finance.

5.2 Consistent with the latter, further research from the PEC suggests that while innovative creative companies are more likely to seek venture capital funding than their non-innovative counterparts they are no more likely to succeed in securing it³ (Di Novo et al, 2022). The recognition of these market failures helps to explain why the creative industries have benefited from tailor-made UKRI programmes in recent years, as well as from cross-economy UKRI funds. Research and blogs published by the PEC⁴ demonstrate how valuable these public investments can be in leveraging industry investment, as well as in

² <https://pec.ac.uk/research-reports/the-art-of-r-and-d>

³ <https://pec.ac.uk/discussion-papers/starving-the-golden-goose>

⁴ <https://pec.ac.uk/news/r-and-d>

driving innovation with other positive outcomes, such as increased community cohesion and environmental benefits.

Tax incentives

5.3 **Investment in innovation** is often cited as a way to boost productivity, which is why parties of all colours have called on businesses to invest more in it, specifically in research and development (R&D). But despite this, **business R&D remains low** in the UK in international comparison. The Government noted that business investment in R&D⁵ at 0.9% of GDP was low relative to the OECD average of 1.5% and very considerably lower than leading nations like Korea, Japan, Germany and the US. But policymakers may be missing a trick when it comes to the businesses that are the focus of initiatives to encourage this. Consequently, much of the research and development that happens in the creative industries - based on developing content and experiences rather than just building new widgets - is excluded.

5.4 One specific issue is that the **definition of R&D used by the HMRC for the purpose of tax relief excludes the arts, humanities and social sciences**, unlike some other OECD countries like Brazil, Czech Republic, Denmark, France, Italy and Korea (OECD Compendium of Information on R&D Tax Incentives 2019). Although UK policymakers claim to follow the definition of R&D from the Frascati Manual, R&D involving the Arts, Humanities and Social Sciences is, unlike in the OECD definition, explicitly excluded in some areas of policy, e.g. fiscal policy, by organisations such as BEIS, HMRC, and the Treasury. For example, BEIS says in its Guidelines on the Meaning of Research and Development for Tax Purposes: "science is the systematic study of the nature and behaviour of the physical and material universe. Work in the arts, humanities and social sciences, including economics, is not science for the purpose of these Guidelines". The application and interpretation of this definition is driven by HMRC, which is explicit about excluding 'work in the arts, humanities and social sciences (including economics)'.

5.5 Consequently, **R&D in the creative industries** which is reliant on the arts, humanities and social sciences is not recognised and **does not qualify for targeted R&D incentives**. By acting on the evidence and targeting policies, the Government has the opportunity to rebuild the creative industries in a way which is more innovative and more ambitious. Research for Nesta from Professor Stephen Roper and Areti Gkypali from the Enterprise Research Centre has shown that **creative industries businesses report that they do almost as much R&D as the manufacturing sector**, when using a broader definition than used in tax incentives (Roper and Gkypali, 2018). We recommend a broader definition should be adopted for R&D tax relief, to incentivise R&D investment in the creative industries.

5.6 The Creative Industries Policy and Evidence Centre has therefore recommended that:

⁵ <https://www.gov.uk/government/statistics/business-enterprise-research-and-development-2020>

- The Government should **amend its definition of R&D for tax relief** purposes so that it follows the OECD’s Frascati Manual in recognising R&D in the Arts, Humanities and Social Sciences (AHSS), bringing the definition into line with the large number of countries that already do so, including Germany, South Korea, Austria and Norway.
- **BEIS should drop the explicit exclusion of AHSS projects** from its guidance, and thereby acknowledge that the definition of ‘science’ includes the systematic study of the nature and behaviour of the physical and material universe, humankind, culture and society.

5.7 By increasing the number and scope of creative industries specific schemes, and by ensuring cross-economy schemes are fit for purpose, UKRI should aim to ensure the sector receives an increase in investment in recognition of size, growth and future growth potential.

Innovation ecosystem

5.8 Research and blogs published by the PEC demonstrate how valuable existing public investments can be in leveraging industry investment, as well as in driving innovation with other positive outcomes, such as increased community cohesion and environmental benefits.

