# DIGITAL HUMANITIES AND THE INNOVATION ECOSYSTEM

## A DARIAH-Ireland Report

Tara Byrne and Susan Schreibman

# CONTENTS

# ACKNOWLEDGMENTS

# FOREWORD

**Susan Schreibman, Professor of Digital Humanities, Maynooth University and National Coordinator, DARIAH-Ireland**

This report, generously funded by the Irish Research Council under their New Foundations scheme, and researched and co-authored by Tara Byrne, explores some of the benefits and contributions of the digital humanities to research and the wider innovation ecosystem. It does this by considering four areas of direct and indirect value: scholarship, the economy, culture and society. In addition, as a horizontal and fifth value, the contribution of the digital humanities as a public good is threaded throughout.

Digital humanities is a disruptive practice. It brings to traditional humanities scholarship methods borrowed from fields as diverse as engineering and information management, evolutionary biology and radiology. As such, it is too often seen as too non-humanistic in its computational approach, but not technical enough when viewed from the sciences. This Janus-like position frequently places digital humanities research and researchers in an uneasy position within the academy and the funding landscape as it is seen as neither a fully humanities nor a fully computational practice.

This report seeks to dispel both these points of view. It argues that research in the digital humanities, by incorporating computationally-driven methods and practices, opens up new vistas to both the traditional objects of humanities research, while increasingly engaging with twenty-first century production, including, e-art and e-literature, as well as the vast data sets generated by social media and the World Wide Web itself.

# EXECUTIVE SUMMARY

**The report identifies and describes the value of digital humanities along three trajectories:**

**Value to Scholarship:** The digital humanities contributes to academic research by creating new modes of investigation, new configurations of information and new scholarly capacities. This process results in novel research practices - multidisciplinary and collaborative - ultimately resulting in innovative research methods, research results and knowledge. Digital humanities scholarship embraces diverse skills from a variety of disciplinary backgrounds across the humanities and sciences. This collaboration promotes interdisciplinarity and creativity, resulting in greater cohesion within the university and professional skills-sharing. The digital humanities also embraces access as a core value, increasing public engagement with scholarship, promoting greater visibility and generating increased potential for research funding.

**Value to the Economy:** The digital humanities generates new intellectual property which can be used in commercial contexts, is part of a vibrant and fast moving digital economy and contributes to the innovation ecosystem. The interactivity and visual features of digital humanities methodologies lend themselves to enhanced tourism offerings and web presences that can contribute to visitor draw and national branding. The skills of digital humanists are also desirable in the knowledge economy, are attractive to cities for economic reasons and reduce likelihood of job-flight.

**Value to the Arts, Culture and Society:** Digital technologies offer artists another way to create new work and disseminate that work, while providing new modalities for cultural institutions to reach audiences beyond their bricks and mortar facilities as well as enhancing the user experience within institutional settings. These activities increase and create new audiences and the potential for greater public 'ownership' of cultural institutions. Digital humanists have a role to play in this cultural ecosystem by both developing new practices to study these works of art, and by collaborating with professionals in cultural institutions to further enhance and enrich their holdings. The increased understanding of and access to a shared cultural heritage, which is at the heart of digital humanities scholarship, contributes to greater civic involvement and hence social cohesion.

'Digital Humanities allows scholars to do things with data that could never be done in its native form'

/ **Professor Susan Schreibman**
*Director of An Foras Feasa, Maynooth University*

## Digital Humanities

As both a method and a subject area, the digital humanities is a collaborative practice that challenges how information is collected, analysed and presented, as well as the processes of scholarship itself. Although early digital humanities research tended to focus on existing historical material, the lens and methods afforded by digital technologies have begun to facilitate a wide variety of new scholarly practices, from the interrogation of complex big data sets, to the reconstructions of tangible and intangible heritage. As such, digital humanities methods encompass a wide range of applications, from reconfiguring online data and diverse cultural artefacts, to fundamentally widening the investigative possibilities of traditional humanities research.

Interpretations of the digital humanities vary from the study and theorisation (scholarship) of digital phenomena in the humanities; the use of digital technology as a methodology to re-present and analyse existing cultural artefacts; and the building or development of digital technologies and artefacts as a set of practices (designed to reconfigure or reinterpret knowledge) resulting in new intellectual property. Tensions within these models can be characterised as the practice of critique versus code-craft, or 'database models and cultural critique' and 'empirically oriented text analysis' (Smithies 27). Other definitions of the digital humanities suggest a more reflexive model focusing on the 'use of information technology to illuminate the human record, and [bring] an understanding of the human record to bear on the development and use of information technology' (Schreibman et al).

