

VCUG2001 LEARNING PORTFOLIO: DIGITAL TECHNOLOGY AND THE WAY FORWARD

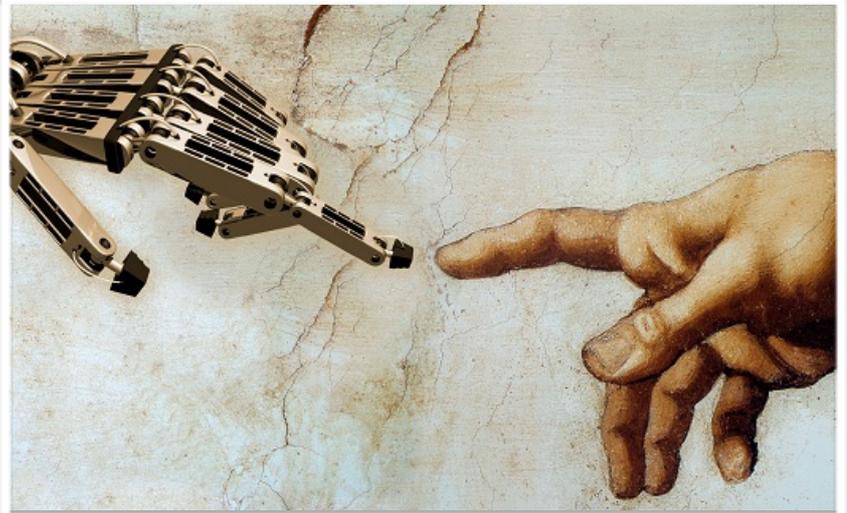
Digital Dualism

Digital dualism is the point of view that positions the online and offline worlds as distinct and separate realities¹.

Digital dualists believe they see the virtual and physical worlds as largely discrete - in which the physical world is the "real" world, and the virtual world is not. Thus, they see digital content as part of a "virtual" world separate from a "real" world found in physical space, and this, in turn, means that the virtual content is less concrete or less legitimate somehow.

This kind of bias, in many cases, is the motivator of many of the critiques of sites like Facebook and other types of social media.

This term was coined by Nathan Jurgenson in 2011.



“People tend to view the on and offline world as two different realities. However, because of the way technology has so developed so rapidly, that is no longer a valid approach to take to something that has become so enmeshed in our lives.”

BACKGROUND

As an arts, social science, and digital humanities student, I am very interested in how technology is developing and how that, in turn, has an impact on our lives and how we relate to each other. Thus, this gap between the general perception of these worlds as divided and its increasingly convergent reality is a fascinating one to investigate for the portfolio. It will explore the factors that plays a part in the divide, how it is framed from different perspectives, and how to bridge that gap so that the two might relate better to each other, and what they could contribute to each other and to society as a whole.

The ubiquity of technology in our lives and the sheer amount of things that it makes possible or more convenient, is causing physical and digital world to become increasingly intertwined. It has come to the point the two are so enmeshed that separating “digital culture”, as termed by some, and culture in general is becoming a hard task. Thus, the digital dualist view seems to be a fundamental fallacy in understanding the world we live in, as it ignores the intersecting realities of the on and offline worlds, the way they effect and define each other, and the major role they play in our lives.

Instead, we need to shift our thinking into one that acknowledges that our reality has shifted into a kind of “augmented reality”, in which there has been a radical increase in the blurring of the digital and material world.

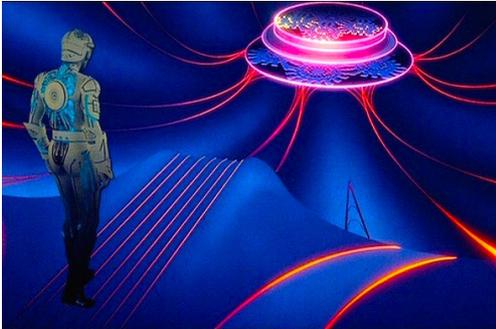
Augmented Reality

Augmented reality is defined as a real-time view of a physical environment or the ‘reality’ that has been enhanced or augmented by overlaying virtual computer-generated information onto it², effectively merging the digital and physical into the same plane.

