

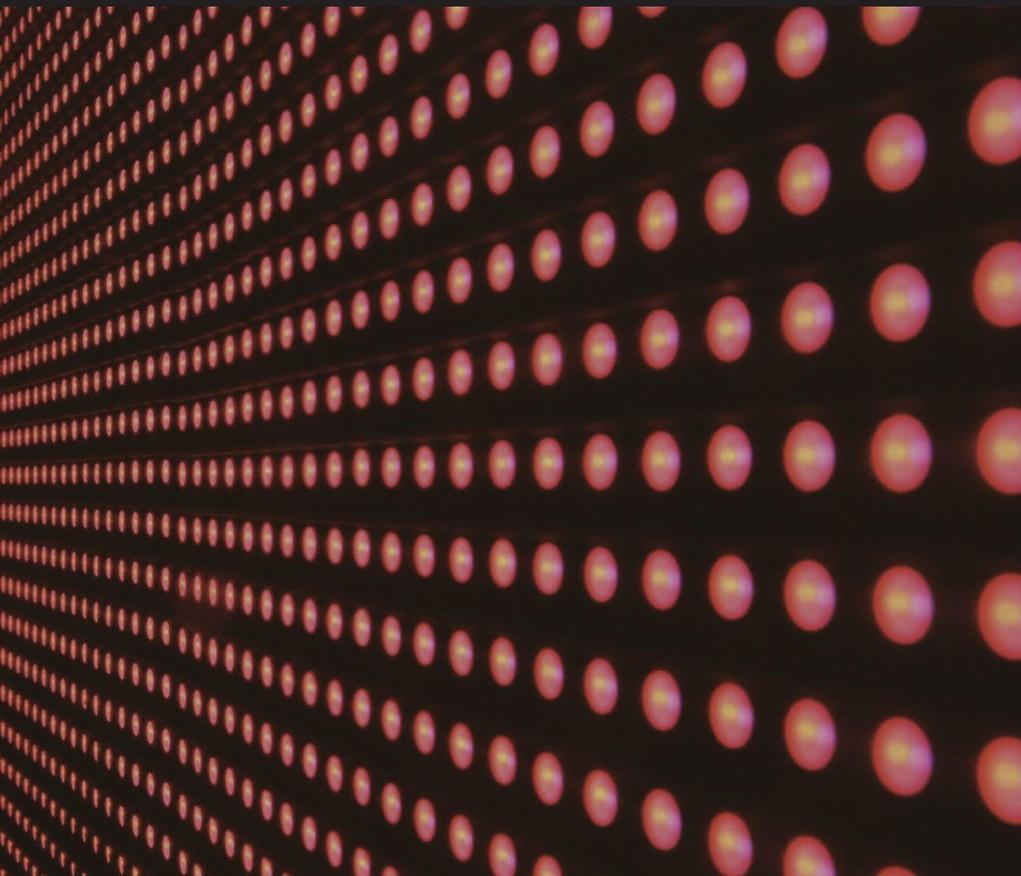


Department of  
**Management**

ISSN 2042-5686 (Online)

# iSCHANNEL

The Information Systems Student Journal



**Volume 13**  
**Issue 1**  
**September 2018**

|   |   |      |
|---|---|------|
| <b>Faculty Editor</b><br>Dr. Will Venters   | Contents  | Page |
| <b>Senior Editor</b><br>Marta Stelmaszak  | <b>Editorial</b>  |      |
| <b>Associate Editors</b><br>Sophie Altrock<br>Kaitlyn Clark<br>Jerome Retzlaff<br>Katharina Rohr  | <b>From the Associate Editor</b><br>Sophie Altrock  | 2    |
| <b>Reviewers</b><br>Oliver Alfridijanta<br>Florian Allwein<br>Sophie Altrock<br>Mark Benya<br>Kari Koskinen<br>Silvia Masiero<br>Chris Maynard<br>Kadriann Pikkat<br>Jerome Retzlaff<br>Katharina Rohr<br>Maria Vittoria Santarelli<br>Andreas Schuster<br>Marta Stelmaszak<br>Mads Tryggedsson<br>Henry Vigneron | <b>Consumer Perceptions to Friction in the Context of the Privacy vs Convenience Trade-Off – The Case of an Open Banking Consent Journey</b><br>Alexandra Gencheva          | 4    |
| <b>Cover Image</b><br>Edited by Sophie Altrock  | <b>Apprentices of Automation: Adapting Career Paths to Ever-Smarter Machines</b><br>Pauline A. Chin, Clotilde de Maricourt, Nicolas A. Feil, Krittika Ray, Terry L. X. Zhen | 12   |
| <b>Formatting</b><br>Katharina Rohr   | <b>When Digital Technologies Migrate: Innovation from an Anthropological Perspective</b><br>Juan Felipe Forero  | 23   |
| <b>Lay-Out Design</b><br>Shannon Spanhake   | <b>The Reinforcing Loop: An Exploration of Filter Bubbles in Social Platforms</b><br>Kadriann Pikkat  | 29   |
| <b>iSCHANNEL is available in PDF</b><br>at <a href="http://lse.ac.uk/ischannel">http://lse.ac.uk/ischannel</a><br>Follow us on Twitter @ischannel   | <b>Locke’s Tacit Consent in Social Networking Sites: A Case for Tacit Online Consent</b><br>Maria Vittoria Santarelli   | 35   |
| <b>Contact</b><br>Information Systems and<br>Innovation Group<br>Department of Management<br>London School of Economics<br>and Political Science<br>Houghton Street<br>London WC2A 2AE<br>Email: <a href="mailto:is.channel@lse.ac.uk">is.channel@lse.ac.uk</a>   |   |      |

## EDITORIAL – From the Associate Editor

Currently in its 13th year of publication, the iSCHANNEL team is proud to contribute yet another series of insightful research of aspiring academics, current students, and those hungry for sharing ideas and findings with the Information Systems community. Out of a wide selection of submissions this year we agreed on a great mixture of quantitative findings and theoretical explorations of topics surrounding challenges and opportunities of our digital age.

With contributions from my fellow Associate Editors, we are happy to present five thought-provoking papers:

**Alexandra Gencheva** studies friction in the context of Open Banking solutions. Using the case of an Open Banking consent journey, the author explores how users perceive friction and how these perceptions and behaviours are impacted by preferences and expectations about privacy and convenience. The analysis shows that friction is perceived as a more positive encounter by participants that value privacy while it is perceived as a more negative encounter by participants that value convenience.