The work of the digital humanities draws from and contributes to activities in related fields such as digital arts, digital libraries, digital cultural heritage and digital archives. Because of this productive relationship, some aspects of the work of these fields will also be discussed below.

## Value and Values

The concept of value or valuation is necessarily subjective and flexible: it is defined, given and withheld by a given community. As such, value represents a system of recognition that can be considered as both the price of something (its exchange value, which is alienable, extrinsic and capable of being isolated to the individual), and its concurrent level of pricelessness (its use or symbolic value, which is inalienable, representing something that is intrinsic and 'can never be reduced to . . . monetary evaluation'; Miller 1123).

Many scholars have defined the value of the humanities according to its intrinsic, inherent, inalienable qualities, such as contributions to knowledge; the creation of meaning, understanding and identities; human happiness and democracy: essentially positioning it as a good in itself (Small 3-6). When the humanities become the digital humanities, another form of intrinsic value emerges, that of the public good and indeed the concept of public value itself, as the impact of the digital humanities extends beyond the university to the public who access and interact with digital humanities research.

In contrast, extrinsic or instrumental approaches to the digital humanities (or rather to their secondary outputs) are usually social but also economic (and frequently measurable) such as the cohesion benefits of collaboration and economic outputs, including technologies and intellectual products developed to interrogate and manipulate data. The capacity of the digital humanities to open up such validation pathways for disciplines that have not traditionally measured themselves in these terms strengthens the position of the traditional humanities in an environment where questions are increasingly asked as to what universities are for (no longer self-evident in relation to learning), in which pressure is increasingly placed on academics to justify their work economically as well as intrinsically, and to deliver measurable, monetisable and recognisable innovations (Collini).

'Technology addresses what we can do, the arts humanities and social sciences provide the insights to address the ethical questions of what we should, ought, or must do.'

/ Higher Education Authority 28

# DIGITAL HUMANITIES AND THE INNOVATION ECOSYSTEM

We live in an increasingly complex information environment, demanding ever greater levels of attention to vast amounts of multimodal data across multiple platforms and devices. The need to identify and connect critical information is not only the result of ongoing globalisation, but also of the exponential growth of vast and unwieldy data generated and made accessible by the Internet. The humanities has always played a key role in studying, providing insights, and documenting the human record and experience while engaging in critical debates about contested global histories and acute contemporary issues. With the rise of the Internet, however, new mechanisms are needed for the humanities to continue to play this role, to make meaning, not only from the vast new datasets being created, but to bring new methods to bear on traditional research questions. In addition, as disciplines become more and more specialised, the need to use the humanities to widen the scope of, as well as subvert and challenge other disciplines has emerged. As a response, over the past few decades, developments in digital technologies have facilitated a paradigm shift in the collection, analysis and dissemination of cultural heritage by those working in the digital humanities.

These developing digital methods not only shape the answers to existing research questions, but progressively modify the research questions themselves. Moreover, digital transformation can act as a 'crucial enabler' of civic agency beyond the academy, helping people to 'participate fully in society' (Higher Education Authority 19).

'Digital scholarship has completely transformed traditional humanities scholarship, revolutionising the way we think of and approach the past. Ordinary words in our research and practice, such as 'preservation', 'analysis', and 'interpretation' have new meaning in the digital realm.'

/ Dr Konstantinos Papadopoulos
*Postdoctoral Researcher*
*An Foras Feasa*
*Maynooth University*

So she is not a bit ashamed
To be fond of Botticelli
And she plays Chopin as well as ...
(She plays beautifully).
She has the friendliest of drawing...
Wherein two Pekinese,
A big blue Persian, amber-eyed,
And a Steinway baby grand
(Whereon a peevish young John the B...

