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### **Data ethics in the digital creative industries**

Encouraging self-reflection and best practices

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# 6

## DATA ETHICS IN THE DIGITAL CREATIVE INDUSTRIES

Encouraging self-reflection and best practices

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### Abstract

Data-driven innovation offers incredible opportunities for the creative industries; however, it also raises complex questions and potential risks in terms of privacy, ethical business and employment practices, environmental impacts, and moral and civic responsibilities. There are often tensions between economic and creative pressures and opportunities and the need to engage with legal and ethical approaches which can minimise risk, ensure compliance, and also make a positive contribution to society. Given the rapidly changing nature of the application of technology in the creative industries, this chapter outlines key considerations, provides pointers to further resources, and frames guidance on data ethics to those using and developing with data within the creative industries. We stress that any creative activity – even an individual one – is part of a wider community and that it is the responsibility of those creating, using, analysing, and transforming data to ensure that they consider how data is collected, used, and reused; consent and privacy; data storage and information security; inclusive design; ethical business and employment practices; and the social and environmental impacts of data-led activities. Through a number of key examples, we recommend that a critical, self-assessment approach can ensure regular reflection and adaptation to a developing and changing area and introduce our self-assessment framework while stressing the need for accountability. We report on important themes which are emerging surrounding the approach to data ethics within the creative industries. Finally, we suggest that a reflective data ethics approach should become embedded into creative practice that involves any aspect of data to minimise unintentional harms in the production of new products and services.

## Introduction

Aspects of data ethics – principles, guidelines, and moral standards that govern the responsible collection, use, storage, sharing, and analysis of data – are becoming a pressing concern for the use of data within the creative industries and their activities. This is particularly because – by their very definition – the creative industries “are those based on individual creativity, skill and talent, or which have the potential to create wealth and jobs through the development or production of intellectual property” (ScotGov, 2020). Developing new and novel approaches involving data often requires experimentation and innovating in areas where there simply is no established best practice and often no real knowledge of the implications and potential harms of technological development, until further reflection or assessment is possible. This is often in tension with the race to market and the pressure to deliver within our capitalist economic system. The ethics of work with and involving data is a complex area and can bring in any number of issues that draw together aspects of philosophy and values, business practices, data handling, and technical affordances. In this chapter we take a broad view of data ethics in the context of creative industry innovation, considering both legally defined aspects such as data protection; equality of access; and equality, diversity, and inclusion (discussed in depth in Chapter 5) but also aspects embodying social values such as employment practices, ethics of business practices and environmental approaches.

There are a growing number of reasons creative industries should care about ethical practices, including brand reputation and sustainability. However, innovation across the creative (and other) industries is synonymous with novelty and disruption. Whilst that disruption can be a positive driver for change, it can also mean bypassing the due diligence associated with more traditional slower moving developments of products, services, and experiences. When this kind of disruption centres on data, including personal data, the track record for ethical practices has been mixed, and often negative. Whilst Cambridge Analytica<sup>1</sup> is the most notorious recent example and has triggered much reflection on the ethics of data science (Schneble, 2018), it is far from isolated, and in a post-Cambridge Analytica R&D environment, any innovation involving data is increasingly expected by both users/audiences and by regulators (e.g. the UK government Centre for Data Ethics<sup>2</sup> and Innovation and the expanding remit of the Information Commissioners Office)<sup>3</sup> to take a more considered and transparent ethical approach.

This chapter aims to outline key considerations for the use of, and development with, data within the creative industries while providing pointers to further resources. We suggest that taking a thoughtful and self-reflective approach can help professionals in the creative industries adapt to the ever-changing landscape if there are also mechanisms for accountability.

To support this, we introduce our self-assessment framework, which explores key emerging themes related to how data ethics is being approached within creative fields, helping prevent unintended negative consequences when developing new products and services. We also provide recommendations for practitioners, education institutions, and funders on the ways in which they can support the embedding of data ethics principles into activities in order to promote best practice.

### **Growing awareness**

Much activity in the creative industries is reliant on, and building upon, data to shape content creation, build new user experiences, and design novel audience engagement. An ethical approach to the use of data within the creative industries is important for a variety of reasons, including social responsibility and the potential impact the creative industries can have to shape public opinion and behaviour; the building of trust between clients and providers, leading to enhanced audience engagement as well as enhancing reputation and branding, and therefore leading to potential increased revenue streams; legal compliance and the reputational and financial risks to both users and creators in breaching legal frameworks; and establishing integrity, trust, and professionalism. Adopting ethical practice as part of creative approaches has to be a conscious decision, given the late-capitalist approaches to value creation which encourage extraction of resources as a source for innovation (Suarez-Villa, 2012). However, it is also increasingly the case that an ethical approach is seen as a key value and ‘unique selling point’ by consumers (whether businesses or individual end users) (Cockburn et al., 2012), leading to certifications for broadly ethical approaches, notably B Corp status (a legal form of enterprise in the USA that requires certification of social and environmental performance; see B Lab, 2023).

Unfortunately, legal frameworks have often struggled to keep up with technological change (see Chapter 7). The emergence of enterprise solutions for AI (such as ChatGPT), and the potential embedding of any dataset created into training data for future AI, further stresses the need to adopt responsible and compliant data practices. There is also growing public, industry, and investor awareness of the importance of an ethical approach to data creation, analysis, storage, and reuse. For example, a pressing question, at time of writing, is how generative artificial intelligence will disrupt the creative industries, including its creation and ideation phases and relationship to bodies of previously created content, as well as future business structures, revenue flows, income streams, employment, and relationship to existing artistic practice (see Chapter 9, also Parra Pennefather, 2023). Yet, with most employed in the creative industries being sole traders or small and medium-sized enterprises (SMEs) (see Chapter 2), where is the capacity to upskill, understand, and navigate these rapidly changing issues or to identify

where they have the power or opportunity to make changes to their established practice? Where are principles and frameworks to ensure we build creative technologies while understanding their potential social, economic, and cultural impacts?

