Institution:
Bangor University, 10007857

Unit of Assessment:
UoA 21 - Sociology

Title of case study:
Emotional AI: Governance, Ethics and Society

Period when the underpinning research was undertaken:
2014 - 2020

Details of staff conducting the underpinning research from the submitting unit:

Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Professor Andrew McStay	Professor in Digital Media	October 2010 – present

Period when the claimed impact occurred:
1 January 2014 - 31 July 2020

Is this case study continued from a case study submitted in 2014? N

1. Summary of the impact

Bangor University's research on 'Emotional Artificial Intelligence' (eAI) has influenced governance, policy, business models and creative artefacts in the design and ethical application of emergent technologies globally. Impacts include co-creation with US/UK stakeholders of the world's first ethical benchmarks for eAI; informing global design standards and protocols for emotion and affect-based technologies; clarifying digital privacy rights for the United Nations High Commissioner for Human Rights; distilling multi-stakeholder perspectives to guide decisions on eAI ethics across UK Government departments, regulators and US/UK companies; and shaping an international festival programme, inspiring artists and informing citizens.

2. Underpinning research

Conducted between 2014 and July 2020, Bangor University's research has revealed a pressing and global need to consider ethical dimensions of developing technologies that gauge and interact with affective and emotional states. This body of work began as a philosophical analysis of privacy ethics **[3.1]** but has since contributed to the interdisciplinary fields of New Media Studies, Digital Sociology, Technology Ethics and Science & Technology Studies. Philosophical analysis of emergent privacy issues was thereafter applied to empirical work on the technology that McStay first termed 'empathic media'. These are technologies that measure affect (e.g. stress, anger) to understand the disposition of others and thereby enable more meaningful interactions with them **[3.2]**. Building on this, McStay foundationally developed the more specific concept of 'Emotional AI' (eAI), referring to technologies using affective computing and machine learning techniques to sense, interact and feel-into human emotional life. Uniquely, McStay's empirical research found that UK citizens are not happy with the deployment of these technologies and that there exists potential for ethical, legal and social harm **[3.2, 3.3]**.

An AHRC Early Career Fellowship in 2015 **[3.a]** initially enabled and generated an original understanding of multi-stakeholder attitudes towards eAI in relation to elite industrial, policy, security, legal, municipal and NGO stakeholders across Europe, the Middle East, USA, Russia and South Korea **[3.1, 3.3]**. Through national survey work, it also found concern among UK citizens about the potential of these technologies **[3.2, 3.3]**.

This foundational research attracted further funding for McStay's study of eAI, via an AHRC-ESRC award in 2018 **[3.b]** that generated workshops with relevant elite European and Japanese policy,

defence, security, industrial and academic stakeholders **[3.4, 3.5]**. McStay also attracted funding from the UKRI-Japan Science & Technology Joint Call **[3.c]**. Alongside these, McStay was funded via an EPSRC grant led by Glasgow University to deliver on the ethics in relation to eAI and toys with third sector organisations **[3.d]**.

Specifically, the research generated the following unique insights that underpin the impacts:
a) It pioneered the term 'empathic media', critically advanced the concept of 'eAI', and brought a unique combination of philosophical and social science perspectives to understand the nature of eAI and its rising social significance **[3.1, 3.2, 3.3]**.
b) It shaped, identified and tabulated the range and nature of the diverse organisations actively pursuing and applying eAI **[3.1, 3.2, 3.3]**.
c) It found an absence of civic protections: the research was the first to identify, explore and provide solutions on the lacunae in data protection law regarding technologies that capture information about emotions in public spaces yet fall outside data protection frameworks **[3.1, 3.2, 3.3, 3.4]**.
d) It quantitatively and qualitatively found that citizens are concerned about what happens with technologies that make use of data about their emotions and why this is the case **[3.2, 3.5]**; but also, that parents are tentatively interested in eAI in toys, robots and child AI services under the right conditions **[3.6]**.