¹ Julie Carmigniani et al., “Augmented Reality Technologies, Systems and Applications,” *Multimedia Tools and Applications* 51, no. 1 (December 14, 2010): 341-77, doi:10.1007/s11042-010-0660-6.

A BIT OF DIGITAL HISTORY

There has always been an ongoing tension between these two approaches - digital dualism and augmented reality - even before either of them was given a name.



The depiction of a human in cyberspace from the movie *Tron* (1982)

There is a preconceived notion of a clear delineation between the online and the offline. This type of rhetoric has existed for as long as people have been aware that digital technology existed. Back in the '90s, when the Internet was first discovered, people were of the notion that the virtual world somehow existed in a different plane than the rest of the world; that it was literally located in a different *place*. This notion is demonstrated and reinforced by the movies of the time, such as *Tron* and *The*

Matrix, in which a human character somehow manages to slip into an all-digital world that allows them to interact with technology in what seemed to be a physical, three-dimensional space.

This trend is a manifestation of the anxieties of the time. People tend to be distrustful of things they don't understand, and technology, since its first conception, has been something that is, for the most part, outside the understanding of the general public.

However, as explained by Dr. Glenn Roe², the perspective of the separation of the virtual and physical world can also be traced to a more optimistic point of view. There was a moment of utopianism and a bright-eyed hopefulness just after the development of the Internet for a general public. Some people believed that the 'cyberspace' would serve to break down barriers between people — such racial, gendered and religious ones, to name a



John Perry Barlow reading his work, *A Declaration of the Independence of Cyberspace*

few — and that we could build a better world online than we have been able to physically. This belief was demonstrated clearly in texts such as the *A Declaration of the Independence of Cyberspace*³ by John Perry Barlow, in which many of these hopeful ideas of creating an egalitarian, self-governing space where the governments would have no dominion over were expressed.

² Interview with Dr. Roe is provided in the appendix

³ John Perry Barlow, "A Declaration of the Independence of Cyberspace," *Online Source: <http://homes.Eff.Org/~barlow/Declaration-Final.Html>* (accessed on: 15-01-08) 10 (1996).

While the optimism of the early adopters of the Internet failed to bring forward the more utopian version of the world they had imagined, these ideas largely persist to this very day. Today, they take the form of freedom of information online, the open source community and the attitude that encourages the reuse, remix and expansion of the materials already available, and perhaps most importantly, allowing the less-privileged to tell their story using their own words. These are all built upon the ideas and principles that proves that people have been trying to shape the virtual world into a better one since the very beginning, and contrasting it to the physical world to make their point.

As we learned in the class visit to the ANU's Classics Museum, all knowledge, especially knowledge of history, is curated in some way, because of certain limitations in finding and displaying the information. Even though technology is a very young discipline compared to most others, it does not escape this process of curation. Just like physical history, the collections of things that were able to preserve does not tell the whole story. This is because we are limited in the amount of information we can gather on the history of the digital reality, because of a myriad of reasons including deleted websites, server crashes, data rot, and incompatible technology. The last one plays a large role in the ability to collect data, because with such a rapid rate of development in the field, a large number of mediums are being introduced and made obsolete in a very short period of time. For example, the CD-ROM format is quickly being made obsolete by most companies' decision to stop releasing their software in a physical format, and increasingly more personal computers are forgoing CD readers completely in a push towards cloud technology. All these factors account for gaps in the known history of the virtual world, and thus our understanding of how the technology developed, how people utilised it, and the public's opinion of the subject.



THE DIVIDE FROM A DISCIPLINARY PERSPECTIVE

The digital dualist bias that exists in the general public transfers through to the academic setting. The same sort of backlash occurred when technology was first starting to be integrated into academia, where there was the notion that anything published or written online was not authentic and should not be taken seriously as a piece of scholarly resource. This is mainly because these texts were not subjected to the academic tradition of peer-review and print journals, so even though in a lot of cases they were written by accredited academics, these articles and blog posts were seen as less valid, and were not considered academic enough for acknowledgement and awards.