Public awareness of ethics in the context of data and technology is typically triggered by high profile cases of misuse, mistrust, or deeply problematic (if not always illegal) use and combination of personal data. There are regular news stories about the transformative approach to data which have negative, unintended consequences, from the racism, sexism, and fascism of Microsoft's Tay (Wolf, 2017), to ChatGPT as a major source of plagiarism (Cotton, 2023; Thorp, 2023; Sallam, 2023), to generative image-based AI as a disruptor to intellectual property (Guadamuz, 2023) and, by extension, employment in the creative industries (Cremer, 2023; Wolff, 2023); the impact of algorithmically driven systems on music consumption and production (Hesmondhalgh et al., 2023); and the use of prediction software by publishers to dictate which books will be commercially successful and worth putting into production (Wang et al., 2019). In the creative industries, the most common large-scale data ethics failures involve data breaches from commerce platforms, for example, the loss of personal data by Ticketmaster in 2018 (ICO, 2018a), although data-rich, profitable media companies are also targets for cyberattacks and leaks (Jarrett, 2017), and there is growing concern about the intersection of consumer systems with political systems and the security of health data, particularly around reproductive rights (Torchinsky, 2022). Small traders and individuals are very susceptible to digital asset loss and copyright infringement, particularly when sharing their work online (Topping, 2010), and this has been exacerbated by the development of generative AI systems that are trained on scraped data which does not respect artist's intellectual property rights (Vincent, 2023).

### **Legal frameworks versus ethical practice**

Each legal jurisdiction will have its own frameworks in which individuals and industry are mandated to operate. In the UK context, there are key legal requirements that must be abided by, including the Equalities Act 2010,<sup>4</sup> Data Protection Act (DPA) 2018<sup>5</sup> (ICO, 2018b), Intellectual Property (Copyright and Related Rights) (Amendment) (EU Exit) Regulations 2019,<sup>6</sup> and potentially the forthcoming Online Safety Act.<sup>7</sup> Business awareness tends to be manifested in terms of these risks and related risk mitigation. The widespread public information campaign around the introduction of EU General Data Protection Regulation (GDPR) in 2016<sup>8</sup> (embedded in UK law through the DPA 2018) led to widespread awareness of the legislation and potential risk, even to small businesses, around data. The increased fines (from a fixed maximum of £500k (University of Bath, 2022) to “up to £17.5 million or 4% of annual worldwide turnover, whichever is higher” (ICO, 2023))

applicable post-GDPR have highlighted the potential business liability to funders, institutions, businesses, and individuals if something were to happen. (See, for example, the record GDPR fines levied against Amazon's use of data in advertising (Burgess, 2021) and Facebook providing access to personal data for political advertising via Cambridge Analytica (McCallum, 2022)). Additionally, the widespread use of cloud computing infrastructure and international microservices (including social media and e-commerce) can add a layer of complexity to compliance with local legislation, as some data transfers may be subject to multiple jurisdictions' requirements or rights to access data.

Legal requirements and penalties can help ensure some core ethical challenges are considered and addressed; however, compliance with the law is not enough to ensure a robust ethical approach. There is a danger of only conceptualising data ethics activities as necessary for risk management, promoting risk-averse behaviours. While ethical practices are concerned with ensuring that you do no harm, there can be additional benefits beyond mere compliance and minimising risk. The use of data can enable significantly useful and impactful new products, services, and experiences which reflect a more nuanced and holistic understanding of ethical practices – including but extending beyond the ethical handling of data. For instance, in addition to commercial applications, it should be remembered that data can also be used to develop non-commercial applications which may be particularly helpful for individuals and communities, including those with disadvantages, resulting in positive contribution to society. For example, entrepreneur Petra Matijevic (supported by Creative Informatics) developed a new platform and schema to connect multiple open and public data sources, which is now being taken forward by Scottish co-operative investigative journalism platform the Ferret<sup>9</sup> (where Petra is now journalist director) and used in investigations supporting deeper citizen engagement with policy and governance, such as investigations on finances, influence, and public life. Similarly, an ethical and data-driven approach to environmental issues may also provide opportunities for business sustainability. The Edinburgh Tool Library<sup>10</sup> (ETL) is a charity enabling members to borrow tools and access workshop space, peer training, and skills sharing around DIY. To manage and track loans, they use myTurn,<sup>11</sup> a widely adopted software system, but decided to develop new, richer data analysis (supported by Creative Informatics) to understand usage, social impact, and carbon savings associated with tool use (see also the case study attached to Chapter 11). This values and ethics-driven approach to data capture was intended to enable more strategic management of resources and a robust evidence base for demonstrating social and carbon impact to funders and stakeholders (e.g., evidencing that ETL saves around 180 tonnes of CO<sub>2</sub> per year).<sup>12</sup> As ETL decided to share this work, their data analysis tool has now been deployed (through myTurn) to more than 400 tool libraries/resource libraries worldwide – creating new opportunities for increased

efficiency, improved processes, and evidence of impact for fundraising, development of socially inclusive business models, and so on. These examples help to illustrate that consideration of data ethics and broader ethical implications can lead to opportunity creation.

### **Ethics of R&D**

Creative industries' research and development processes – particularly within small businesses and micro-SMEs – do not typically involve structured ethical processes, unless there is an academic element to the work or they are required to comply with ethics-related elements of procurement processes (e.g., anti-bribery) or are working as suppliers into a more highly regulated field (e.g., medical applications). Larger-scale creative industries organisations may be more likely to undertake ethics considerations, particularly when they have chosen to implement internal or external ethics groups as part of their governance, though this is itself complex and highly disputed territory (e.g., Google's relationships with its ethical AI research team (Newton, 2020)). For small creative start-ups and SMEs working with data, individuals and/or small teams must rely on their own knowledge and capacity (or lack thereof) when considering the ethics of their work, use of data, business models, employment practices, and so on. For those working in highly regulated areas of industry (e.g., a marketing company working with alcohol companies or a design agency working with the pharmaceutical industry), they may have greater access to information and expertise on (some) areas of data and business ethics than those working in less regulated areas. This variable and often limited understanding of data and wider business ethics can present risks to funders, institutions, businesses, and individuals if something were to happen that causes harm, as well as impacting on trust, relationships, and expectations of their users/customers and stakeholders.