**Pauline A. Chin, Clotilde de Maricourt, Nicolas, A. Feil, Krittika Ray, and Terry L. X. Zhen**, a group of undergraduate students, explore the impact of automation in different industries looking at current and future professionals. Using a mixed method approach, the findings reveal that all participants are concerned about the automation of jobs in the near future. Students however were showing a willingness to adapt to those arising challenges by learning how to code in comparison to no willingness on the side of professionals. Findings further indicate that e.g. job security also affects concerns with the automation of jobs.

**Juan Felipe Forero** offers an anthropological perspective on understanding the nature of digital innovation. Deploying the concept of migration, including departing, arriving and crossing borders, the author outlines how digital innovation is a product of moves, changes and different modes of travelling. Drawing from a range of anthropological concepts and contributions, the author argues that innovation emerges as a far messier and improvised process than previously thought. To an Information Systems audience, this paper presents a fascinating insight into contributions from digital anthropology and adjacent fields.

**KadriannPikkat** provides an interesting analysis of filter bubbles enabled by social media platforms. Through an examination of this phenomenon, where the mechanisms exposing content to a user prioritise ideas that reinforce his or her own beliefs, she raises awareness of the ways users of these platforms may be unwittingly subjected to a narrowing subset of information disguised as personalisation. Kadriann reveals the ways these platforms may simplify and manipulate the complexities of social interaction and raises questions around how this reinforcement may shape users' identities.

**Maria V. Santarelli** examines from a political point of view the way users give consent within social networking sites (SNS) using Facebook as a case study. By showing the analogies between a state and Facebook, she argues that consent given on a SNS resembles John Locke's tacit consent as derived from "take it all or take nothing" Hobson's choice. Such "tacit online consent" goes beyond the consent given to governments, calling into question the contemporary legislative means in place.

We have assembled a rich set of contributions this year and we want to thank all our authors and reviewers. Taking part in the journey from the first call for papers to the final printed journal has shown us that research is not just about counting online submissions. iSCHANNEL has brought people together, challenged reviewers to change their perspectives but, most of it all, it has offered yet another breadth of topics on all kinds of technological developments that affect us equally, now and tomorrow.

When I came to the LSE a year ago, my background in digital media studies in the field of cultural science provided me with a healthy scepticism about technologies, and the way they affect our daily lives. In the past months, however, I have come to realise the opportunities and the potential of this digital landscape for individuals and businesses if only we aspire this comprehensive view.

The papers selected in this volume offer rich insights into the privacy concerns in the open banking sector and perspectives on social media platforms, accompanied by explorations of the automation of jobs and the ever narrowing information flow we are exposed to online. Adding an anthropological perspective to our selection further shows us that these topics of digital innovation should not just be addressed in the field of Information Systems alone, but rather across different areas of research. With this variety of perspectives and the growing body of knowledge that we take part in, I now see that we can continue to evolve and revolutionise our technologies with the potential to bring about more of rewarding disruptions.

In the name of iCHANNEL, I am happy to have joined the team that has brought about another journal with intriguing findings and captivating thoughts. We now like to invite your reflections and challenge new ideas while reading through our 13th edition.

With many thanks to my fellow Associate Editors and their contributions, Katharina B. Rohr, Jerome Retzlaff, and Kaitlyn Clark.

Special thanks goes to our Senior Editor Marta Stelmaszak who has invested a considerable amount of time and effort to make this journal possible over the past years and Dr. Will Venters, the Faculty Editor, who has once more supported us with his academic expertise and experience.

Sincerely,

Sophie Altrock

*Associate Editor*

# Consumer Perceptions to Friction in the Context of the Privacy vs Convenience Trade-Off – The Case of an Open Banking Consent Journey

Alexandra Gencheva

MSc Management of Information Systems and Digital Innovation  
Department of Management  
London School of Economics and Political Science

---

## KEYWORDS

Open Banking  
Friction  
Expectancy  
E-banking  
UX  
User experience  
Privacy  
Security  
Convenience

## ABSTRACT

It is widely considered that ‘friction’ in user experience and digital journeys leads to a negative user engagement, drop off rates, and ultimately impacts profits for business in the digital space. The aspect of individuals’ perception to risk, privacy and convenience is brought in as it directly pertains to the context within which this study occurs.

Here, friction is studied in the context of Open Banking solutions, where to allow for the service to be provided, customers need to consent their data to be shared. Mocked-up digital journeys of a consent model are presented and discussed with participants in focus groups. This paper aims to explore what user perceptions are about friction and how these perceptions and behaviours are impacted by their preferences and expectations about privacy, and convenience. Expectancy Theory dimensions – Expectancy, Instrumentality and Valence - are used to analyse and discuss the findings.

This paper is an abridged adaptation of the author’s Masters’ Thesis Dissertation, for the Management of Information Systems and Digital Innovation course at the LSE, with an original word count of 11,000 words. Thus, findings have been summarised in a table and representative quotes have been omitted due to the wordcount constraints in the iSChannel journal. Appendices and visual representations of the digital journeys, have also been omitted in this publication (link to full thesis: <https://bit.ly/2N2MGeQ>).

---

## Introduction

Industries, markets and even human behaviour, are being changed and transformed in modern societies with ever-so-pervasive connected services, and an on-demand and data driven economy. As such, there has been an increased focus by researchers, businesses and public institutions on understanding issues and concerns related to the vast amounts of data that is being generated: social, personal, financial, data from ‘wearables’. Debate and discussion in extant literature focuses on privacy, security, trust, and control of our data, with a shift to a more user-centric view (Elahi, 2009; Whitley E. , 2009). This is reflected in regulatory changes that aim to put the control of personal data, including consent for granting access, and the mechanism of revocation, and the value it holds in the hands of individuals (Whitley E. , 2009).

At the same time literature and industry findings have shown that in a fast paced, and on-demand

accelerated by innovation society, user experience (UX), and a seamless one at that, is proving ever more important. Organisations have measured the negative impact and resulting loss in profit of this type of friction of slight delays, interruptions and ambiguity within a digital or online customer journey. These have found that this sort of ‘friction’ in a user experience journey can lead to higher drop-off and bounce rates. This paper explores how this has been exhibited in the new Open Banking ecosystem, and how nuanced levels of friction are perceived by customers in a digital consent journey.

## Background

### 1. Open Banking, and getting it right

As of January 2018, the UK financial services industry started implementing substantial and disrupting changes to the way it offers products and services to consumers and SMEs – commonly referred to as Open Banking. Enabled by the second Payment Services Directive, Open Banking is believed to lead to a more open and secure banking ecosystem, new business models and services (Zachariadis & Ozcan,

---

Corresponding Author  
Email Address: alexandra.gencheva@gmail.com (A. Gencheva)

2017; PWC, 2016), as well as more market competition and choice (Reynolds, 2017). It can even become a lens “through which to reassess how we share our data [...], and help us regain control over how we share all our data better” (Reynolds, 2017).