3. References to the research

Research Outputs

3.1 **McStay, A.** (2014) Privacy and Philosophy: New Media and Affective Protocol. Peter Lang. Submitted to REF2021 (REF identifier UoA21_42)
3.2 **McStay, A.** (2016) Empathic media and advertising: Industry, policy, legal and citizen perspectives (the case for intimacy). *Big Data and Society*, **3**(2), 1-11 DOI (Peer-reviewed journal article) Submitted to REF2021 (REF identifier UoA21_20)
3.3 **McStay, A.** (2018) Emotional AI: The Rise of Empathic Media. London: Sage. Submitted to REF2021 (REF identifier UoA21_18)
3.4 **McStay, A.** and Urquhart, L. (2019) "This Time With Feeling?" Assessing EU Data Governance Implications of Out Of Home Appraisal Based Emotional AI. *First Monday,* **24**(10). DOI (Peer-reviewed journal article)
3.5 **McStay, A.** (2020) Emotional AI, soft biometrics and the surveillance of emotional life: An unusual consensus on privacy. *Big Data & Society*, **7**(1), 1–12 DOI (Peer-reviewed journal article)
3.6 **McStay, A.** (2020) Emotional AI and EdTech: serving the public good. *Learning Media & Technology* **45**(3), 270-283. DOI (Peer-reviewed journal article) Submitted to REF2021 (REF identifier UoA21_19)

Grants

3.a **McStay, A.** (2015 – 2017) *Empathic Media: Theory-Building & Knowledge Exchange with Industry Regulators & NGOs*. AHRC Early Career Fellowship, AH/M006654/1, GBP133,375 (BU: R07R05).
3.b **McStay, A.** (2019 – 2020) *Emotional AI: Comparative Considerations for UK and Japan across Commercial, Civic and Security Sectors*. ESRC, ES/S013008/1, GBP50,288 (BU: R20R03).
3.c **McStay, A.** (2020 – 2022) *Emotional AI in Cities: Cross Cultural Lessons from UK and Japan on Designing for An Ethical*. ESRC, UKRI-Japan Science & Technology Joint Call on AI and Society in 2020, ES/T00696X/1, GBP404,496 (BU: R20R04).
3.d **McStay, A.** (2019 – 2020) *Rights of Childhood: Affective Computing and Data Protection*. University of Glasgow – sub award on Glasgow's EPSRC grant: *Human Data Interaction: Legibility, Agency, Negotiability*, EP/R045178/1, 301671, GBP42,118 (BU: R20R04)

4. Details of the impact

In an embryonic situation where policy lags behind technology, Bangor University research led by McStay has raised awareness at international and national levels of data ethics leading to the adoption of normative principles in relation to eAI. The impact on governance has both been

external - a change in global technology standards and influence on rights and regulations - and internal, a change in organisational norms that exceed law, ethical checklists and ethically guided strategies. It has also shaped wider creative and civic engagement with eAI.

International External Governance

The global impact of the research is demonstrated by its integration into the Standard for Ethical Considerations in Emulated Empathy in Autonomous and Intelligent Systems Working Group. Led by the Institute of Electrical and Electronics Engineers (IEEE), this is the global body currently defining the standards to guide technological development of emulated empathy. Its definition of emulated empathy, voted upon and agreed in February 2020, derives from Bangor research. The Chair of the IEEE P7014 Group for Emulated Empathy states that: (1) McStay is a thought leader in this area; (2) Bangor's work is directly influential on industry and policy making in the US, EU and UK; (3) Bangor's research has '*provided definitions and research-led insights that impact upon and inform IEEE's P7014 endeavour to shape AI for social good*' **[5.1]**.

As a member of the IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems, whose mission is to embed ethics in intelligent and autonomous technologies, McStay contributed to producing the go-to guidance document **[5.2]** for ethical issues in AI service design for both governments and commercial companies across the world. Bangor University research clearly informed the IEEE *Ethically Aligned Design* 2019 report **[5.2]**. Responding to IEEE input, NGO Privacy International cited McStay's wider work on smart cities and on emotion detection technology in public spaces **[5.3]**.