### **Related guidance**

A variety of existing resources on ethical approaches to data may be relevant to creative industries practitioners, including those from the Association of Internet Researchers,<sup>13</sup> whose Ethics Guidelines promote primary ethical norms (Franzke, 2020) of “respect for persons, beneficence, and justice”: values drawn from the Belmont Report, a foundational document when considering this space (National Commission for the Protection of Human Subjects of Biomedical and Behavioural Research, 1979). It should be noted that ethics relevant to the creative industries working with data, technology, and particularly AI and machine learning is an area of growing interest, with many intersectional aspects (in addition to those discussed here, see Appendix 2).

In 2020, the European Union's High-Level Expert Group on AI published their “Assessment List for Trustworthy Artificial Intelligence (ALTAI)”

(European Union, 2020), building on the Group’s “Ethics Guidelines for Trustworthy AI” (2019) by presenting a self-assessment checklist. The checklist is based on seven key requirements to consider when evaluating the trustworthiness of artificial intelligence systems: human agency and oversight; technical robustness and safety; privacy and data governance; transparency; diversity, non-discrimination, and fairness; environmental and societal well-being; and accountability. Although it focuses on factors collectively contributing to the responsible development and deployment of AI technologies, this assessment list provides a framework relevant to data ethics, more broadly framed, to ensure that innovation respects human values, upholds ethical principles, and aligns with the broader interests of society. Likewise, the OECD’s<sup>14</sup> Principles on AI (2019) and Beijing AI Principles (International Research Center for AI Ethics and Governance, 2019) provide useful conceptualisations of responsible technological development. Tahaei et al. (2023) are actively mapping current and future trends in this area. At time of writing, individual platforms and internet service providers, such as YouTube, are developing principles for responsible use of AI related to creative endeavours (YouTube Official Blog, 2023).

More specific to innovation, in 2021, the UK’s Digital Catapult<sup>15</sup> produced their Machine Intelligence Garage<sup>16</sup> Ethics Framework (Digital Catapult, 2021). This provides a practical guide for SMEs and entrepreneurs to review the ethics of their products or services. Based on seven key high-level concepts, it focuses on the benefits of the product or service; knowledge and management of risks; responsible use of data; earning and being worthy of trust; promoting diversity, equality, and inclusion; open and understandable communications; and the nature of business models. Those interested in aspects of diversity, inclusion, and equity in the use of data will benefit from *Data Feminism* (D’Ignazio and Klein, 2023), which offers strategies for justice-centred approaches to data creation and reuse (their ethos extends to making this text available for free download in open access).<sup>17</sup> From an environmental perspective, the non-profit Julie’s Bicycle<sup>18</sup> aims to mobilise the arts and culture to take action on ecological crisis, providing practical tools (case studies, research, podcasts, and guides) as well as support on how to take climate action, including specific guidance and a data collection template on how to report on environmental data (2023). Their 2022 report, “Creative Industries and the Climate Crisis,” highlighted the need for collaborative innovation in the sector if it is to adapt “to the inevitable changes already locked into climate impacts” (2022, 6). Creative Carbon Scotland<sup>19</sup> provides guidance for artists and cultural organisations and how they can take climate action. The Digital Humanities Climate Coalition<sup>20</sup> particularly tailors their advice towards researchers utilising digital methods, producing a toolkit to help make research practices more environmentally responsible (2023) and a “Research Guide to Writing a Climate Justice Oriented Data Management Plan” (DHCC, 2022).



## Creative industries ethical approaches

There are a variety of unethical approaches that are all too familiar to those working in the creative industries, including plagiarism, copyright infringement, cultural appropriation, exploitative working practices, unfair compensation, data privacy violation, stereotyping and bias, planned obsolescence, and environmental negligence. The lack of regulation, pressure for innovation and creativity, and competition for attention and engagement, combined with a lack of education and training or ramifications can lead to poor individual and organisational choices and behaviours (Bouwer, 2019). The creative industries themselves are making various efforts to produce industry-specific (or even company-specific) codes of conduct, ethical guidelines, and education. For example, the Fair Wear Foundation<sup>21</sup> aims to improve labour conditions in the garment industry, and Black Lives in Music<sup>22</sup> have created a UK Music Industry Anti-Racism Code (2023) to protect and represent Black and ethnically diverse musicians and workers. However, there is, as yet no centralised effort to ensure ethical approaches to the use of data in the creative industries.

Given the scattered nature of the related advice (given previously), the complexity of understanding policy and legal frameworks, and the risk-averse nature of many ethical business policies, the potential benefits for the use of data in the creative industries are often lost, and innovative practices are often challenged. To mitigate against this requires development of a stream of practice-based thinking surrounding data ethics, which is not currently taught in many creative programmes and has only recently been more fully addressed as part of ‘professional issues’ components of computer science degrees, data skills programmes, and emerging data skills initiatives (e.g. under British Computer Society (BCS) guidance, graduates should have “the ability to recognise the legal, social, ethical issues involved in the exploitation of computer technology and be guided by the adoption of appropriate professional, ethical and legal practices” (BCS: The Chartered Institute for IT, April 2022)). However, these changes currently influence future/newly entering sector professionals rather than practising and trading creatives, and, as more formalised structures emerge (e.g., regulatory changes; more stringent or better publicised best practices), currently practising creatives will also have to step up their game; it’s not just about training those early in their careers.

Prevention is the key route to addressing ethics within the realm of creative practice. This perspective must become deeply ingrained, given the intricate landscape of start-up investments and potential data reuse, sharing, or integration into future AI training datasets. Taking a proactive approach to ethics mitigates risks and ensures a safer and more effective pathway for new products, services, and experiences, but it also necessitates a fundamental redesign of digital tools and software to align with ethical data practices. A belated

rethink of architecture can lead to unwarranted delays and increased costs throughout the development process. A commitment to ethical data usage, coupled with a keen understanding of how design influences user perceptions of data utilisation and the overarching purpose of data use, holds the potential not only to conserve time and resources but also to guide start-ups or product development teams towards a more refined focus on key success metrics. This approach encourages a more profound understanding of their target audience, prompts strategic considerations for market positioning, facilitates the delineation of a robust product roadmap, and fosters the cultivation of trust and a positive brand reputation. Thus, while ethical data practices are indispensable from both a legal and ethical standpoint, a conscientious and introspective approach can significantly enhance the design and success of commercial creative products.