The successful uptake of Open Banking will likely be reliant not only on technological excellence and regulatory rigour, but also on successful mitigation of perceived risk factors for consumers, as was seen with e-payment solutions (Ho & Ng, 1994). Its success depends on positive initial uptake from the first-adopter customers – which includes them having understood its potential value and overcoming fears pertaining to the adequate handling of their data, security and safeguarding their identity (The Open Data Institute, 2016).

The EU General Data Protection Act (GDPR), will undoubtedly contribute to easing consumers’ fear and instil some confidence in the Open Banking process, as well as other digital experiences which require their consent to gather data. The law clearly states that when individuals share their data, informed, unambiguous and an affirmative action (deliberate, i.e. having to opt-in) must be present when the individual agrees to give consent (ICO, 2017). However, as with other digital journeys, within the Open Banking ecosystem, instilling certain protections could become an element of ‘friction’, as the process of acquiring such consent may add steps and additional actions on behalf of users.

## Literature Review

### 2. The Role of ‘Friction’ in Digital Customer Experience

A concept that originates in the study of physics, ‘friction’ is used to describe diverse phenomena in an array of disciplines. - from kinetic energy and war battle performance (von Clausewitz, 1873), to a trading environment in market economies (FT.com, 2006; NASDAQ.com, 2011) and institutions as a constraint-creating factor in societies (Sjöstrand, 1993, p. 17). In user experience, digital journeys and ‘flow’, friction has not been as clearly defined, but is largely viewed as something negative, something to minimise if possible.

Author Denis Hauptly argues that “any technology or product that significantly reduces the steps to complete a task will enjoy high adoption rates by the people it assists”. Removing steps in the journey required to accomplish a task or reach a goal, can be part of product innovation as well (Hart, 2009). Similarly, Evan Williams co-founder of Twitter and Blogger echoes that that is the secret to establishing a successful tech business in this age: “Take a human desire, preferably one that has been around for a really long time...Identify that desire and use modern technology to take out steps.” (Wired, 2013). Tech giants like Google, Amazon and Facebook are constantly looking for ways to optimise their digital revenue streams. They understand that friction, in the form of ‘profitable but irritating’ mechanisms to target

and advertise, leads to abandonment behaviours along the digital journey (Harvard Business Review, 2016). As little as 100 milliseconds leads to a seven per cent drop in conversion; a two second delay leads to a 103 per cent increase in abandonment rate on a website. At the same time 53 per cent of mobile device users will leave a web page if it has longer than a three second delay when loading (DoubleClick, 2016; Akamai, 2017). Delays in the online experience affect the long-term relationship and trust built with customers (Harvard Business Review, 2016), and can result in loss of profit and unaccomplished business objectives, as well as the inability to make use of user and traffic data analytics (DoubleClick, 2016; Facebook Business, 2016).

Banks are now having to compete with industry disruptors, such as FinTechs and challenger banks, for customer acquisition and retention, with the new battlefield being the digital customer experience. Complexity caused by multiple touch-points, regulatory compliance, and multiple interests increases the prospect for interruptions and friction in the customer journey, which may result in higher drop-off rates (Finextra, 2017). In fact, a seamless digital experience and smooth flow that reflect consumers’ preferences will lead to “improved satisfaction, loyalty and referral scores” (Digital Banking Report, 2017). The Technology Acceptance Model theory explains the uptake and use of new technology as a dependant on two primary factors – perceived usefulness and ease of use (Davis, 1989). The latter, more pertinent to this study, is defined as “the degree to which using the technology will be free of effort.” (Davis, 1989). ‘Ease of use’ also has an impact on user adoption of technology, and significantly more so with riskier technology than with less risky technology (Im, Kim, & Han, 2008). The inverse correlation has also been found - products and services perceived to be too complex and difficult to learn to use, are likely to also be perceived as risky to adopt and use (Featherman & Pavlou, 2003). While privacy and security concerns at the top of ‘risk factors’, another dimension of risk is ‘time-risk’, defined as “consumer assessment of potential losses to convenience, time, and effort caused by wasting time researching, purchasing, setting up, switching to, and learning how to use the E-payment service” (Featherman & Wells, 2010). Or similarly, in e-payment risk perception studies, the ‘risk’ of a transaction online taking up more time to complete than completing it by other means. Time-risk has been explored as one of several perceived risks that impact on consumer buying and adoption behaviour (Ho & Ng, 1994; Darley, Blankson, & Luethge, 2010; Featherman & Pavlou, 2003). Adding time delays or steps can inhibit the adoption and use of a new service or technology – they cause friction in the commonly perceived context.

### 3. Privacy, Convenience and Friction

Information privacy concerns matter in this context, as they too add a level of risk, inhibitive to adoption to technology. However, trying to mitigate privacy concerns can equally increase friction user journey.

Consumers' information privacy concerns are complex, encompassing corporate information practices including information gathering, handling, transfer and data accuracy (Stewart & Segars, 2002) and affecting perceptions of risk when factoring them in to other decisions (Png, Hui, Lee, & Hann, 2007). Demonstrating this, is the widely observed phenomenon and debate over the trade-off between privacy and convenience seen in the context of social media and Internet of Things (Fusion, 2016; Social Media Today, 2014). People mostly do not read privacy policies on websites as it would be time-consuming, counterintuitive and costly - it would take 201 hours/annum to read privacy policies word for word on every website we visit (McDonald & Cranor, 2008). Convenience seekers will also be the first to sign up to a service if it simplifies their experience (Png, Hui, Lee, & Hann, 2007). Equally, not only are people more likely to purchase from websites that offer higher levels of privacy and more informative privacy policies, but that they are willing to pay a premium to purchase from them (Tsai, Egelman, Cranor, & Acquisti, 2011).

However, it was also found that privacy concerns in the advent of e-banking services – around supplying personal information as a prerequisite of use - may inhibit their adoption. (Kolodinsky, Hogarth, & Hilgert, 2004). Not surprisingly, user adoption and use of e-payment services has similarly been found also impacted by the way various design attributes reduce various perceived risk (financial, privacy, time-risk), consequently effecting consumer choice for payment method (See-To & Ho, 2016). In other words, if consumers perceive a level of convenience, time saved and ease of use of an e-payment journey, it will reduce their perception of risk, and thus positively affect its adoption.

This is congruent with previous research highlighting that finding a sufficiently compelling offer, benefit or utility, is conducive to “unquestioning adoption”, indicating a reduced consideration for privacy and sharing personal data (Ipsos Mori, 2015; Reynolds, 2017).