To her daughter and me
...
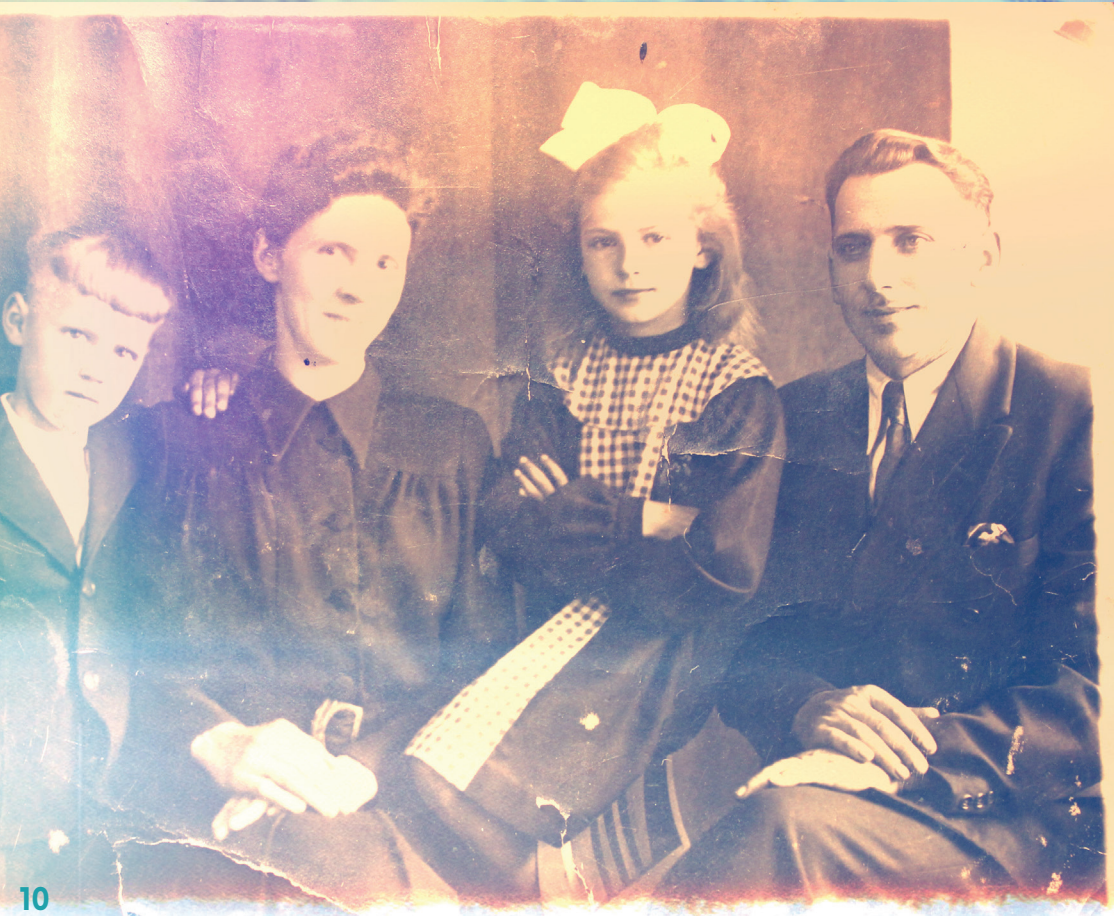
Given the digital humanities focus on processing and presenting information formats that engage, explain and enlighten, industry has begun to recognise the advantages of working with digital humanists. Google has made this explicit in the title of a posting on its Official Blog: 'Our commitment to the digital humanities', backed by a Gogle Humanities Research Award. Social networking companies have stressed their need to find workers who can 'engage with social networking in more than just a tokenistic way' and more generally who 'understand what people want [of and in technology] and how they use it' (Holden). Steve Jobs, the late co-founder of Apple, 'liked to describe his company as existing "at the intersection of technology and liberal arts"' (Sapsed 1). The digital humanities, therefore, not only widens the scope and processes of disciplines within the university, but contributes to national innovation agendas, creating new possibilities for the traditional scholar within an increasingly competitive academic and economic context. As such, the collaborative nature of digital humanities research contributes to the innovation ecosystem, understood as the productive interaction between people, ideas, flows, processes and outputs.

The digital humanities also plays a role in the innovation ecosytem in that it encompasses a wide range of skills and disciplinary expertise to address key twenty-first century global issues. It contributes to a wider movement advocating an ethical approach to the development of new technologies, it is concerned with the implications of these innovations, and advocates that the 'enhancement of economic opportunity without due regard for social innovation and civic society is short-sighted and ultimately self-defeating' (Higher Education Authority 13).