Now, however, the practice of publishing online is becoming more and more widely accepted, even as just a secondary means of getting the information out there to the public. The early adopters, and the people who have been writing and releasing their projects online since the start, have been able to engage people and now have a substantial following. Tim Sherratt⁴, for example, have been releasing a myriad of interesting projects online for years, that makes use of his digital know-how and the social media to engage people and encourage them to explore certain topics.



NASA's Twitter Page

This leads in to the way this topic is framed in different disciplines. The Science, Technology, Engineering and Mathematics (STEM) discipline, especially the sciences, have embraced technology and digital media as a way to reach out to the a wide range of people. The National Aeronautics and Space Administration (NASA), for instance, has an active Twitter account that they use as a platform to post updates on their discoveries and interesting astronomical events. They seem to have intuited that

a lot of people are actually interested in their projects, but do not wish to actively seek out complicated scholarly papers to keep up with it. Their periodic tweets from astronauts currently in space, as well as images the Mars Rover, are insights into the real-life events that are occurring. Their people-friendly approach, as well as their linkage of social media to physical events, has earned them 12.8 million followers. Many STEM scholars are doing similar things, keeping the public up-to-date on their research with the use of social media.

While this is true for the STEM fields, a big part of the humanities discipline still attempt to firmly divide the material world and the virtual. Some are yet under the impression that anything that is written, created or published in a digital format is somehow less 'real' in comparison to something that is more physical. This can be seen through the prejudice that most academics still hold about

⁴ Tim Sherratt, "Home," *Discontents*, January 26, 2014, <http://discontents.com.au/>.

Wikipedia, which, while not an appropriate academic resource, is still an excellent jumping off point in most research topics. This is rapidly becoming a critical moment for historians and other humanities scholars, in which they are trying to find where they fit into this world of instant information, and some of the reactions can be categorised as a knee-jerk one to simply reject it completely. This is, of course, ignoring the myriad of ways that the digital realm provides a much more robust platform, especially for marginalised people, to discuss important issues relevant to them (including racism, mental health, and so forth), and letting them tell their stories with their own words with no other person's biases getting in the way.

Furthermore, this is ignoring the reality that while we are living in the age of information with the collected knowledge of humanity simply a few clicks away, we still face the issue now is synthesising all that information in new and useful ways. And in order to do that, academics and historians has to play an important part in that process.

TECHNOLOGY AND IDENTITY

With the advent of the social web in the last decade, this divide between cyberspace and physical space evolved into one that concerns itself more with the notion of identity. The discourse in these cases tends to revolve itself around the idea that our physical self is our ‘real’ self, compared to our online presence that is considered an imaginary or ‘made up’ self⁵. This is not true in the vast majority of cases. Our identities are inherently fluid, changing slightly depending on where we are and who we are with, and the same thing applies for our virtual selves. Internet technology liberates the individual from the physical and allows the articulation of multiple aspects of the self that would not have been able to be expressed otherwise⁶. However anonymous our online presence is, we always bring our own unique sense of ‘self’ to it, in the forms of opinions and biases that are inherent to being human. Our online personas are enough of a representation of ourselves that it could not, over time, “support a plausibly disembodied, depoliticized, fragmented ‘self’”⁷.



In most cases, there is no more divide between the ‘real’ world and the virtual one, where a conversation can be started in one medium and continued in another almost seamlessly. Therefore, technology can be viewed as an extension of us, be it our bodies, our minds, or simply our ‘selves’. ‘Self’ is simply a story we tell ourselves, having a notion of our history and where we are going⁸, and John Locke’s theory of personal identity states that we tend to construct our identity based on our knowledge and our memory of ourselves⁹, and the things we do not or cannot remember is then not a part of that identity. The Internet has simply made it easier for us to explore our own narratives, by documenting our personal histories and making sure that we would not forget whatever parts of ourselves that we chose to share online, creating an “imagined alternate versions of ourselves”¹⁰. Our online identities are usually the best version of ourselves;

⁵ Jurgenson, “Digital Dualism versus Augmented Reality.”