## Research Design

### 1. Objective and Methodology

The aim of this paper is to answer the following question:

*What are consumer attitudes toward added 'friction' in the user experience of a consent journey of an Open Banking Solution?*

It attempts to validate previous findings about friction in user experience, contribute to this through a unique new context of the advent of the Open Banking ecosystem, and discuss the findings within an information-processing theory of motivation. The research question was chosen due to its significance in the context of the technological shift in the banking sector and the availability of raw current data. A qualitative approach was selected due to the nature of

available data, as part of an ongoing larger research project conducted by Ipsos Mori market research organisation, for a report commissioned by the OBIE. A qualitative approach allows for a more in-depth investigation of a niche question, the possibility to discover subtleties and nuances pertaining to the topic, and a flexible and guided approach to the questions in real time by the researcher (Anderson, 2010).

### 2. Data Gathering

Permission was sought and granted for the use of focus group data from the OBIE research project, conducted by Ipsos Mori market research company. I contributed additional questions to the research brief and discussion guide. I chose tape-based analysis (audio and video), which allows researchers to “focus on the research question and transcribe sections that assist in better understanding of the phenomenon of interest” (Onwuegudzie, Dickinson, Leech, & Zoran, 2009). The full Ipsos Mori research comprised of 10 two-hour focus groups, with three to five people each. Participants were shown several ‘stimuli’ - mocked-up mobile app/website consent journeys, reflecting what the potential consent journey could look like in an Open Banking ecosystem - and asked a series of questions pertaining to the stimuli they have just seen.

The original OBIE research brief included 16 mocked-up journeys, with respective objectives. I selected the relevant Journey 1 and Journey 2, which are as follows:

#### Journey 1: Friction on Journey

This journey aims to test *if* adding a delay, results in what is defined as positive friction - as a way for people to stop and think further about the process, their data and the consent mechanism.

Control Journey 1 (CT1) – An ‘account aggregation’ journey on a Third-Party Provider (TPP) app, taking the consumer from a Consent Page, to a Bank-side page (within the app), for authentication; finally, to an Authorisation page, to authorise the bank to release their Account/Transaction data.

Test Journey 1.1 (TJ1.1) – This is the same account aggregation journey, but includes redirect screens and messages when the customer is redirected from the TPP to the bank and vice versa. Customers are held on the redirect screen for 3 seconds, with an animated graphical ‘spinning wheel’ icon, or ‘throbber’ (Soon, 2016).

Test Journey 1.2 (TJ1.2) – The same as Journey 1.1, except that the customer is held on redirect screen with the throbber animated icon, for 5 seconds.

#### Journey 2: Efficacy of the three-step Authentication and Authorisation Models

Journey 2 tests the preference and attitudes of three different consent models, thus indirectly testing perceptions to friction to different extents in each of the

consent models. As explored in the literature review, an additional journey step could be considered added friction in the digital journey, whereas the hybrid and circumvented models could theoretically be preferred by participants.

Control Journey 2 (CT2): The 3-step consent model where authentication and authorisation are distinct steps

Test Journey 2.1 (TJ2.1): The circumvented consent model where there is an authentication step but no authorisation step

Test Journey 2.2 (TJ2.2): The hybrid consent model where the authentication/authorisation steps are combined into one step (OBIE, 2017).

### 3. Conceptual Framework

Because this study deals with people's perceptions of user experience and value of a theoretical future ecosystem, and it requires them to take into account privacy and security concerns pertaining to their financial and personal information – I utilised a theoretical lens that explains people's behaviour through motivation. Open Banking uptake by the public is considered partially dependant on the perception of trade-offs between merits and risks. This aligns with the basic belief in this theory: motivation, seen as the driving force of behaviour, addresses the question of choice between alternatives, and their respective value and consequences.

According to Victor Vroom's Expectancy theory (Vroom, 1964), motivation is the driving force for behaviour, and explains that people make choices between opposing alternatives, by estimating if the expected results from their behaviour will match their desired outcome. Motivation is a product of the multiplicative relationship between Expectancy, Instrumentality and Valence. Expectancy is the belief that if an individual exerts enough effort it will lead to the desired performance, known as the effort-performance relationship. Instrumentality is the performance-outcome relationship, characterizing the belief that if a person meets the expected performance it will result in the desired outcome. Finally, Valence represents the value placed on the desired outcome (Lambright, 2010; Png, Hui, Lee, & Hann, 2007). It is dependent on the person's personal values, beliefs and preferences, and can be related to a positively or negatively valued expected outcome. In the context of online privacy, and related to this research, positive Valence would also incorporate the feeling of security due to specific mechanisms in place like a privacy policy on a website (Png, Hui, Lee, & Hann, 2007). In other words, the value they place on the benefits of the outcome is high enough.

### Findings and Analysis

Table 1 summarises some of the attitudes, feelings and observations across the different consumer groups, for Journeys 1 and 2. In addition, Expectancy, Instrumentality and Valence, are used as a lens for

perceptions of friction and its impact on the motivation to consent, and successfully use these services. The findings about TJ1.1 and TJ1.2 are presented together, as they were extremely similar, only differing in a three- versus five-second delay. 'N/A' indicates no specific discussions occurred on that section.

### Discussion and Conclusion

First, findings point to 'throbber' delays in redirect screens, not being perceived as 'negative' friction enough to lead to higher drop-off rates or journey abandonment. However, too much of a delay could be mistaken for crashed or frozen service. Second, delay wasn't perceived as 'positive friction' either. However, other positive outcomes were observed in the less tech-savvy groups - delays symbolised a more secure and robust process, and interpreted as two organisations communicating with each other. More tech-aware participants on the other hand, merely related this delay to the internet connection, or as a function of the process. Third, the 3-step consent model was found to be a clear way for people to map out the consent model digital journey in their minds, which implicitly signalled this to be part of a robust secure process. This is congruent with extant literature findings that where consumers have 'low mental-intangibility', i.e. journeys are mentally tangible and easier to grasp, they perceive the ease of use of an e-service as a risk-reducing factor (Featherman & Wells, *The Intangibility of E-Services: Effects on Perceived Risk and Acceptance.*, 2010).

Expectancy Theory lens helps explain why perception of friction within a journey can be diverse, due to varying weight placed on the effort-performance and performance-outcome relationships. People understood the effort exerted to overcome friction to signify different things, depending on how tech-savvy, and financially-aware they were. Even more importantly, Valence helps explain this complexity, as people will place different value on convenience vs privacy/security, and therefore, on the service that they attain. Less tech- and financially-savvy users expressed that the service didn't directly interest them at present, and found that the process itself, while straightforward and familiar, is still a lot of effort for the benefit offered. Conversely, CG3 (looking for finance/credit) didn't feel deterred by the 'throbber' delay, and were more willing to go through this 'effort' – attributable to their higher financial needs, thus more willing to disregard friction. Similarly, more tech-savvy users, assumed privacy measures are already in place, as this occurs within the financial services sector, or that the onus is on the banks to protect them – because they value convenience and time-saved more.