### **Themes in data ethics**

There are a variety of themes that any project or initiative needs to address when considering the role of ethics in its approach to data, which remain true for its use within the creative industries. These include how data is collected, stored, and transmitted; consent and approval; privacy and how it relates to data aggregation; inclusive data design; ethical business and employment practices; data analytics, modelling, and their relation to inherent bias; and the environmental impact of digital activities. In addition, there then need to be put in place frameworks for managing responsibility when it comes to data, including accountability; responsibility for updating and checking ethical approaches; planned response to issues; codes of conduct; information security; risk registers and disaster recovery; responsibility for communications; and complaints processes, including whistleblowing.

From a practical point of view, there are various principles that can be put into place regarding the collection, storage, analysis, usage, and transmission of data. Informed consent is foundational, requiring clear communication with individuals about current and future data usage and the option to decline participation. Privacy, another paramount theme, intertwines with data aggregation, raising questions about the responsible handling of personal information within larger datasets. Anonymisation and robust security measures protect privacy and prevent breaches. Data minimisation emphasises collecting only necessary information, guarding against data sprawl. Embracing inclusive data design ensures that diverse perspectives and experiences are considered during data collection, promoting fairness and equity. Transparency is key, as projects should openly detail their data collection methods and potential risks. Responsible data retention and disposal, along with proactive bias mitigation, is critical. When it comes to data analytics and modelling, addressing inherent bias is imperative to avoid perpetuating unfair

or harmful outcomes. Compliance with data protection laws and stakeholder engagement, particularly those affected by data collection, are crucial. It is also important to understand that ethical practices are not restricted to newly collected personally identifiable data but also apply to work with existing modern and historical data sets which may be used in analytics, modelling, training data sets, and so on, which may carry their own bias and/or ethical questions. Last, recognising and mitigating the environmental impact of digital activities is increasingly vital as the digital realm's ecological footprint grows.

Accountability for data ethics plays a pivotal role in R&D, demanding that individuals and organisations alike take responsibility for their actions and that ethical approaches evolve in tandem with technological advances and societal changes. Planning responses to potential ethical issues is also vital, as it proactively addresses challenges that may arise via data handling. Many organisations are moving towards codes of conduct, which serve as guiding principles and set clear expectations, for governing data practices. Risk registers and disaster recovery plans become essential tools for pre-emptively identifying and mitigating potential risks to data ethics while establishing procedures for recovery and damage control in case of unforeseen crises. Responsibility for communications is an often overlooked but integral facet, emphasising transparent and ethical communication with stakeholders, including data subjects, to foster trust and understanding. An impactful example of this type of meaningful stakeholder (and data subject) engagement and accountability can be found in the work of Design Beku in creating the AI (ADMS) observatory, which documents both actual and potential harms to individual and collective rights, building upon a long-standing programme of ethical co-design work with grassroots communities from their base in Bengaluru, India.<sup>23</sup> (Engagement and awareness of stakeholders in data projects is also explored further in this chapter's case study on Kate Steenhauer's work.) Last, an effective complaints process, which encompasses mechanisms for addressing potential harms and for effective whistleblowing, stands as a cornerstone of ethical data governance, offering a channel through which individuals can voice concerns and expose unethical practices without fear of retaliation, thereby reinforcing the accountability framework. (For overview texts that consider these aspects, see Brown, 2013; Mallery, 2015; Richterich, 2018; Room, 2021; Ajunwa, 2023.)

The interconnectedness of all of these themes underscores the complexity of data ethics in contemporary R&D projects, particularly for those working – like much of the creative sector – as freelancers or in micro-SMEs. It is clear that a structured approach to contemplating ethical approaches to the use of data in the creative industries is beneficial to those undertaking innovation in this space rather than hoping that every project would be able to tackle every facet of a rapidly changing topic in a technologically fluid space.

### Creative Informatics' self-assessment approach

Over its five-year funded period (2018–2023), the Edinburgh based Creative Industries Cluster (see Chapter 2) Creative Informatics funded over 130 small R&D projects. As part of our approach to managing funding, each funded project had to undertake an audit of their approach to innovating with data, using our “Creative Informatics Self-Assessment Ethics Review Form” (Osborne et al., 2020, and see Appendix 1). This provides a structured way of thinking through project values and priorities and encourages thoughtful reflection on work with data and new technologies in the creative industries. Given that this was a prerequisite to unlocking funding, and part of each project’s contracted duties, we did not experience any significant resistance to this approach, although participants found the process unusual, often finding themselves thinking in these broad ethical terms for the first time, and sometimes struggled to find time to engage significantly or prioritise this. However, once initially completed, the forms allowed a constructive to-and-fro between Creative Informatics and each project, encouraging and supporting while also highlighting particular ethical aspects that are of importance to the creative industries.

Creative Informatics participants that benefited from this consultation included Bearhammer Games,<sup>24</sup> a company developing *Venture’s Gauntlet*,<sup>25</sup> a VR adventure fitness game. As a game with user profiles, there is an element of using data on users, as well as necessary performance tracking to enable gameplay; as a VR game they are dependent on third-party hardware and their users accessing and experiencing their game within the context of this hardware and their associated distribution platforms, and as a health and fitness game there are elements around handling of health and performance data to consider. One of the challenges of complex data-driven projects like this is their use and dependencies on other tools, systems, and platforms, which adds complexity to legal, user experience, and data use expectations and broader ethical considerations. Bearhammer made productive use of the ethics process and extended follow up discussions to reflect on their offer, how they articulate use of data, and how their own software and game experience relates to other software and hardware tools it integrates with – and associated terms of use across platforms and third-party tools. This example illustrates that whilst ethics processes can seem quite theoretical, applying them to practical creative practices and businesses requires engagement with technical detail, information security processes, as well as underpinning business models and long-term plans that may be significant for articulating planned current and future use of data – whether personal data (subject to data protection), licensed data (e.g. through partners or data suppliers), or new data created or generated as new intellectual property for the creative organisation.