⁶ Eleanor Wynn and James E. Katz, “Hyperbole over Cyberspace: Self-Presentation and Social Boundaries in Internet Home Pages and Discourse,” *The Information Society* 13, no. 4 (December 1, 1997): 297-327, doi: 10.1080/019722497129043.

⁷ Ibid.

⁸ Anthony Giddens, *Modernity and Self-Identity: Self and Society in the Late Modern Age* (Stanford University Press, 1991)

⁹ John Locke, *The Correspondence of John Locke* (Clarendon Press, 1976).

¹⁰ *Is Facebook Changing Our Identity?* | Idea Channel | PBS Digital Studios, 2012, https://www.youtube.com/watch?v=WRiGZJQZ_X4&feature=youtube_gdata_player.

it's not an *inauthentic* version, simply a part of ourselves that we choose to share, much like we sometimes omit embarrassing or unpleasant facts about ourselves when we are talking to other people. It can be said that this, the collection and preservation of things online, is a way for us to offload the less pleasant parts of tending to our own memories.



Sophie de Oliveira Barata's *Alternative Limb Project*: an example of humans a functioning cyborgs

The divide between the human and the digital are slowly eroding, to the point that many of us can be labelled as cyborgs without being inaccurate. 'Cyborg' is a portmanteau of 'cybernetics' and 'organism'¹¹, first coined to represent physically adapting a human to survive a hostile environment. Today, the working definition of a cyborg is a "person whose physical abilities are extended beyond normal human limitations by a machine or other external agency that modifies the

body's functioning; an integrated man-machine system"¹². In terms of our bodies, a lot of us are already depending on some sort of technology to extend our capabilities or compensate for some sort of disability or deficit in the 'normal' running of the human bodies. These types of technologies serve to prolong and improve the quality of human lives. Both the organic and inorganic parts that make up a complete human being works as a self-governing whole that processes and respond to stimuli in a way that maintains a homeostatic state. This ties into one of the strains of posthumanist thinking, which is the human-machine hybrid, put it these part-human, part-machine's very existence blurs the boundaries technology and ourselves and calls it into question¹³.

Our reliance on technology and the mechanical does not only stop at assistive or restorative technology, but has also become commonplace in our daily lives. Increasingly, we keep our computers - be it in the form a smartphone, tablet or laptop – on us at all times. With the emergence of wearable tech, such as the Google Glass and smartwatches, it is becoming even more commonplace for us to wear tiny computers on our bodies that gives us an enhanced, or at least altered, view of the world, which is where augmented reality comes in.

¹¹ Manfred E. Clynes and Nathan S. Kline, "Cyborgs and Space," *The Cyborg Handbook*, 1995, 29-34.

¹² *Oxford Dictionary of English*, 3rd ed. (Oxford University Press, 2010), <http://www.oxfordreference.com/view/10.1093/acref/9780199571123.001.0001/acref-9780199571123>.

¹³ N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (University of Chicago Press, 1999).

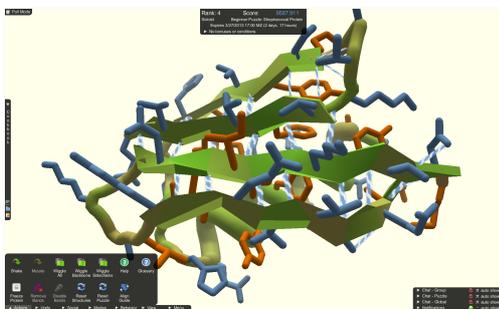
TECHNOLOGY AND KNOWLEDGE



If we think of digital technologies as an extension of ourselves, then it must also be an extension of our mind. One of the major ways we use technology to expand the capabilities of our mind is by having it as something that Larry Sanger calls ‘mental prosthetic’¹⁴, in which we rely on the digital as an extension or prosthesis for our memory. As our technologies improve and are better adapted to work alongside our biological brain, they tend to work as part of our minds; non-organic circuits that serves as a database that provides

us with the necessary information¹⁵ – and in exponential amounts to anything our biological brains would be able to remember on its own. The access we have to this massive amount of information has enabled the rapid development that we are seeing in many fields, as people are able to build upon the work of their predecessors. Today, we have the knowledge of the Library of Alexandria hundreds of times over, simply a query away.