The Expectancy Theory lens helps us see why across different groups there was a common perception when it came to the 3-step consent model. Early adopters felt they would not be going through the 'effort' or be in the app, had they not wanted to. They saw it as their firm choice to try a new service/app and didn't need the extra Authorisation step; some even went as far to say that if they had decided to use

| JOURNEYS     | General sentiment across multiple groups   | CG1   | CG2   | CG3   | CG8  | Expectancy   | Instrumentality  | Valence   |   |
|--------------|--|---|---|---|--|--|--|---|---|
| CT1          | <ul style="list-style-type: none"> <li>Didn't notice the absence of a 'throbber' or transfer screen until prompted and only after seeing a TJ</li> <li>Expected a 'throbber' as a customary step in this type of sign up journey</li> <li>Most didn't spot differences between CT1 and TJs, unless they were pointed out</li> <li>5 second delay (TJ1.1) felt too long, when compared to 3 second (TJ1.2)</li> </ul> | N/A   | <ul style="list-style-type: none"> <li>Feelings of insecurity, anxiousness (after compared to TJ)</li> <li>2 organizations are communicating</li> <li>A process in the background</li> <li>Doing what you've asked it to so</li> <li>Being transferred from Third Party Provider to Bank</li> </ul> | <ul style="list-style-type: none"> <li>(generally) concerned about what TPPs could do with their information</li> <li>'Throbber' wouldn't deter, but encourage them</li> <li>May 'switch off' while waiting and think about something else</li> </ul> | N/A  | <ul style="list-style-type: none"> <li>Level of security</li> <li>A robust process they would expect</li> <li>Don't expect things to be instantaneous</li> <li>Too long delay may be frustrating or interpreted as a 'crashed site'</li> </ul> | <p>Participants expect reasonable level of wait or 'effort' as a natural part of the Consent process - leading to successfully performing sign up, grant access, or add an account.</p>  | <p>Completing the sign-up signifies that a robust background process has taken place, and leads to attaining the service (outcome), in a safe and secure way. The 'throbber' signified performing a secure process between TPP and bank (to privacy conscious people)</p> | <p>Value placed on attaining the service depends on perception of benefits vs potential risks – exposed financial accounts, identity theft, information being used to make decisions about them, etc.</p> |
| TJ 1.1 & 1.2 | <ul style="list-style-type: none"> <li>Preferred CT2 as it added sense of security and control</li> <li>Represented a good way to model in their minds that there is a Third Party, a Bank and a connection between them (before seeing TJs)</li> </ul>  | <ul style="list-style-type: none"> <li>When compared to alternative TJs, felt long-winded/clunky</li> <li>(upon experiencing TJs) the inconvenience of extra step is actually negligible</li> </ul> | <ul style="list-style-type: none"> <li>Clearer compared to TJ2.2, with distinct Authorisation step</li> <li>Affirming what you are consenting to,</li> <li>Good for people that glance over small print</li> <li>More confident that data will be secure</li> </ul>                                 | <ul style="list-style-type: none"> <li>CG6 – Poor Credit History</li> <li>Taking the time now even with extra step means ensure security is right</li> <li>Process asks for familiar information, so doesn't seem lengthy</li> </ul>                  | <ul style="list-style-type: none"> <li>User friendly</li> <li>Familiar in the things you are required to provide</li> <li>Wasn't asking for 'that much' information</li> </ul> | <p>Steps were perceived as part of the 'effort' needed – give certain information, bank confirms it – to attain the performance of 'successfully signing up'.</p>  | <p>Performing the sign-up process, leads to the attaining the service. Privacy- and security-conscious groups saw the performance of extra steps as instrumental to ensuring their information is secure and risk is as low as possible. Early adopters saw them as unnecessary for the desired out come</p> | <p>Depending on value placed on attaining the service, people perceived the extra steps as either acceptable or unnecessary. Similarly, extra steps/prompts were welcome more by privacy-aware people.</p>  |   |
| CT2          | <ul style="list-style-type: none"> <li>Compared to 3-step model, people didn't feel comfortable with this; more positive attitudes to 3-step consent model</li> </ul>  | <ul style="list-style-type: none"> <li>When comparing to 3-step model, acknowledged that they are sharing data, so should be extra cautious, so didn't mind extra step</li> </ul>                   | <ul style="list-style-type: none"> <li>Felt this is a weaker consent model than CT2</li> </ul>  | <ul style="list-style-type: none"> <li>Felt they wouldn't notice the lack of Authorization if they hadn't experienced CT2</li> </ul>  | <ul style="list-style-type: none"> <li>Compared to CT2, didn't like the absence of Authorization step</li> </ul>   |  |  |   |   |
| TJ2.1        | <ul style="list-style-type: none"> <li>Said they wouldn't be on the app unless they wanted to / had all the information – so extra step may be unnecessary</li> </ul>  | <ul style="list-style-type: none"> <li>Less steps than CT2 so seems easier to go through</li> <li>No distinct Authorisation step wasn't detrimental – no need for yet another prompt</li> </ul>     | <ul style="list-style-type: none"> <li>Helped them notice that authorization &amp; authentication can look similar in CT2</li> <li>No distinct Authorisation step wasn't detrimental – would've been completely informed and sure at this point</li> </ul>  | N/A   | N/A  |  |  |   |   |
| TJ2.2.       |  |   |   |   |  |  |  |   |   |

Table 1. Summary of Findings - Attitudes, Feelings, and Observations across the Different Consumer Groups

it, they didn't want to be challenged one more time. The more privacy-conscious and technology-resistant groups, felt the same, but the justification cited was that they would have already done extensive research, decided to either trust it or not, and then try it.

In summary, friction is perceived as a more positive encounter where participants were more privacy and security conscious (typically technophobes, and financially excluded); early adopters, tech-savvy and younger people, expressed preference for and put exceeding value on convenience and speed, and thus were inclined to perceive friction as negative. It is important to clarify that this inclination was in the context of imagining what long-term use might feel like.