For artist Andrew Brooks,<sup>26</sup> developing his award-winning *FND Stories*<sup>27</sup> art project, the issue of ethics was always core to his artistic process, which sat at the intersection between qualitative research and artistic practice. Brooks

was creating art works from data on the experience of living with functional neurological disorders (FND)<sup>28</sup> and worked with the charity FND Hope<sup>29</sup> to identify interviewees. In discussing the ethics around this project, there needed to be consideration of building appropriate transparency and trust with participants around how their lived experiences would be communicated in the art, what kinds of advance consent would be needed depending on how the resultant art works would be used, and how the ethics of this project related to wider best practices and processes already in use by FND Hope. The data to be collected was highly personal and emotive in nature, and, whilst some data was collected through a (global) survey, a significant element of the data collection was an in-depth interview process with a small number of participants who would inevitably be somewhat identifiable, with elements of transcribed text and non-anonymised video content directly forming parts of the artworks. Discussing some of these issues at the outset enabled Brooks to find the right balance of information and consent and to think about his longer-term plans for the works and their use. One particular point of discussion was looking forward to potential future exhibition plans and any potential for sale of the works and what implications this would hold for participants and the type of consent required. Given the potentially exposing experience of being part of an art project of this type, these discussions with both Creative Informatics and FND Hope, as well as Brooks' own reflection on the experience he wanted to create for his participants, were important to consider and establish prior to gaining initial consent. As has often occurred across discussions with Creative Informatics projects, discussions of ethics considerations inevitably also touched upon future plans, business models, and the wider values of the R&D project team as they looked towards the kinds of business or experience they want to create. Through his project, Brooks was able to build a strong and trusted relationship with his participants, leading to a very warm reception from both his participants and wider audiences to his initial exhibition of FND Stories at Inspace gallery<sup>30</sup> in June 2022, with the work going on to win the Art of Neuroscience Award 2023.<sup>31</sup>

Over the course of the Creative Informatics programme, and through discussions with many projects, we have observed a number of trends. These include a shift over time toward deeper engagement with both environmental and information security concerns, in line with wider public discourse. There has often been a lack of understanding of what is and what is not personal data and where particular data may still carry risks around identifiability or profiling. There was a lack of understanding of the reusability of data beyond its created bounds, particularly regarding third-party interactions about data and the implications this may have. There was also confusion regarding data retention and what is or is not appropriate under the consent obtained at the outset of a project.

In the context of a project such as CI, the use of an ethics framework can be clearly bounded by funder requirements and reporting mechanisms. For

those operating without such constraints, it can be difficult to inculcate ethical approaches, as the perceived risks can be deemed low, while the effort needed to understand and mitigate for ethical issues is high.

It became clear to us that while our form provides a structured mechanism for self-reflection, the interaction with the Creative Informatics team to discuss and lodge the forms was an equally crucial part of the process, providing a mechanism for improvement but also accountability. Without this, the self-reflection activities may not have enough strength to stand alone (this is a well-understood aspect of self-reflection and systems that depend on self-starting, see Fetterman et al., 1996). It is also worth noting that most of our projects were short-term (3–12 months), but ideally this ethics review process would be repeated every 6 months or so (data-based projects tend to develop and morph rapidly). Regularly providing this mechanism for discussion and accountability is therefore resource intensive. Self-assessment itself may also be the mainstay of a rich, white western institution with generous funding, and further consideration is needed as to how this approach intersects with diversity and global issues and whether it is appropriate or applicable to all cultures and resources. For example, publicly funded organisations often have to make choices regarding data collection and analysis versus risk mitigation of the use and storage of that data: the time and effort needed to undertake data self-assessment is not inconsequential and may itself have ramifications.

## Recommendations

Following on from our experiences within the Creative Informatics programme, we recommend the following concrete approaches to engaging with ethical aspects of data within the creative industries. First, we recommend the adoption of best practices – although those practices are constantly changing. Sources of emerging best practice are given previously, and we encourage practitioners and funders to watch this developing area. Second, we encourage the embedding of ethical aspects of creative work within schools, higher, and further education frameworks, as well as the need to provide mechanisms for upskilling for existing practitioners. We encourage those providing online resources in this area, including self-assessment tools, to keep an eye to inclusion and diversity, particularly in order to enable creatives to engage without feeling excluded by technical (legal and technological) language. All training materials need to emphasise the benefits of a data ethics approach, giving concrete frameworks and examples on how to adopt data ethics best practices and placing less emphasis only on risk management and potential issues, which can lead to creatives moving away from productive and appropriate use of data, or failing to get consent for potentially beneficial uses of data.

We encourage accountability for data ethics approaches, and this comes with the need to provide structured methods and approaches above and beyond existing legal frameworks of interventions for clear misconduct. For example, funders and research support organisations are well placed to establish checks, balances, and reporting structures, given those that they fund are inherently motivated to engage with funder requirements. Likewise, the inclusion of ethics in contracts is essential: Creative Informatics found that including ethics reporting as a required component in contract processes led to fruitful and productive self-reflection, requests for support, and opportunities for discussion which enabled wider reflection on the role of data in emerging products while also introducing accountability to the process. Finally, we welcome further opportunities for critical intersectional engagement in data ethics conduct – particularly in awareness of the important interconnectedness of the availability of digital data sets to the shaping and training of AI. The inequalities that are often embedded in new AI models and systems as a result of utilising data that is not appropriately reflective or representative of society have the potential to cause great and ongoing societal harm, and whilst these are issues for all modern data providers, they are also increasingly important for SMEs as AI enters more widespread adoption at all levels of the creative industries.

## Conclusion

There is clear demand and interest in the appropriate and ethical use of data within the creative industries – though this is not universal. There is also a clear need for both structured guidance and for support navigating and understanding already-available guidance. Whilst there is a strong array of guidance and best practice documents, approaching these can be intimidating and sometimes require support and scaffolding to help creatives understand which elements are relevant and to see ahead to potential future risks.