Digital technology and the ‘digital culture’ that has been built around them allows us, as human beings, to capitalise on a very human trait, cooperation. Digital culture simply extends the opportunity for cooperation into a something that is possible in a global scale. It takes advantage of the ‘cognitive surplus’ that is available today¹⁶ – a concept that represents the ability of the world’s population to participate and contribute to large global projects. People collectively have



One of the Folded up Streptococcal Protein Puzzles in Foldit

over one trillion hours a year of free time to contribute to shared projects, and digital technologies are allowing us to use that time to create and engage, instead of simply to consume. One of the recent displays of the use of this cognitive surplus is the success of gamers cracking the code to an enzyme through an online puzzle game called Foldit¹⁷. The problem, which scientists have been struggling with for a decade, was solved in only ten days, made possible by players collaborating and building upon

each other’s work. This is reminiscent of what a traditional research method would be, only in a massive scale and in a much shorter timeframe.

¹⁴ Larry Sanger, “Individual Knowledge in the Internet Age,” *EDUCAUSE Review* 45, no. 2 (March 2010): 14–24

¹⁵ Andy Clark, “Out of Our Brains,” *Opinionator*, December 12, 2010, <http://opinionator.blogs.nytimes.com/2010/12/12/out-of-our-brains/>.

¹⁶ Clay Shirky, “How Cognitive Surplus Will Change the World,” June 2010, http://www.ted.com/talks/clay_shirky_how_cognitive_surplus_will_change_the_world?language=en.

¹⁷ Tibi Puiu, “Gamers Solve Decade Old HIV Puzzle in Ten Days,” *ZME Science*, September 20, 2011, <http://www.zmescience.com/research/studies/gamers-solve-decade-old-hiv-puzzle-in-ten-days/>.

These gamer's success through the Foldit medium demonstrates the importance of visualising knowledge, as talked about by our panelists Dr Vanessa Robins and Ms Erica Seccombe. The gamified interface of Foldit makes it much more intuitive for players to be able to jump in and contribute without a prior background knowledge of the subject. The colourful, visual interface is also more engaging and could more easily interest people in participating in this different kind of knowledge creation.

Of course, relying on the digital to discover information does come with its own specific set of setbacks. The increasing personalisation of the web and the merging of many different smaller companies into one big monolith - Google's purchase of YouTube, for example - are leading to the "echo chamber" effect, in which we are only allowed to see content that aligns with our own opinions online. Because of a change in Google's algorithms, two people with different political or ideological views will see radically different information when searching the exact same terms. This is troubling for many reasons, not least that acquiring knowledge involves challenging our own perception and opening ourselves up to other perspectives.

In order to accomplish these results, we have to shift our thinking from an individualistic one, relying on one particular individual or one particular field to solve a problem, to an academic culture that welcomes and fosters collectivist ideals, where academics from multiple fields can explore a problem together, drawing on the experiences and expertise of different researchers who each bring a unique skill set to the table. This is because, often, the best way to solve a problem is to have new perspectives on its issues, and to be able to view them through many lenses¹⁸—mathematical, scientific, social, empirical, ethical and so on. An interdisciplinary approach not only provides transformational fresh thinking about complex problems, but it adds innovation to the strengths of each discipline as well.



The Real Face of White Australia

Taking an interdisciplinary approach to a particular field or subject matter also has the advantage of being able to create new types of knowledge and pave the way for innovative research that impacts our lives in a very real manner. It does this by allowing researchers to ask new types of questions that would not usually be addressed in a specific field. Bioethics is a good example of an interdisciplinary approach, in which it investigates how decisions in medicine and science touch upon our health, society and environment.

¹⁸ Tom McLeish and Veronica Strang, "How to Value Research That Crosses More than One Discipline," *The Conversation*, July 31, 2015, <http://theconversation.com/how-to-value-research-that-crosses-more-than-one-discipline-45324>.