### Implications

This research has shown that if the aim is to increase engagement and uptake within the Open Banking ecosystem, the barriers to overcome are the preference for convenience or speed, and the simultaneous security and privacy consideration. Friction could, then operate as a control mechanism for these perceptions, helping to strike the right balance for a successful uptake with the target audience. Extant literature tells us that people have different preferences for security and privacy versus convenience - from disregarding privacy concerns if the offer is compelling enough (Ipsos Mori, 2015; McDonald & Cranor, 2008) to paying premium to shop on websites where they feel their privacy is safeguarded (Tsai, Egelman, Cranor, & Acquisti, 2011). However, results are dependent on people's perceptions and values, and can be examined as continuum impacted by variables, including how tech-savvy and/or risk-averse people are. Previous studies recommend that because of the various considerations taken into account, e-banking and e-commerce technologies could not be aggregated into one category, with a one-size-fits-all approach to marketing, communication and adoption strategies (Kolodinsky, Hogarth, & Hilgert, 2004). Furthermore, adhering to the GDPR's requirements for informed consent is fundamental for all companies dealing with gathering, storing and sharing data. A pertinent observation is people's perception that commencing the digital journey is enough of a signal of their intent to be there, certain of their decision, and even being informed enough. This contradicts research, so far, showing that people aren't fully aware of what they are agreeing to because they don't read through privacy policies. Perhaps, another dimension of the privacy paradox.

Finally, despite my main findings aligning with previous literature, it is my conclusion the Open Banking ecosystem is unique, and once it has matured, further research may show different results about perceptions. I would recommend that quantitative research is conducted to validate these findings and determine the extent to which privacy and security concerns affect the tolerance to friction or its perception as positive vs negative friction. Suggested studies should be segmented across age groups, and

with a large sample across similar consumer groups, and measure drop-off rates at different points in a UX funnel and A/B testing different degrees and approaches to friction.

### Limitations

Data gathering was conducted by external market researchers, meaning less control over guiding designing and guiding the focus group discussions. In addition, participants in this case did not have first-hand interaction with the stimuli, but were instead shown and talked through them. Perceived ease of use from hand-on trial of e-service software, has been found to reduce perceived risk of using the software (Featherman & Pavlou, 2003). Finally, this study entailed participants imagining their preferences and opinions about a future ecosystem and theoretical products, with all the contextual complexities.

### References

- AccessPay. (2017, May). The Little Book of Big Banking Changes. Retrieved July 2017, from <https://www.accesspay.com/guides/little-book-banking-changes/>
- Akamai. (2017, April). Akamai Online Retail Performance Report: Milliseconds Are Critical. Cambridge, MA. Retrieved June 17, 2017, from <https://www.akamai.com/uk/en/about/news/press/2017-press/akamai-releases-spring-2017-state-of-online-retail-performance-report.jsp>
- Anderson, C. (2010). Presenting and Evaluating Qualitative Research. Anderson, C. (2010). Presenting and Evaluating Qualitative Research. American Journal of Pharmaceutical Education, 74(8), 141., 78(8), 141.
- BBVA. (2016, June). The Open Banking Standard: The open banking road map. Retrieved June 18, 2017, from <https://www.bbva.com/en/the-open-banking-standard-the-open-banking-road-map/>
- CityA.M. (2017, July 25). We need to overcome consumers' data fears to make Open Banking a success. (R. Vincent, Ed.) Retrieved from <http://www.cityam.com/269132/we-need-overcome-consumers-data-fears-make-open-banking>
- Darley, W., Blankson, C., & Luethge, D. (2010). Toward an integrated framework for online consumer behavior and decision making process: A review. Psychology and Marketing, 27(2), 94-116.
- Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13, 319-339.
- Digital Agenda. (2017, April 4). Squirrel's money impact mission. Retrieved August 3, 2017, from <http://www.digital-agenda.co.uk/features/squirrels-money-impact-mission/>
- Digital Banking Report. (2017). 2017 Retail Banking Trends and Predictions. Retrieved July 02, 2017,

- from <http://forms.kony.com/rs/656-WNA-414/images/2017-DBR-Retail-Banking-Trends-and-Predictions.pdf>
- Digitalist. (2016). Friction Thinking – a must-have for digital business. (S. Pihonen, Editor) Retrieved July 13, 2017, from Digitalist Group: <https://digitalistgroup.com/blog/Friction-Thinking-a-must-have-for-digital-business>
- DoubleClick. (2016, September). The need for mobile speed: How mobile latency impacts publisher revenue. (A. Shellhammer, Ed.) Retrieved July 16, 2017, from <https://www.doubleclickbygoogle.com/articles/mobile-speed-matters/>
- Dowling, G., & Staelin, R. (1994). A model of perceived risk and intended risk-handling activity. *Journal of Consumer Research*, 21(1), 119-134.
- Elahi, S. (2009). Privacy and Consent in the Digital Era. *Information Security Technical Report*, 14, 113-118.
- Facebook Business. (2016, August). Improving Mobile Site Performance. Retrieved July 27, 2017, from <https://www.facebook.com/business/news/improving-mobile-site-performance>
- Featherman, M., & Pavlou, P. (2003). Predicting E-Services Adoption: A Perceived Risk Facets Perspective. *International Journal of Human-Computer Studies*, 59(4), 451-474.
- Featherman, M., & Pavlou, P. (2003). Predicting E-Services Adoption: A Perceived Risk Facets Perspective. *International Journal of Human-Computer Studies*, 451-474.
- Featherman, M., & Wells, J. (2010). The Intangibility of E-Services: Effects on Perceived Risk and Acceptance. *ACM SIGMIS Database: the DATABASE for Advances in Information Systems*, 41(2), 110-131.
- Finextra. (2017). Banking on frictionless customer journeys. (B. Safran, Ed.) Retrieved July 30, 2017, from <https://www.finextra.com/blogposting/14328/banking-on-frictionless-customer-journeys>
- FT.com. (2006, March 3). Frictionless Markets. (N. Colchester, Ed.) Retrieved August 16, 2017, from <http://www.ft.com/cms/s/2/202615ce-68b4-11da-bd30-0000779e2340.html>
- Hart, M. (2009). Something Really New: Three Simple Steps to Creating Innovative Products by Denis J Hauptly. *Journal of Product Innovation Management*, 26(1), 111-113. Retrieved from [http://onlinelibrary.wiley.com.gate3.library.lse.ac.uk/doi/10.1111/j.1540-5885.2009.00338\\_2.x/epdf](http://onlinelibrary.wiley.com.gate3.library.lse.ac.uk/doi/10.1111/j.1540-5885.2009.00338_2.x/epdf)
- Harvard Business Review. (2016, September). Why User Experience Always Has to Come First. Retrieved August 1, 2017, from <https://hbr.org/2016/09/why-user-experience-always-has-to-come-first>
- Ho, S., & Ng, V. (1994). Customers' Risk Perceptions of Electronic Payment Systems. *International Journal of Bank Marketing*, 12(8), 26-38.
- Hoffman, D., Novak, T., & Peralta, M. (1999). Information Privacy In The Marketplace: Implications For The Commercial Uses of Anonymity On The Web. *The Information Society*, 15(2), 129-139.
- Hsu, C.-L., & Lu, H.-P. (2004). Why do people play on-line games? An extended TAM with social influences and flow experience. *Information & Management*, 41(7), 853-868. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0378720603001319>
- ICO. (2017). GDPR consent guidance. Retrieved July 6, 2017, from <https://ico.org.uk/about-the-ico/consultations/gdpr-consent-guidance/>
- Im, I., Kim, Y., & Han, H.-J. (2008). The effects of perceived risk and technology type on user's acceptance of technologies. *Information Management*, 45(1), 1-9.
- Ipsos Mori. (2015, November). Open API - Exploring the views of consumers and small businesses. Retrieved July 30, 2017, from [https://www.ipsos.com/ipsos-mori/en-uk/open-api-exploring-views-consumers-and-small-businesses?language\\_content\\_entity=en-uk](https://www.ipsos.com/ipsos-mori/en-uk/open-api-exploring-views-consumers-and-small-businesses?language_content_entity=en-uk)
- Kolodinsky, J., Hogarth, J., & Hilgert, M. (2004). The Adoption of Electronic Banking Technologies by US Consumers. *International Journal of Bank Marketing*, 22(4), 238-259. Retrieved from <https://doi.org/10.1108/02652320410542536>
- Lambright, K. T. (2010). An Update of a Classic: Applying Expectancy Theory to Understand Contracted Provider Motivation. *Administration & Society*, 42(4), 375.
- McDonald, A., & Cranor, L. (2008). The Cost of Reading Privacy Policies. *ISJLP*, 4, 543.
- Money and Mental Health Policy Institute. (2017). Seeing through the fog: how mental health problems affect financial capability. Retrieved July 30, 2017, from <http://www.moneyandmentalhealth.org/fincap/>
- Monzo Bank. (2017, January 27). Designing a product with mental health issues in mind. (Z. Brade, Ed.) Retrieved from <https://monzo.com/blog/2017/01/27/designing-product-mental-health-mind/>
- NASDAQ.com. (2011). Frictionless market. Retrieved August 8, 2017, from <http://www.nasdaq.com/investing/glossary/f/frictionless-market>
- Nienaber, A., Hofeditz, M., & Searle, R. (2014). Do we bank on regulation or reputation? A meta- analysis and meta- regression of organizational trust in the financial services sector. *International Journal of Bank Marketing*, 32, 367-407.
- Nir, E. (2014). Hooked: How to Build Habit-Forming Products.