As a result of IEEE work, Bangor was given further opportunities to influence international external governance on eAI. In 2018, McStay was an invited expert delegate to a United Nations High Commissioner for Human Rights workshop in Geneva tasked with shaping Privacy Rights in the Digital Age. He was one of the few academics to be invited alongside largely corporate, NGO and political stakeholders. McStay's subsequent evidence to the UN Privacy rapporteur detailing privacy and ethical arguments informed a report prepared by the High Commissioner for Human Rights for the UN Human Rights Council that clarified principles, standards and best practices regarding the promotion and protection of the right to privacy in the digital age **[5.4]**. McStay was also an invited delegate to the UNICEF AI4Children 2019 workshop in Helsinki. Its policy lead stated that McStay is a '*friend who we think of for enriching the (UNICEF) work and who's own work we follow*'. In a broadcast presentation for US National Institute of Standards & Tech Internet of Things (IoT) Cybersecurity Colloquium in 2018, Bangor research was cited by the founder of the global thinktank IoT Privacy Forum. It was also cited in an IoT risks report (2018), co-authored with the Programme Manager of Cyber Security at US Department for Homeland Security, this reaching and influencing decision-makers at US Department for Homeland Security. The founder of the IoT Privacy Forum reported how Bangor University '*research on emotion detection has been an extremely valuable element in my work, influencing my thinking and the direction of the IoT Privacy Forum as a whole*.' Singling out McStay, he added how he is '*an influential voice in the global conversation about how to regulate in the domain of emerging technology*' **[5.5]**. This testifies to McStay's impact on private and public decisions about the ethical status of these technologies, deployment and the nature of social harms.

UK External Governance

By continuous engagement with multiple stakeholders, Bangor research offered ethical and rights-based evidence on eAI to various arms of the UK government influencing its thinking, guidelines and practice. McStay advised the Advertising Standards Authority on biometric/AI related development and was invited to join the Academic Advisory group for Policy Delivery department at Information Commissioner's Office (ICO), participating in an invite-only ICO event on regulating behavioural advertising. McStay takes part in the data protection NGO, Open Rights Group's Advisory Council. It participated in the international security think tank Royal United Services Institute invite-only workshop on AI and policing. By distilling such multi-stakeholder perspectives, Bangor University has guided decisions on emotional AI ethics across UK Government departments. In 2017, following the submission of written evidence to the House of Lords Select Committee on AI, Code 4 of its subsequent AI code states, 'All citizens have the right to be

educated to enable them to flourish mentally, emotionally and economically alongside artificial intelligence' pointing directly to the evidence which was the only submission to focus on eAI **[5.6]**. In 2018, McStay advised the UK Government on how to develop and promote humane technology through: two interviews by the Cabinet Office on promoting humane technology and facial recognition technologies in February 2020; McStay advised and reviewed the UK Government Centre for Data Ethics and Innovation (CDEI) report *Online Targeting* published in February 2020; and, in July 2020, Bangor University researchers advised the UK All-Party Parliamentary Group on AI on governance, ethics and emotion recognition through an invited written briefing and a private call with its co-chair to discuss regulation of these emerging technologies.

International Internal Governance

Bangor University has generated highly regarded international ethical checklists and bespoke ethical advice for global companies using eAI. In 2016, a UK government funded workshop, run by Bangor, promoted innovation in digital technology and generated ethical standards in the form of an agreed ethical code. The workshop brought together leading companies like IBM and Akamai, emotional AI specialists such as CrowdEmotion, data protection authorities, media regulator - The Committee of Advertising Practice, the Open Rights Group, technologists and select academics. In 2018, Bangor University worked with ChangeSciences, an ethical technology consultancy, for world-leading companies including Google, Accenture, Publicis, Virgin, General Electric and Johnson & Johnson, to design an internal ethical checklist for developers working with eAI. The UK Government CDEI report *Online Targeting* (2020) cited the checklist as an exemplar of best practice. Founder of ChangeSciences stated that Bangor University's '*empirical research and thinking on emotional AI have been deeply influential in how we conceive of emotion-sensing technologies and how we advise US and global clients on ethics and best practice*' **[5.7]**. Bangor research was quoted extensively in the 2018 UK Re-Work AI white paper on *Ethical Implications of AI*, citing its findings on emotion tracking, algorithmic bias and ethnicity. McStay was subsequently invited to write the introduction to the 2018 Re-Work white paper, *Privacy and Security in AI* **[5.8]**, alongside global contributory authors such as Google Brain, Microsoft and National Institute of Standards and Technology (NIST).

Internal UK Governance

In 2016, Bangor research was cited by the Programme Director of Sensing Feeling, a UK-wide retail technology project as '*ground-breaking insights*' whose '*policy assessment and citizen research have directly impacted Sensing Feeling's strategy, roadmap planning and the product features we're planning to introduce*' **[5.9]**.