Embedding ethics into the work of creative SMEs is non-trivial and still unusual but does position them for future robustness in terms of facing potential risks; building trust with users, customers, and investors; and ensuring they are better skilled to face the ethical complexity of working with data as a key business asset and tool for building new and disruptive business models. The Creative Informatics framework we have provided in this chapter provides a mechanism by which to explore ethical aspects of innovation, but we also stress the need for accountability and the importance of mechanisms which will hold creatives to account (whether from a funder or consumer perspective). Only by placing data ethics at the heart of data innovation in the creative industries can we build new products, services, and experiences that cause minimal harm while encouraging inclusion, sustainability, and long-term success. Ethics must become embedded into all aspects of creative data practice.

# APPENDIX 1

## Creative Informatics self-assessment ethics review form

Here (in Table 6.1) we introduce our framework (Osborne et al., 2020), which provides a level of guidance for those working in and around the creative industries or with data more broadly in a creative context. It should be used as a tool for reflection with prompts to consider, document, and review approaches and practices and as a way to encourage positive engagement with legal and societal responsibilities. While these questions cannot be exhaustive, they should prompt review and reflection upon creative activities, asking how any entity will ensure their product, service, or business activities are consistent with emergent ethical best practices. We recommend that this be thought of as a living document, which is regularly revisited, particularly in conversation with an authority that can encourage accountability.

**TABLE 6.1** Creative Informatics Self-Reflection Ethics Checklist Form

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<i>Ethical Consideration</i>	<i>Please explain your answers to the list of ethical considerations (e.g. your approach, processes, etc.) and any actions that may still be required.</i>
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**Existing Data:**  
Any data I/we are using has been collected in fair and appropriate ways and is licensed/approved for the way we are using it.

---



*Ethical Consideration*

*Please explain your answers to the list of ethical considerations (e.g. your approach, processes, etc.) and any actions that may still be required.*

**Collecting New Data:**

My/our practices comply with key legislation (GDPR, Data Protection, Privacy and Electronic Communications Regulation) and/or we are taking action to ensure compliance.

I/we have considered if we need specialist legal advice on the data we are collecting.

I/we have undertaken privacy impact assessments (PIAs).

I/we have considered the data we collect or plan to collect and ensured that:

– The use, aggregation, and processing of any personal data is fair and appropriate.

– There is a valid and legal basis for processing any personal data (consent or other legal basis).

– Any data is used for a defined purpose and there are processes to monitor any change in purpose.

– Users understand, through clear communication, how their data is being collected, how it is used now and may be used in the future, how their data is stored, who will have access to it, and how they can make changes or withdraw consent in the future.

– Risks are minimised for more vulnerable users (which may include not capturing their data, clearer or alternative communications, easy withdrawal of consent).

– Long-term privacy implications have been considered, including processes for managing requests by users to change or withdraw consent for use of their data.

(Continued)

TABLE 6.1 (Continued)

*Ethical Consideration*

*Please explain your answers to the list of ethical considerations (e.g. your approach, processes, etc.) and any actions that may still be required.*

I/we have considered our responsibilities towards users around any data that is or could be/become personally identifiable (e.g. location, biometric data, user behaviour data, etc.) and long-term privacy implications arising from the data or of this data being used in combination with other data sets.

**Storing Data:**

I/we know where any data we collect and use is stored or processed, and this is compliant with legislation and user privacy rights (e.g. in the UK or EU) as well as user expectation.

Access to any data is restricted to authorised individuals who truly have need to access it.

Data is safe from unauthorised insiders or external attackers and there are processes to respond if it is compromised.

Data is stored in the safest form through anonymisation, encryption, etc.

**Inclusive Design:**

- Our product/service/business is:
- Compliant with equality and human rights legal requirements.
  - Designed to be inclusive of all users.
  - Accessible to those with disabilities.
  - Respectful of diverse populations and cultural backgrounds.

---

*Ethical Consideration**Please explain your answers to the list of ethical considerations (e.g. your approach, processes, etc.) and any actions that may still be required.*

---

**Ethical Business and Employment****Practices:**My/our business model and/or production methods respect others' rights. My/our workers and subcontractors are paid appropriately for the minimum or living wage in their locality, their human rights are respected, and they are working under fair contract terms. My/our product/service/business is not reliant on exploiting volunteered, underpaid, or 'gig economy' workers. **Data Analytics and Modelling:**

Any text and data mining, machine learning, or AI used with data in my/our product/service/business:

– Are based on training data sets representative of wider and diverse society. – Are not unfair, exclusionary, or discriminatory. – Do not reinforce or create new inequalities. I/we are committed to monitoring the fairness and appropriateness of our data analytics and modelling approaches to ensure they remain ethical. 

---

*(Continued)*

TABLE 6.1 (Continued)

*Ethical Consideration*

*Please explain your answers to the list of ethical considerations (e.g. your approach, processes, etc.) and any actions that may still be required.*

**Environmental Impact:**

I/we have considered the environmental impact of our chosen technologies and reviewed less environmentally impactful alternatives.

I/we have reviewed or are in the process of reviewing the future environmental impact of any goods or physical materials that will be created and how this may be minimised (e.g. through measures to ensure they can be recycled).

I/we are committed to reviewing the environmental impact of our product/service/business and, where possible, documenting and tracking this.

**Ongoing Review:**

I/we are committed to reviewing this ethics self-assessment on a six-monthly basis, and this is embedded in my/our organisational processes.

The named person responsible for this review is:  
  
The next review is due to take place on:

**Additional comments, concerns or notes:**

**Are there any ethical areas where you need further advice or support?**

**By signing below you are indicating that:**

*I have read the Creative Informatics Ethics Statement, considered how it applies to my own organisation or practice, and completed the self-assessment checklist for my product, service, or business.*