- NRK. (2017, August 10). With a quiz to comment, readers test their article comprehension. Retrieved August 14, 2017, from NRK Beta: <https://nrkbeta.no/2017/08/10/with-a-quiz-to-comment-readers-test-their-article-comprehension/>
- OBIE. (2017, June). Open Banking - Research Brief v0.4. [Unpublished internal document].
- Onwuegudzie, A., Dickinson, W., Leech, N., & Zoran, A. (2009). A Qualitative Framework for Collecting and Analyzing Data in Focus Group Research. *International Journal of Qualitative Methods*, 8(3), 1-21.
- Payments UK. (2016, July). The Second Payment Services Directive. A briefing from Payments UK. Retrieved July 29, 2017, from <https://www.paymentsuk.org.uk/sites/default/files/PSD2%20report%20June%202016.pdf>
- Png, I., Hui, K.-L., Lee, S.-Y., & Hann, I.-H. (2007). Overcoming Online Information Privacy Concerns: An Information-Processing Theory Approach. *Journal of Management Information Systems*, 24(2), 13-42.
- PWC. (2016, July 25). Catalyst or threat? The strategic implications of PSD2 for Europe's banks. Retrieved from <https://www.strategyand.pwc.com/media/file/Catalyst-or-threat.pdf>
- Reynolds, F. (2017). Open Banking A Consumer Perspective. Retrieved June 19 2017, from <https://www.home.barclays/content/dam/barclayspublic/docs/Citizenship/Research/Open%20Banking%20A%20Consumer%20Perspective%20Faith%20Reynolds%20January%202017.pdf>.
- See-To, E., & Ho, K. (2016). A study on the impact of design attributes on E-payment service utility. *Information & Management*, 53(5), 668-681.
- Sjöstrand, S. (1993). *Institutional change: Theory and Empirical Findings*. Armonk, N.Y.: M.E. Sharpe.
- Solomon, G., & Rhea, D. (2008). Sources of expectancy information among college coaches: A qualitative test of expectancy theory. *International Journal of Sports Science & Coaching*, 3(2), 251-268.
- Soon, W. (2016). *Microtemporalities*. Isea, (pp. 209-215).
- Stewart, K., & Segars, A. (2002). An Empirical Examination of the Concern for Information Privacy Instrument. *Information Systems Research*, 13(1), 36-49.
- The Guardian. (2017, April 4). Could adding friction to spending improve people's mental health? (E. Reynolds, Ed.) Retrieved August 1, 2017, from <https://www.theguardian.com/technology/2017/feb/04/tech-banking-mental-health-anxiety-bipolar-disorder>
- The Open Data Institute. (2016). The Open Banking Standard. Retrieved July 22, 2017, from <https://theodi.org/open-banking-standard>
- Tsai, J., Egelman, S., Cranor, L., & Acquisti, A. (2011). The Effect of Online Privacy Information on Purchasing Behavior: An Experimental Study. *Information Systems Research*, 22(2), 254-268.
- von Clausewitz, C. (1873). Friction in War. In Book 1 (p. Chapter 7). Retrieved from <https://www.clausewitz.com/readings/OnWar1873/BK1ch07.html>
- Vroom, V. (1964). *Work and Motivation*. New York: Wiley.
- Whitley, E. (2009). Informational privacy, consent and the "control of personal data". *Information Security Technical Report*(14), 154-159.
- Whitley, E. (n.d.). Informational Privacy, Consent and the "control" of Personal Data. 14(3), 154-159. Retrieved June 11, 2017, from <http://www.sciencedirect.com.gate3.library.lse.ac.uk/science/article/pii/S1363412709000363?via%3Dihub>
- Wired. (2013, September 30). Twitter Founder Reveals Secret Formula for Getting Rich Online. Retrieved July 17, 2017, from <https://www.wired.com/2013/09/ev-williams-xoxo/>
- Zachariadis, M., & Ozcan, P. (2017, June 15). The API Economy and Digital Transformation in Financial Services: The case of Open Banking. Retrieved July 20, 2017, from The SWIFT Institute: <https://www.swiftinstitute.org/wp-content/uploads/2017/07/SIWP-2016-001-Impact-Open-APIs-FINAL.pdf>