Creativity, ethics and civic engagement

Bangor research shaped the programme of *Intimacy in the Age of AI*, a Europe-wide arts, music, thinking and activism festival held in Slovenia 2018. Bangor academics worked with a leading digital artist to create the mediated empathy artwork Aura that toured the UK exhibiting in Manchester and the Winter Lights show at Canary Wharf, London (over 600,000 visitors). Key advice was provided on ethics, bias, gender and need for explicability. The artist reported: '*Having enabled me to create Aura, what [McStay] has done is both open scope for a new creative palette, but also challenged all artists on the ethics of these new soft biometric tools for expression*' **[5.10]**. Bangor University also advised Nexus Studios' installation at 'Meet the AI' at London Barbican, which was positively reviewed by *The Times*, *Financial Times*, *Evening Standard*, *Artlyst*, *Artnet* and British *GQ*.

Wide dissemination of Bangor research between 2014 and 2019, has contributed to industry, government, and public thinking on eAI. This has included 10 articles for industry outlets, over 30 talks to such companies as Amazon, Google, Facebook and IBM, government and legal institutions in six countries, and five multi-stakeholder workshops in the UK and Japan, attracting in total approximately 4000 attendees who have decision-making roles in organisations and governance bodies. Interviews about eAI with *The Guardian*, *The Sun*, *BBC Radio 4*, *BBC Wales* and *BBC Worldwide* in the UK, *MIT Tech Review*, *Buzzfeed*, *Scientific American*, *New York Post*, *The Register*, *Daily Dot* in the US, and *ABC Radio* and *RTV* in Australia and Slovenia respectively

has raised public awareness of eAI. Bangor research has also informed *Drawing the Line* (Sensum), a documentary on law, ethical boundaries and eAI.

5. Sources to corroborate the impact

5.1 **Testimonial from the Chair of the IEEE Global Initiative** (participant in the impact process). Corroborates McStay's contribution to the global body responsible for the IEEE standards initiative whose mission is to embed ethics in intelligent and autonomous technologies.
5.2 **IEEE 2019 report: Ethically Aligned Design**. McStay's work is cited twice as an additional resource, p.92 and p.98.
https://ethicsinaction.ieee.org/
5.3 **Privacy International response to IEEE report: Ethically Aligned Design**. McStay is cited on p148 footnote 35.
https://privacyinternational.org/sites/default/files/2017-12/rfi_responses_document.pdf
5.4 **Report of the Office of the United High Commissioner for Human Rights on the right to privacy in the digital age**. Acknowledges McStay's input as a stakeholder.
https://www.ohchr.org/EN/Issues/DigitalAge/Pages/ReportDigitalAge.aspx
For McStay's input see:
https://www.ohchr.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Documents/Issues/DigitalAge/ReportPrivacyinDigitalAge/AndrewMcStayProfessor%20of%20Digital%20Life,%20BangorUniversityWalesUK.pdf&action=default&DefaultItemOpen=1
5.5 **Testimonial of Founder, IoT Privacy Forum** (reporter on the impact) in a broadcast presentation for US National Institute of Standards & Tech (NIST). An email available on audit clearly states the valuable role AM's research has played in developing ethical standards and global regulation of AI.
5.6 **House of Lords Select Committee on AI (2018)** *AI in the UK: ready, willing and able?* (p.149). Directly links to evidence submitted by Bangor University regarding eAI.
https://publications.parliament.uk/pa/ld201719/ldselect/ldai/100/100.pdf
5.7 **Testimonial of Founder, ChangeSciences** (Participant *and* reporter of the impact process). An email available on audit clearly states the valuable role AM's research has played in developing ethical standards and global regulation of AI. Consultancy was influenced by McStay's book and McStay was contacted to co-develop an ethical checklist of eAI.
5.8 **White paper on the ethical implications of AI (2018)** Lists McStay as a major contributor (p.3).
http://reworkco.domain.com/TheEthicalImplicationsofAIREWORK2018.pdf
5.9 **Testimonial of CEO, Sensing Feeling** (Reporter on the impact). An email available on audit clearly states the valuable role McStay's research has played in developing ethical standards and global regulation of AI.
5.10 **Testimonial of Digital Artist** (participant *and* reporter of the impact process). An email available on audit clearly states the valuable role McStay's research has played in developing ethical standards and creative opportunities. The artist, influenced by McStay's book, suggested collaborating on *Aura*).