This approach to innovation is also supported by an increasing number of high-tech companies wanting workers that 'can brainstorm, prolem-solve, collaborate creatively and contribute/communicate new ideas' underlining the view that corporations 'need both sides' of the [science/humanities] equation (Tarnoff). Digital humanities is as much about making and doing as thinking and analysing, producing 'creative researchers who can challenge, mash up, disrupt, invent and re-imagine rather than reproduce' (Dovey).

## 'there are not enough humanists in business and the tech world...'

/ **Marie Wallace**
*Analytics Strategist, IBM*

As 'information and communications technology is one of the global economy's strongest enablers' (Mendoza 35), the digital humanities contributes to the innovation ecosystem via its facilitation of technology across borders, its fostering of open data, technology transfer between public and private sectors, and participatory engagement in the creation of new knowledge through new modalities such as crowd-sourcing (Mendoza 50-53). Not surprisingly, therefore, digital technologies are central to many national policies and government reports which variously state that digital content is a key part of Ireland's future in innovation (Department of the Taoiseach, 1999, 2008, 2010) and that digital technology is essential to improved public services (Department of Public Expenditure and Reform, 2014). Other reports emphasise the importance of networking and collaboration across the creative industry sub-sectors, such as digital media and design (Forfás 2010, xxxii). The findings of the recently published Brighton Fuse Report go further in explicitly linking the creative arts with technology as a 'critical driver of innovation and growth in the creative digital economy' (Sapsed 4).

**The digital humanities will eventually become, simply, humanities. In essence, we are using new media and technologies to help us think in new ways about very old quetions. Digital humanities is more public and social than many previous academic movements have been, because all of us - within and beyond the academy - are gradually coming to terms with the new realities of the digital age, which are increasingly influential in all areas of our daily lives...'**

**/ Dr Justin Tonra**

*University Fellow in English, NUI Galway*

Perhaps more significantly, however, the contribution of the humanities to society and to the economy has increasingly been recognised in these reports, and in particular, an acknowledgment of the synergies between, and the need to group diverse science/maths/engineering skills with arts/humanities skills (Department of the Taoiseach, 2010, 32). Collaboration between disciplines is central to Ireland's knowledge economy such that we need 'researchers and innovators from a wide range of disciplines, including the physical and social sciences, arts and humanities, to meet the challenges and opportunities presented by a diverse and rapidly changing world' (McSweeney 10). An analysis of the most recent Research Excellence Framework in the United Kingdom found that over 80% of the REF impact case studies 'included underpinning research that was multidisciplinary' (HEFCE). These strengths can be better capitalised upon when humanities skills are not only seen as an end in themselves, but as an essential partner to the technological knowledge and imperatives defined above.

# THE CONTRIBUTION OF DIGITAL HUMANITIES TO THE INNOVATION ECOSYSTEM

## RESEARCH AND SCHOLARSHIP

### New research and research questions; new knowledge, understandings and insight

The digital humanities utilises digital technology to create multiple and parallel lenses with which to analyse and present the cultural/human record. New research methods allow scholars to ask questions of analogue data that has been digitised which would have been impossible when it was in its native form, as well as to interrogate vast new born-digital datasets. New technologies and methodologies enable an unprecedented ability to recreate and simulate, providing powerful new methods to study intangible events or experiences (such as performances and battles). These new methods facilitate a wide range of research that was previously unavailable to most humanities researchers, from identifying patterns across time and space in large datasets, to recreating physical environments that no longer exist (e.g. buildings, cities, streetscapes and soundscapes) to test our theories about them. The supplementation of the traditional publishing ecosystem through dynamic, web-based publication formats, opens up the potential for a greater variety of research outputs for which global impact is possible in a way that traditional publishing structures could not support.

'it is the application of the digital humanities in contexts previously unthought of that brings to the forefront the true implications of the field...'

/ **Vinayak Das Gupta**
*Doctoral student*
*Department of English, Trinity College Dublin*

'It is widely assumed that the digital is a tool to enhance the real... however, we have entered a time where, due to its high fidelity, the digital object can generate a powerful experience in its own right.'