5.9 Through the Industrial Strategy Challenge Fund (2017-) and the Creative Industries Sector Deal (2018), UKRI has been able to distribute the most substantial and ambitious large-scale investments aimed at the creative industries ever, which have in turn leveraged in significant private investment. These include:

- The **Creative Industries Clusters Programme**⁶ which is already generating a huge impact across all four nations of the UK. Two clusters (Future Fashion Factory⁷ and Business of Fashion, Textiles and Technology⁸), are playing a leading role in sector transformation, re-imagining a future for fashion with sustainable innovation as an emerging priority, whilst the Dundee-based research and development centre, InGAME,⁹ is showing how video game design

⁶ <https://eur01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fcreativeindustriesclusters.com%2F&data=04%7C01%7CSamantha.Lynch%40ahrc.ukri.org%7C0a914930482c4e9c317008d9d9d7ce46%7C2dcfd016f9df488cb16b68345b59afb7%7C0%7C0%7C637780343220454547%7CUnknown%7CTWFpbGZsb3d8eyJWIjojMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6I6I1haWwiLCJXVCI6Mn0%3D%7C3000&sdata=K0iWKF6k22uwKq%2FmqkQJVsvxK35a%2Faf0C%2BbAXptMncQ%3D&reserved=0>

⁷ <https://eur01.safelinks.protection.outlook.com/?url=https%3A%2F%2Ffuturefashionfactory.org%2F&data=04%7C01%7CSamantha.Lynch%40ahrc.ukri.org%7C0a914930482c4e9c317008d9d9d7ce46%7C2dcfd016f9df488cb16b68345b59afb7%7C0%7C0%7C637780343220454547%7CUnknown%7CTWFpbGZsb3d8eyJWIjojMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6I6I1haWwiLCJXVCI6Mn0%3D%7C3000&sdata=o6iH3kcpRU37oFOetDeBct3xxLIO4PBIE2Fv%2FFOVN2s%3D&reserved=0>

⁸ <https://eur01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fbftt.org.uk%2F&data=04%7C01%7CSamantha.Lynch%40ahrc.ukri.org%7C0a914930482c4e9c317008d9d9d7ce46%7C2dcfd016f9df488cb16b68345b59afb7%7C0%7C0%7C637780343220454547%7CUnknown%7CTWFpbGZsb3d8eyJWIjojMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6I6I1haWwiLCJXVCI6Mn0%3D%7C3000&sdata=%2FinlrDUoA79q2nWT3V8%2BYYNp8GAD3N098K6getG6CCA%3D&reserved=0>

⁹ <https://eur01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fgame.com%2F&data=04%7C01%7CSamantha.Lynch%40ahrc.ukri.org%7C0a914930482c4e9c317008d9d9d7ce46%7C2dcfd016f9df488cb16b68345b59afb7%7C0%7C0%7C637780343220454547%7CUnknown%7CTWFpbGZsb3d8eyJWIjojMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6I6I1haWwiLCJXVCI6Mn0%3D%7C3000&sdata=K0iWKF6k22uwKq%2FmqkQJVsvxK35a%2Faf0C%2BbAXptMncQ%3D&reserved=0>

techniques, tools and technologies can be used to solve real-world problems - from tackling obesity to managing livestock.

● The **Audience of the Future Challenge**¹⁰ which has invested £39.3 million in the development of new immersive technologies such as virtual, augmented and mixed reality. Projects range from the first augmented reality production featuring Wallace and Gromit to the Royal Shakespeare Company's live online performance inspired by A Midsummer Night's Dream. The programme has helped the UK to sustain its position as the largest immersive market in Europe, according to Digital Catapult and Immerse UK 2019 Immersive Economy report.¹¹ A PEC blog from Dr. Samantha Lynch (Lynch, 2022),¹² who is Head of Creative Industries at the Arts and Humanities Research Council, points out that **StoryFutures Academy**, part of the Audience of the Future programme, has been making great strides in equipping the creative industries workforce with a range of arts and humanities-based skills - from storytelling to cutting edge skills in XR, VR and AR, fusing cutting-edge R&D with real world application in professional training. The positive impact of this 'fusion effect' on business performance - combining the sciences and arts - was explored in Nesta's report of the same name¹³ (Siepel et al, 2016).

5.10 A blog for the PEC from Andrew Chitty, Challenge Director at Innovate UK, UKRI¹⁴ (Chitty, 2022) details some of the specific lessons from these significant creative industries investments - highlighting that from their success policymakers should **take away the knowledge that public R&D funding for the creative industries can drive co-investment from industry and other partners "to a scale we could hardly have imagined"**. In the case of these challenge programmes, they have far exceeded their initial target for match funding of £59 million, and Chitty highlights that the current co-investment total is £201.6 million. The blog¹⁵ also highlights six ways in which the programmes together demonstrates the benefits of R&D to the creative sector, namely:

1. *R&D drives development of new, commercially viable, immersive products and services.*
2. *R&D funding can align rounds of private investment with innovation.*
3. *Challenge-based R&D models can drive innovation across supply chains.*
4. *R&D can drive the scaling up of small and medium sized businesses across the UK if connected to an innovation ecosystem.*
5. *Large-scale R&D demonstrators drive sector transformation.*