That is why interdisciplinary efforts and fields such as digital humanities, which attempts to bridge this gap, is something that is important and should be encouraged. One fantastic example a digital humanities project is *The Real Face of White Australia*¹⁹, by Tim Sherratt, which aims to extract and showcase the lives of those who suffered under the White Australia Policy. This is a very humanities-centric project, but it goes about it in a thoroughly digital media method, making the case that there is space for a collaboration that allows both fields to shine in the process.

To conclude, the discourse that the on and offline realities are two wholly separate things is a misconception, as it is not a zero-sum choice between them, and they both influence the other in the most fundamental ways. Digital technologies has not detracted from our rich history of ‘being human’, it has certainly not hindered the pursuit of creating and gaining knowledge. Technology and digital media has simply made it possible for us to reach more people and to collaborate in massive, globe-spanning projects such as Wikipedia, which would have been inconceivable mere decades ago. These technologies are part of who we are, both literally and metaphorically, considering how much they influence our outlook, in our everyday life and in the way we seek out and construct our knowledge of the world.

¹⁹ Tim Sherratt, “The Real Face of White Australia,” *Discontents*, September 21, 2011, <http://discontents.com.au/the-real-face-of-white-australia/>.

REFLECTIONS

The topic of digital technologies and how they influence the shape and structure of our society is an area of high interest for me, so it is no surprise that I ended up choosing it as the foundation of the knowledge gap that we had to investigate.

I have at least a passing familiarity with all of the disciplines I am interrogating in this portfolio, so I did come into it with some preconceived ideas of what I would ultimately find. However, in delving deeper into sources and materials, I discovered layers upon layers of ideas and perspectives that has made this field what it is today, and that is with a discipline that is as young as digital humanities.

Our class visit to the ANU's Classics Museum made me reflect on how *digital* history is collected and curated, since it is not a physical or tangible thing, and that led me to dive in deeper and resulted in the entire section surrounding digital history.

The peer-led tutorials, particularly the ones addressing framing and mental models also helped tremendously in creating this portfolio, as the idea thrown around the class helped me crystallise the some of the previously vague thoughts that I had about this topic.

The Visualising Knowledge seminar by Dr Vanessa Robins and Ms Erica Seccombe was also valuable in making me think more about how knowledge *looks*, and how it can be transmitted in different ways through different mediums.

The research for this portfolio took me through many areas of study: the sciences, history, sociology and, I'm sure, many more that I did not even realise I was treading through. This research, more than anything, has convinced me of the importance of interdisciplinary study, as every field has links to each other that is fascinating to explore. My interview with Dr Glenn Roe shed even more light on the subject, as he outlined the history of this relatively young field, most of which were not recorded — at least not formally. It presented a unique perspective that had me restructuring parts of this portfolio to fit in the information I had gained from the interview.

It was a challenge, though an enjoyable one, to take all this raw information from a variety of different disciplines, and to condense them into a form that is concise, and hopefully, present them in a way that is coherent and informative.

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Appendix: An Interview with Dr Glenn Roe

Dr Glenn Roe is currently the lecturer in Digital Humanities at the Australian National University, and has previously held the Mellon Post-doctoral Fellowship at the University of Oxford. In researching this portfolio, I had the opportunity to sit down with him for an interview and ask him about his thoughts about the divide in the perception between the digital and the material.

First, he gave some background as to the factors that had led to this gap. He explained the historical perspectives that people used to hold about technology and cyberspace, and how the web evolved from separate clusters of homepages and message boards to the ‘social web’ as we know it today. He talked about how this evolution has an impact on our sense of identity, and that the anonymous identity of the yesteryear and the social identity in the web today are both simply our constructions, albeit in a different form.

Dr Roe described the way academic publishing has been transferred to one that is done primarily digitally. He expanded upon the direction in which the future of that important convergence might be going, and the fact that the academic journal model would have to change and evolve with the times to stay economically viable. He also talked about how social media, such as Twitter, has made some research paper exponentially more impactful, as people would actually be aware that it exists and are able to gain access to it through the links provided, compared to simply publishing it into a journal.