**/ Professor
Sara Kenderdine**
*Director of the iGLAM Lab*

## 'We should seek to develop the simplest tools to answer the most complex questions.'

**/ Dr Sandra Collins**
*Director of the Digital Repository of Ireland*

## Bridging disciplines: collaboration and interdisciplinarity

As an interdiscipline, the digital humanities works across the university - across schools and between departments. As such, digital humanities research introduces scientific/technological (with an emphasis on quantitative) models of analysis into the humanities, and qualitative, interpretive and ethical approaches into science and technology. Since interdisciplinarity is considered central to the production of new (creative) goods and services (Dovey) and collaboration 'critical to innovation' (Howson and Dubber 19), this quality brings intrinsic benefit to the institution, creating a fertile platform for new insight and knowledge. Digital humanities collaborations also open up debate on issues of intellectual property and copyright, as well as encouraging scholars of different traditions to share a common language. Collectively, these collaborations promote a more socially-cohesive university, while bringing an applied dimension to a largely basic research-focussed set of disciplines.

Digital humanities research equally necessitates that scholars increase their technical, managerial and entrepreneurial skills due to the collaborative, team-based nature of most projects. This technical 'skilling-up' enhances the professionalism and diversity of humanists and hence increases their employability, a factor referred to in various government reports  (Forfás 2009).[1]

---

1 At Kings College London, which has a much longer history of Digital humanities postgraduate programmes than in Ireland, the average employment rate of its graduates six
   months after graduation is 93.8% (Dunne)

**Practice-based research in digital arts constitutes a new and unstable extension of the academy, and should be welcomed as such...'**

**/ Professor
Rod Stoneman**
*Director of the Huston School of
Film and Digital Media
NUI Galway*

## Creativity and new technologies

The creative collaborations between digital humanists and technologists/engineers rest on the creation of new technologies, new ideas, and new ways of thinking. These relationships can contribute to calls for more 'discipline-specific technical knowledge with entrepreneurial skills ... [and] an ability to think creatively' (Higher Education Authority 53).

Technology-centred researchers often struggle to understand the needs of their user, or to find compelling use cases to challenge their software tools and processes. By engaging directly with their more technical colleagues, digital humanists are able to contribute from an informed perspective to the development and honing of new technologies.

Digital humanities also fosters creativity where its applied approach and interrogation of cultural context lead it to overlap with the arts and creative technology. Although distinct communities exist around these approaches, each brings an applied dimension to the normally somewhat more traditional areas of humanistic scholarship, while they also enter into fruitful conversation around how technology is used to communicate culture.

## Access and engagement

Digital humanists, like their colleagues in (and often in collaboration with) the digital cultural heritage sector, create 24/7 access to collections which can reduce the need for and expense of travel to research those collections.[2] In this way the digital humanities can be viewed as part of a wider activist movement to democratise information, produce audience engagement and construct new publics in the process, a key public service objective for publicly-funded institutions. The availability of data also works to increase public ownership of knowledge and facilitates and empowers the public to independently navigate and reinterpret different data sets. This process enables 'citizen scholars' who are not only able to find and interpret key information, but also to participate in the creation of new knowledge and models of authorship (through, for example, citizen science projects). The research of digital humanists thus reaches new, non-traditional audiences or 'consumers' who might otherwise not come into contact with such research.