**Name:**

\_\_\_\_\_

**Date:**

\_\_\_\_\_

## APPENDIX 2

### Ethics guidance and resources for data, data science, and AI

**TABLE 6.2** Suggested Guidance and Resources

<i>Resource</i>	<i>Publication Date</i>	<i>Further Information</i>
Beijing AI Principles (documented in Datenschutz und Datensicherheit – DuD, 43)	2019	<a href="https://doi.org/10.1007/s11623-019-1183-6">https://doi.org/10.1007/s11623-019-1183-6</a>
The CBI (Confederation of British Industry): Embed, Engage, Explain – A Guide to Approaching Data Ethics	2022	<a href="https://www.cbi.org.uk/articles/embed-engage-explain-a-guide-to-approaching-data-ethics/">https://www.cbi.org.uk/articles/embed-engage-explain-a-guide-to-approaching-data-ethics/</a>
Centre for Data Ethics and Innovation (CDEI), part of the Department for Science, Innovation and Technology	2022 onwards	<a href="https://www.gov.uk/government/organisations/centre-for-data-ethics-and-innovation">https://www.gov.uk/government/organisations/centre-for-data-ethics-and-innovation</a>
Data Feminism – D’Ignazio, C. and Klein, L. F. (MIT Press)	2023 (first published 2020)	<a href="https://direct.mit.edu/books/oa-monograph/4660/Data-Feminism">https://direct.mit.edu/books/oa-monograph/4660/Data-Feminism</a>
Digital Catapult Machine Intelligence Garage: Ethics Framework	2021	<a href="https://futurescope.digicatatapult.org.uk/wp-content/uploads/2023/04/DC_AI_Ethics_Framework-2021.pdf">https://futurescope.digicatatapult.org.uk/wp-content/uploads/2023/04/DC_AI_Ethics_Framework-2021.pdf</a>
IEEE Ethically Aligned Design	2018	<a href="https://standards.ieee.org/wp-content/uploads/import/documents/other/ead_v2.pdf">https://standards.ieee.org/wp-content/uploads/import/documents/other/ead_v2.pdf</a>

(Continued)

TABLE 6.2 (Continued)

<i>Resource</i>	<i>Publication Date</i>	<i>Further Information</i>
Information Commissioner's Office (ICO): Advice for Small Organisations	2016 onwards	<a href="https://ico.org.uk/for-organisations/advice-for-small-organisations/">https://ico.org.uk/for-organisations/advice-for-small-organisations/</a>
Information Commissioner's Office (ICO): Guidance on AI and Data Protection	2023	<a href="https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/artificial-intelligence/guidance-on-ai-and-data-protection/">https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/artificial-intelligence/guidance-on-ai-and-data-protection/</a>
Microsoft Research Group FATE: fairness, Accountability, and Ethics in AI	2018 onwards	<a href="https://www.microsoft.com/en-us/research/theme/fate/">https://www.microsoft.com/en-us/research/theme/fate/</a>
The ODI (Open Data Institute) Data Ethics Canvas	2021	<a href="https://www.theodi.org/article/the-data-ethics-canvas-2021/">https://www.theodi.org/article/the-data-ethics-canvas-2021/</a>
OECD AI Principles	2019	<a href="https://oecd.ai/en/ai-principles">https://oecd.ai/en/ai-principles</a>
Omidvar Network Ethics Explorer Tool	2020	<a href="https://ethicalexplorer.org/">https://ethicalexplorer.org/</a>
A People's Guide to AI	2018	<a href="https://mimionuoha.com/a-peoples-guide-to-ai">https://mimionuoha.com/a-peoples-guide-to-ai</a>
UK Government Data Ethics Framework	2018 onwards	<a href="https://www.gov.uk/government/publications/data-ethics-framework">https://www.gov.uk/government/publications/data-ethics-framework</a>
UN Guide to Business and Human Rights	2011	<a href="https://www.business-humanrights.org/en/big-issues/un-guiding-principles-on-business-human-rights/">https://www.business-humanrights.org/en/big-issues/un-guiding-principles-on-business-human-rights/</a>
Unbias Awareness Cards	2018	<a href="https://unbias.wp.horizon.ac.uk/fairness-toolkit/">https://unbias.wp.horizon.ac.uk/fairness-toolkit/</a>
World Bank Code of Ethics	2020 (published 2022)	<a href="http://documents.worldbank.org/curated/en/147281468337279671/WBG-Code-of-Ethics">http://documents.worldbank.org/curated/en/147281468337279671/WBG-Code-of-Ethics</a>
World Federation of Advertisers: Data Ethics – The Rise of Morality in Tech; The CMO Guide to Data Ethics in Practice; Data Ethics Playbook	2020 onwards	<a href="https://wfanet.org/leadership/data-ethics">https://wfanet.org/leadership/data-ethics</a>

## Notes

- 1 The Guardian 2018, The Cambridge Analytica Files. <https://www.theguardian.com/news/series/cambridge-analytica-files>
- 2 <https://www.gov.uk/government/organisations/centre-for-data-ethics-and-innovation>
- 3 <https://ico.org.uk/>
- 4 <https://www.legislation.gov.uk/ukpga/2010/15/contents>
- 5 <https://www.gov.uk/data-protection>
- 6 <https://www.legislation.gov.uk/ukxi/2019/605>
- 7 <https://bills.parliament.uk/bills/3137>
- 8 See <https://gdpr-info.eu/> and <https://gdpr.eu>
- 9 <https://theferret.scot/>
- 10 <https://edinburghtoollibrary.org.uk/>
- 11 <https://myturn.com/>
- 12 Estimates quoted in ETL Adopt-a-Tool campaign: <https://edinburghtoollibrary.org.uk/adopt-a-tool/>
- 13 <https://aoir.org>
- 14 <https://www.oecd.org>
- 15 <https://www.digicatapult.org.uk>
- 16 <https://futurescope.digicatapult.org.uk/our-programmes/machine-intelligence-garage/>
- 17 <https://direct.mit.edu/books/oa-monograph/4660/Data-Feminism>
- 18 <https://juliesbicycle.com>
- 19 <https://www.creativecarbonscotland.com>
- 20 <https://sas-dhrh.github.io/dhcc-toolkit/>
- 21 <https://www.fairwear.org/>
- 22 <https://blim.org.uk>
- 23 <https://ai-observatory.in/>
- 24 <https://bearhammergames.com/>
- 25 [https://store.steampowered.com/app/1840140/Ventures\\_Gauntlet\\_VR/](https://store.steampowered.com/app/1840140/Ventures_Gauntlet_VR/)
- 26 <https://www.ajb-art.com/>
- 27 <https://www.ajb-art.com/fnd-stories>
- 28 <https://www.nhsinform.scot/illnesses-and-conditions/brain-nerves-and-spinal-cord/functional-neurological-disorder/>
- 29 <https://fndhope.org/>
- 30 <https://inspace.ed.ac.uk/exhibition-fnd-stories/>
- 31 <https://web.archive.org/web/20230917083142/https://aon.nin.nl/>

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## CASE STUDY

### Creating music from art: Kate Steenhauer and painting with music

Kate Steenhauer is a visual artist and filmmaker, whose practice explores the dynamic and interactive nature of painting in dialogue with other artforms, technology, and their relationship with audiences. Her multi-award-winning cross-disciplinary collaborations encompass live stage performances directed by Aberdeen Performing Arts and National Theatre of Scotland, audio-visual productions consisting of films and (live) installations, and group and solo art shows exhibited across the UK.