[2Fwww.innovationforgames.com%2F&data=04%7C01%7CSamantha.Lynch%40ahrc.ukri.org%7C0a914930482c4e9c317008d9d9d7ce46%7C2dcfd016f9df488cb16b68345b59afb7%7C0%7C0%7C637780343220454547%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6IjEkaWwiLCJXVCi6Mn0%3D%7C3000&sdata=I7opbuMQPYxf6B09HN289cv3DQKA6%2F%2BbHWRKvIgfPa4%3D&reserved=0](https://www.innovationforgames.com/?F&data=04%7C01%7CSamantha.Lynch%40ahrc.ukri.org%7C0a914930482c4e9c317008d9d9d7ce46%7C2dcfd016f9df488cb16b68345b59afb7%7C0%7C0%7C637780343220454547%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6IjEkaWwiLCJXVCi6Mn0%3D%7C3000&sdata=I7opbuMQPYxf6B09HN289cv3DQKA6%2F%2BbHWRKvIgfPa4%3D&reserved=0)

10 <https://www.ukri.org/our-work/our-main-funds/industrial-strategy-challenge-fund/artificial-intelligence-and-data-economy/audience-of-the-future-challenge/>

11 <https://www.digicatapult.org.uk/news-and-insights/press-releases/post/the-latest-insights-and-data-on-the-immersive-tech-sector-in-the-uk/#:~:text=The%20UK%20is%20currently%20Europe's,%24160%20billion%20immersive%20technologies%20market.>

12 <https://www.pec.ac.uk/blog/a-new-age-for-the-creative-industries-and-the-uk>

13 <https://www.nesta.org.uk/report/the-fusion-effect-the-economic-returns-to-combining-arts-and-science-skills/>

14 <https://www.pec.ac.uk/blog/transforming-investment-in-r-d>

15 <https://www.pec.ac.uk/blog/transforming-investment-in-r-d>

6. *Successful innovation models between creative businesses and universities increase participation in R&D.*

5.11 Meanwhile, a blog published by the PEC from Tom Fiddian (Fiddian, 2022),¹⁶ Head of AI and Data Economy Programmes at Innovate UK, highlights different lessons for future investment in the creative economy achieved through **cross-economy funds**. Specifically, he focusses on Innovate UK's £40 million funding cross-economy competition to support business-led innovation projects to respond to the societal and economic disruption caused by the Covid-19 pandemic, where **12% of recipients were from the creative industries**. This competition was directly funded by the Treasury and included a number of mechanisms and processes which were new to Innovate UK and proved to be effective at attracting creative companies to the fund, as well as achieving a greater pace and scale than they had previously achieved.

5.12 **Specifically, the programme offered small grants (up to £50K), funded short projects (up to six 6 months), used streamlined application forms, offered up-front payments and utilised De Minimis** (a state-aid mechanism which has arguably more freedom to operate than standard innovation funding). In his blog, Tom Fiddian argues that these changes allowed Innovate UK's funding to be more accessible to businesses, which was reflected in the total number of applications, which reached 8619 (more than the total which Innovate UK had received in the previous year) as well as in the overall quality of creative industries applications. Successful creative industries bids included:

- **ACS Clothing**, who innovated their business model to address the sustainable fashion agenda subsequently attracting £2.5m of private finance and nearly £1m of public funding.
- **Gramophone**, who accelerated the development of their live-audio streaming technology to allow artists all around the world to perform on the world's largest music platforms.
- **Deep Render**, who developed their AI-based compression for the live-streaming market to be integrated on streaming platforms and devices (smart TVs, etc.).

5.13 Given these success stories, the PEC has recommended that:

- Funders should look to the success of the creative industries challenge programmes and prioritise investment in this strategic and fast growing sector.
- In order to support the ambitions of the UK Government's Levelling Up White Paper,¹⁷ we recommend that continued investment goes into the Creative Industries Clusters Programme. The R&D mission in the Levelling Up White Paper aims to see domestic public R&D investment outside the Greater South

¹⁶ <https://www.pec.ac.uk/blog/agile-innovation-funding-is-the-solution-for-the-uk-creative-industries>

¹⁷ <https://www.gov.uk/government/news/government-unveils-levelling-up-plan-that-will-transform-uk>

East increase by at least 40% by 2030. The White Paper also highlights how UKRI will have a directive to “deliver economic, social and cultural benefits from research and innovation to all our citizens”. The success of the Creative Industries Clusters Programme in achieving economic, social and cultural benefits by investing in R&D right across the UK’s nations and regions makes it a useful lever for the Government in achieving these goals.

- Funders should also ensure that cross-economy schemes are designed appropriately for the creative industries. Lessons from a successful Innovate UK fund point to the benefits of offering small grants of up to £50K, short projects (up to six 6 months), streamlined application forms, up-front payments and utilisation of De Minimis to support creative industries businesses to apply.
- By increasing the number and scope of creative industries specific schemes, and by ensuring cross-economy schemes are fit for purpose, UKRI should aim to ensure the sector receives an increase in investment in recognition of size, growth and future growth potential.

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