2 Despite the activity of both the digital humanities and cultural heritage sectors, at present in Europe where a digital collection is in existence, an average of only '20% of the whole collection is digitized.' While '23% have no need to be digitized.' Experts in the field maintain that '57% still need to be digitized' ('Digitisation Activity in Europe's Cultural Heritage Institutions.')
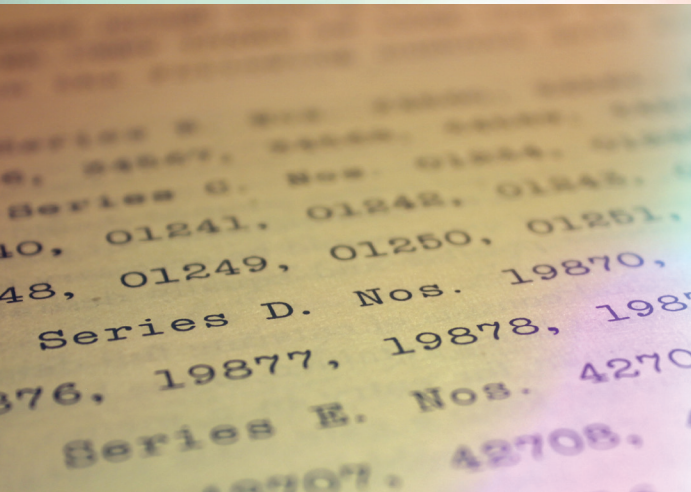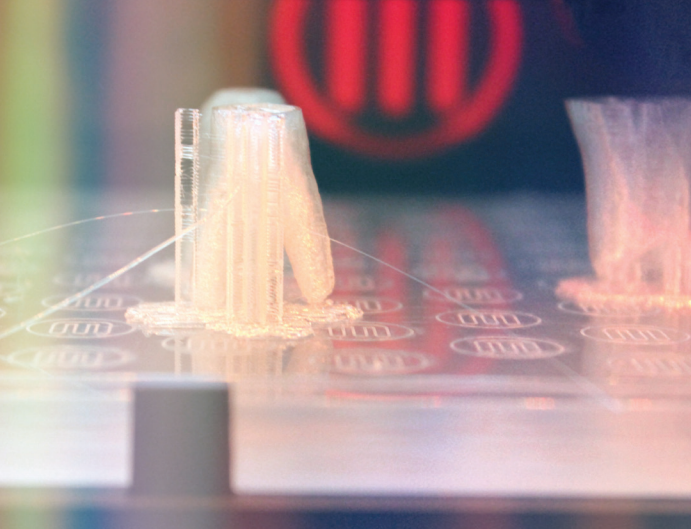
## Economic leverage, university profile and research visibility

As a result of the complex and nuanced technological tools developed through digital humanities scholarship, digital humanities projects can attract significant funding to humanities departments and to their research programmes more generally. The technological aspect to these projects can also attract industrial partners to universities, creating greater visibility, leverage and thus sustainability for the humanities in general.

## Tourism and national branding

Fáilte Ireland identifies cultural tourism as a leading reason for individuals to consider Ireland as a destination. Termed 'sightseers and culture seekers' (S&CS), these tourists tend to stay longer in the country, spend more, be affluent, well-travelled, highly educated and socially concerned. This market segment accounts for 43% of tourists from mainland Europe. Fáilte Ireland also identified the Internet as a key resource that potential tourists from France, Germany, the United Kingdom and the United States used in choosing a holiday destination and planning their itinerary. The creation of appealing, interactive, information-rich web resources enhances Ireland's cultural offering thus participating in attracting this market segment.

'the digital humanities can be ambitious for society... not just academia...'

/ **Marie Wallace**
*Analytics Strategist, IBM*

> **'technology is a true enabler of truly original research'**
>
> **/ Professor Jane Ohlmeyer**
> *Erasmus Smith's Professor of Modern History, Trinity College Dublin*

## Labour intensive and sticky jobs and the creative industries

The creative industries are cited as one of the fastest growing areas of economic development (European Union 2012). Given the reliance of these industries on technology, digital platforms, interactivity and affective experiences, the practices and approaches of the digital humanities can serve as a collaborative partner for these industries. Although the market is still growing, technology jobs risk becoming the next generation of manufacturing jobs, able to be outsourced to less skilled, lower wage regions as automation allows more of their functions to be standardised. This is less the case when technology is combined with the critical standpoint of a humanist, however. The specialised nature and resistance to automation of the humanities labour model (depending on individually skilled workers) creates specialist jobs that tend to be more 'sticky' than other jobs, making them less easily replaceable. This stickiness ensures that these employees and their companies are less at risk of corporate flight (when corporations move from country to country to access cheap labour), providing more secure and better paid jobs, greater social cohesion, and ultimately greater tax returns to the exchequer.[3]

## ARTS AND SOCIETY

## New works of art

Digital technologies facilitate the creation of new, born-digital artworks by artists and almost anyone with access to basic technology. The use of digital processes thus vastly increasesthe imaginative possibilities of new works of art, as well as the speed at which particular effects can be achieved. The movement from the relatively closed environment of the physical archive into the public sphere of the Internet provides not just the inspiration for new works of art, but the content for remediating existing work.

3  In 2010, the Gross Value added impact of the creative industries in Ireland was €4,703.9m with 49,306 working in creative industries jobs  (The Arts Council). In 2012, the creative industries  contributed £71 billion to the UK economy and the 'creative economy' provided 2.5 million jobs, or 8% of UK total employment (Hancock 2014).