In 2020, Kate applied to be a Creative Informatics Connected Innovator to progress work on her project, *Painting Music*.<sup>1</sup> Developed in collaboration with AI developers Andrew Starkey and Jack Craven from Aberdeen University, *Painting Music* uses artificial intelligence (AI) to create music from live painted drawings. The AI algorithm is based on neural nets and exploits areas of similarity within the two distinct artforms to respond to the live-painted elements, producing musical notes that reflect the development of the evolving artwork.

Following the demonstration of a prototype system<sup>2</sup> at Aberdeen May Festival 2019, Kate was keen to expand her vision – building on this prototype and bringing *Painting Music* to creative communities and audiences, encouraging them to investigate and explore the realm of AI and its impact on our world.

During her Connective Innovator attachment, she therefore determined to develop a standalone version of the system that does not require input from the AI team and can be controlled by the artist, which was a particularly pertinent need during the COVID-19 restrictions in which this activity was taking place. To achieve this, Kate used the Creative Informatics funding to enable the procurement and development of hardware and software in collaboration with fellow creatives and technical specialists across a diverse range of expertise, including fellow Creative Informatics partners Ray Interactive, who provided the system's functionality, including hardware, software, construction, and labour.

The bespoke 'toolkit' produced comprised two cameras (one to monitor the painting, the other to alternate between capturing close-ups of the act-of-making and the artist themselves), painting board, lighting, laptop, and software, which allowed Kate to independently generate high-quality material through digital as well as physical platforms not only in relation to *Painting Music* but exploitable for any of her other collaborations (Pingel, 2021).

This system was subsequently used in a live setup for a production called *In the Bell*, engaging the Scottish Trans community, with Kate additionally securing a contract to give a series of six online workshops with the *Painting Music* system at An Lanntair Education and Outreach programme working with

young people in the Outer Hebrides, as well as a series of public workshops in collaboration with the Elphinstone Institute (which researches and promotes the culture of the north and northeast of Scotland) and a local Aberdeen community centre.

With her Connected Innovators work successfully concluded – and having developed a comprehensive set of creative and technical skills in programming and AI through work with project partners – Kate went on to become part of the final Resident Entrepreneurs cohort in 2022, seeking to create an audience interactive Painting Music product. This portable standalone system would allow the general public to create music in real time (either in conjunction with Kate or without), using AI by painting on their own mobile phone or via a single iPad. This mini performance, created by the public, could additionally be broadcast on a screen as an audio-visual installation or shared via social media platforms.

With work still ongoing, Kate and her collaborators have completed a prototype of the Painting Music Sketchpad, an application that converts arbitrary shapes into credible and consistent music in a contemporary classical/minimalist style. Though the current prototype does not currently employ an AI/ML model, instead using a set of hard-coded rules that use these categories to decide what music to produce, which limits the potential variation of the musical output, further development into integrating AI into the setup has been supported by Creative Informatics' Creative AI Music & Audio Pilot Project – in 2023.

This additional funding significantly enhanced and optimised the music generation to produce an AI-driven system that is capable of creativity during the composition process, using recent advances in AI at the University of Aberdeen that will allow the AI to choose notes to play based on learning derived from previous musical pieces. The difference to other approaches will be the ability of the system to understand what combinations of notes have *not* been played together, thereby giving a framework that will allow the AI to creatively investigate unexplored spaces in its network (i.e. combinations of notes not previously played in its experience). This new version will produce more sophisticated and interesting outputs which should drive a greater user experience of the Sketchpad and Canvas Capture.

The unique selling point of Painting Music is that it uses AI models that are explainable – an approach that also allows for more transparent and less environmentally impactful use of AI. A lot of AI models being used in industry are 'black box' AI which use very large data sets and do not enable users to understand how and why the AI model has made its decisions. This is not the case with the model being developed for Painting Music, where the use of explainable AI means that decisions can be better interpreted and understood and exemplify the product's fundamental commitment to raising questions and stimulating conversation around AI ethics, the datasets used for training AI

models, the role of explainable vs black-box AI approaches, the application of AI itself in our world, and the subsequent impact it has on our society.

To complement the project, the team behind Painting Music has made a short award-winning documentary about that performance and the software. This film has been shown at multiple events such as 2021 Synaesthesia Ars Electronica, 2021 Visual Arts Scotland exhibition, 2020 George Washington Wilson Centre for Art and Visual Culture, and Haddo House 2019 Arts Festival, where it received praise from King Charles III.

Victoria Murray

### **Bibliography**

Pingel, J. 2021. Painting Music with Artificial Intelligence. *Mathworks Blog*, 31 March 2021. [https://blogs.mathworks.com/deep-learning/2021/03/31/painting-music-with-artificial-intelligence/?from=jp&doing\\_wp\\_cron=1696954644.9067049026489257812500](https://blogs.mathworks.com/deep-learning/2021/03/31/painting-music-with-artificial-intelligence/?from=jp&doing_wp_cron=1696954644.9067049026489257812500).

### **Prototype demo videos**

<https://youtu.be/ynAaxgDRYvs>

<https://youtu.be/ZxJBW-1IAK0>

<https://youtu.be/R9IF2CtQnds>

[https://youtu.be/c\\_1zhAZa4gl](https://youtu.be/c_1zhAZa4gl)

### **Case study notes**

1 <https://katesteenbauer.com/painting-music/>

2 See <https://vimeo.com/601714128/fc4e5f003f>