> **'[digital humanities] studies how to bring together the scattered landscape of digital data created by libraries and museums'**
>
> **/ Dr Jennifer Edmond**
> *Director of Strategic Projects, Faculty of Arts, Humanities and Social Sciences*
> *Trinity College Dublin*

## Learning, education and professional skills

The imaginative and interactive ways in which the digital humanities presents and interprets information may help to attract younger learners (in particular digital natives)in a way that more traditional formats might not. Moreover, digital humanities scholars develop wider technical and collaborative skill-sets than other humanities researchers improving both confidence and employability.

## Societal understanding, social cohesion and intercultural dialogue

The democratisation and increased access to information facilitated by digital humanities' research, as well as the new perspectives and understanding it can create, helps to generate shared values and identities, and fosters prosumers (bridging traditional gaps between producers and consumers) rather than passive consumers of knowledge. In addition, the mining of social information, networks and communication systems (e.g. YouTube/Twitter) generates visualisations and other aids to understanding complex sociological and psychological data, thereby enhancing our understanding of ourselves and wider society in a way that is not possible otherwise. Access to the resulting insight can create greater social capital and stability, which can aid in increased social cohesion and well-being.[4] This increased access to cultural content, sense of identity and associated confidence can also increase the sense of civic responsibility and potential contributions to the public sphere.

---

4   There have been many studies on the link between culture and well-being including Baumol and Peacock; Fuijiwara,  Kudrna and Dolan.

# CONCLUSION

This report lays out the basis for a reassement of the digital humanities, as an interdisciplinary research practice, as a contributor to the wider economy and as a collaborative partner to sectors as diverse as cultural heritage and information technology. The digital humanities is not presented here as the 'saviour of the humanities' (Straumsheim), but as an approach that enriches the fundamental value of the humanities itself, albeit with enhanced social and economic spill-over benefits. This is a pressing requirement in light of the growing pressure being placed upon the humanities to prove its value according to metrics that are alien to its traditions. As such, this report represents a step toward countering the broader view that 'evidence of the value of technology in the humanities is "thin on the ground"' (Parr). If digital humanities scholarship is to continue to develop, the full range of its contributions need to be understood across academia, within the policy and funding landscape and in the private sector. This report provides a window and a rationale for that reassessment.

# LIST OF INTERVIEWEES

**Ms Karolina Badzmierowska**
PhD candidate in Digital Humanities and Art History,
Department of History of Art and Architecture, Trinity College Dublin

**Mr Roman Bleier**
PhD candidate, School of Histories and Humanities, Trinity College Dublin

**Dr Sandra Collins**
Director, Digital Repository of Ireland, Royal Irish Academy

**Ms Catriona Crowe**
Head of Special Projects, National Archives of Ireland

**Mr Vinayak Das Gupta**
PhD candidate, School of English, Trinity College Dublin

**Dr Jennifer Edmond**
Director of Strategic Projects, Faculty of Arts, Humanities and Social Sciences,
Trinity College Dublin

**Mr Shane Murtagh**
PhD candidate, Department of English and An Foras Feasa, Maynooth University

**Professor Susan Schreibman**
Professor of Digital Humanities, Director of An Foras Feasa, Maynooth University

**Professor Rod Stoneman**
Director of the Huston School of Film and Digital Media, National University of Ireland,
Galway

**Dr Justin Tonra**
University Fellow in English, School of Humanities, National University of Ireland,
Galway

**Ms Marie Wallace**
Analytics Strategist, IBM

# WORKS CITED

The Arts Council. *Assessment of the Economic Impact of the Arts in Ireland.* Dublin: 2011. Web. 19 April 2015.

Baumol, William J. and Alan Peacock. 'A Manifesto for the Arts: Six Principles to Guide Government Arts Policies.' London: Policy Institute, Society Series 6, 2005. Web. 20 April 2015.

Collini, Stefan. 'The Threat to Our Universities.' *The Guardian.* 24 February 2012. Web. 20 April 2015.

'Digitisation Activity in Europe's Cultural Heritage Institutions.' *Enumerate Statistics.* Enumerate, 2014. Web. 20 April 2015.

Dovey, John. 'Arts Research: From Spin-Out to Sandbox'. *The Guardian.* 26 September 2012. Web. 2 September, 2014.

Dunne, Stuart. 'Digital Destinations: What to do with a Digital MA'. *Stuart Dunn's Blog: Musings on Technology, Location and Cultural Heritage.* Web 9 May 2015.

European Union. Working Group of EU Member States Experts on Cultural and Creative Industries. *European Agenda for Culture: Work Plan for Culture 2011-2012 Policy Handbook.* Publications Office of the European Union, 2012. Web. 20 October 2014.

Fáilte Ireland. 'How Culture & Heritage Drives Irish Tourism'. 2012. Web. 25 April 2015.

Forfás. *Skills and Creativity, Design and Innovation.* Dublin: 2009. Web. 20 April 2015.

Forfás. *Making it Happen; Growing Enterprise for Ireland.* Dublin. 2010 Web. 7 May, 2015.

Fujiwara, Daniel, Laura Kudrna, and Paul Dolan. *Quantifying and Valuing the Wellbeing Impacts of Culture and Sport, April 2014.* UK Department for Culture Media and Sport. London: HMSO, 2014. Web. 19 April 2015.

Google Official Blog 'Our commitment to the digital humanities', *Google Official Blog.* 14 July, 2010. Web. 4 November 2014

Hancock, Matthew. 'The Creative Industries.' The Makegood Festival, London. 30 May 2014. Speech.

HEFCE: Higher Education Funding Council for England. *The nature, scale and beneficiaries of research impact: An initial analysis of Research Excellence Framework (REF) 2014 impact case studies.* Web. 10 May 2015

Higher Education Authority and Irish Research Council. *Playing To Our Strengths: The Role Of The Arts, Humanities And Social Sciences And Implications For Public Policy 2008.* Web. 5 September, 2014.

Holden, Louise. 'Going Digital: A Lightbulb Moment for Arts Graduates'. *The Irish Times.* 11 March. 2014. Web. 25 June 2014.

Howson, Paul and John Dubber. *Culture Matters: Why Culture Should be at the Heart of Future Public Policy,* The British Council, 2014. Web. 7 September, 2014.

Ireland. Department of the Taoiseach. *Implementing the Information Society in Ireland: An Action Plan.* Dublin: Stationery Office, 1999. Web. 19 April 2015.

Ireland. Department of the Taoiseach. *Innovation Ireland: Report of the Innovation Taskforce, March 2010.* Dublin: Stationery Office, 2010. Web. 19 April 2015.

Ireland. Department of Public Expenditure and Reform. *Supporting Public Service Reform: eGovernment 2012-2015.* Dublin: CMOD, 2012. Web. 20 April 2015.

McSweeney, Barry. *Technology Actions to Support the Smart Economy.* Knowledge Society Strategy, Department of Communications, Energy and Natural Resources. Dublin: Stationery Office, 2009. Web. 19 April 2015.

Mendoza, Susana. *Actions for a Sustainable and Competitive Open Innovation Ecosystem in the EU from a US Perspective.* European Commission, Directorate General for Communications Networks, Content and Technology (DG CONNECT), 2014. Web. 19 April 2015.

Miller, Daniel. 'The Uses of Value.' *Geoforum* 39.3 (2008): 1122–1132. Web. 19 April 2015.

Parr, Chris. 'Technology's Value to Humanities Must be Made Clearer.' *The Times Higher Education.* TES Global, Ltd., 26 May 2014. Web. 5 September 2014.

Sapsed, Jonathan and Paul Nightingale. *The Brighton Fuse.* Brighton. December 2014. Web. 10 May 2015

Schreibman, Susan, Ray Siemens, and John Unsworth. *A Companion to Digital Humanities.* Oxford: Blackwell, 2004. Web. 6 September 2014.

Small, Helen. *The Value of the Humanities.* Oxford: Oxford University Press, 2013. Print.

Smithies, James. 'Digital Humanities, Postfoundationalism, Postindustrial Culture.' *Digital Humanities Quarterly,* 8.1 (2014). Web. 28 July 2014.

Straumsheim, Carl. 'Digital Humanities Bubble.' *Inside Higher Education.* 8 May 2014. Web. 20 April 2015.

*Sustainable Economic Renewal.* Dublin: Stationery Office, 2008. Web. 19 April 2015.

Tarnoff, John. 'Stem To Steam – Recognizing The Value Of Creative Skills In The Competitiveness Debate.' *The Huffington Post.* 25 May 2011. Web. 6 September 2014.