# Apprentices of Automation: Adapting Career Paths to Ever-Smarter Machines

Pauline Anne Chin, Clotilde de Maricourt, Nicolas Alexander Feil, Terry Li Xiang Zhen, Krittika Ray

BSc Students  
London School of Economics and Political Science

---

## KEYWORDS

Automation  
Occupational choice  
Future  
Uncertainty  
Individual perceptions

## ABSTRACT

This paper examines the effects of automation on seven different professional sectors, and the degree of uncertainty this creates among current and soon-to-be professionals. It then looks at whether or not the individuals concerned make decisions accordingly, and if so, what the nature of these decisions are. A mixed method approach was chosen, incorporating a quantitative survey and qualitative interviews. The survey investigated 106 students' decisions regarding future career prospects and if they intend to develop skills relevant to automation. The interviews were conducted with 11 individuals working in fields affected by automation, or in which they have knowledge of the development of this technology. Comparing these two groups: workers and students entering the workforce within 0-5 years, demonstrated that students were more adaptive to automation (44% were learning to code or considering it vs 0% of professionals), despite a clear sample size limitation. Due to time constraints, a quantitative survey with professionals was not possible.

All interviewees acknowledged that automation will replace their job or change it significantly. However, only the teacher was subsequently concerned about job security. The other interviewees' relaxed view may be explained by proximity to pension or strong unions.

So far, literature on the topic of automation has focused on the concrete effects of technological developments on professional sectors themselves as opposed to the actual perceptions and adaptation of individuals. We therefore hope that this research will work as an impetus for further research on workers' and students' reactions to automation. This could have implications for social policy directions linked to job protection and adaptability.

---

## Introduction

Our aim in conducting this research was to gain a deeper insight into the ways in which automation, robotics, and artificial intelligence (AI) affect workers' and students' decisions regarding their professional future, and potential factors which may play on these perceptions. The research questions that guided our methodological journey were the following:

1. How do the recent developments in automation affect professions and students and how does this shape their perceptions and decisions about the future of their careers?
2. What factors might influence people's certainty regarding their future in the context of the increasing

prevalence of automation technologies?

3. Considering how widely cited Frey and Osborne's prediction of automation impact (2013) is, do their perceptions align with their prediction?

We found that professionals and students seem to have different perceptions and reactions regarding technological developments. Whilst the former group remains relatively passive in the face of potential job-automation, the latter tend to actively adjust their skills to adapt themselves to the automation trend. We also found that gender and the sectors they would like to work for in the future could, to some extent, contribute to the students' degree of certainty regarding future automation. Furthermore, we found some inconsistencies between the perception of our respondents and

---

Corresponding Author  
Email Address: n.a.feil@lse.ac.uk (N. A. Feil)

Frey and Osborne's work (2013) with regard to the likelihood of automation in some types of industries.

This paper starts off with a review of the literature, followed by a justification of our methods, the analysis of survey and semi-structured interview results, and our conclusion.

## Literature Review

### 1. Careers and Sectors Most Affected

To quantify the proportion of jobs likely to be affected by automation in the US, Frey and Osborne (2013) asked computer scientists for probabilities that certain jobs can technically be performed by a machine in the near future. They did this by looking at the skills required for each job as listed in O\*NET 2010 job descriptions (Occupational Information Network). They found that 47% of jobs are highly likely automatable in the near future, especially in transportation, administrative support work, and production occupations, services, sales and construction (2013:41). They might underestimate automatability as O\*NET descriptions might overestimate skill requirements; the descriptions were compiled through a survey, to which mainly those might have responded who use more skills than the average job occupant (Handel, 2016:160).

Deloitte (2015) used Frey and Osborne's findings and data from the ONS labour force survey to analyse the effects of automation specifically in the UK. There, jobs with the highest probability of being automated "were largely administrative in nature or involved routine manual activities". Jobs with the lowest probability of automation required high "manual dexterity", "cognitive or social skills", and the least routine. Those latter sectors, such as "caring, leisure, and other service occupations", were expected to grow (p. 3).

### 2. The Longer Term: Will More or Less Jobs be Created through Automation?

While the above makes clear that many jobs can be automated, the equilibrium impact of automation remains unclear. While jobs may be lost, the concept of creative destruction posits that new jobs will at the same time be created. Investigating this net effect, Willcocks and Lacity (2016a) analysed four cases of Robotic Process Automation (RPA) in the US, UK, and Canada. RPA refers to automation of "swivel chair" service tasks, such as transferring data from one software to another, say from e-mails and spreadsheets to Enterprise Resource Planning systems (Willcocks and Lacity 2016a:66). RPA did not result in layoff of internal staff, but at most in job wastage (Willcocks and Lacity, 2016b). This is

concordant with some of our interviews, in which it seemed that those already working in a certain profession were made to change tasks but not asked to leave the company.

Rainie and Anderson asked experts and interested members of the public whether educational and training programmes would help adapt to the "jobs of the future" (2017:3). While some were hopeful, concerns also arose regarding the replacement of more jobs than would be created, and the socio-economic negative impacts this would entail for the workforce (p.22).

Applying John Maynard Keynes' "technological unemployment" theory in a meta-study, Petropoulos (2017) looked at both positive and negative impacts of automation on employment. On the negative side, a 'displacement effect' may take place where workers lose their jobs (e.g. the introduction of automobiles had laid off horse-related-job workers). On the positive side, there may be a 'productivity effect' where more job opportunities are created. An example of the productivity effect is the reduction in the number of bank clerks following the introduction of Automated Teller Machines. The respective cost-reduction allowed for the opening of more bank branches, and therefore new employees. Similarly, self-checkout machines did not (yet) completely replace cashiers because humans have to correct their errors, as reported in two of our interviews with supermarket staff.

In contrast, Acemoglu and Restrepo state that for every industrial robot introduced in the US economy, between 3 and 5.6 workers may lose their jobs, and introducing one more robot per thousand employees may reduce wages between 0.25-0.5% (2017:35).

### 3. Which Skills Workers should Develop to Adapt to Automation

The consensus in the literature was that soft skills are less likely to be automated than hard skills (Deloitte 2015, Frey and Osborne 2013, Susskind and Susskind 2015). Rainie and Anderson confirmed that members of the public interested in developments in technology think the same (p.13). Moreover, many believed that skills used for working in the development of robotics and AI itself would become primordial, although others acknowledged that this might lead to an overload of programmers, not all of which would be able to work in the sector (p.14). Other respondents mentioned that technological advancements would not leave many skills left to learn once most jobs were replaced, and that shifts in training mechanisms were both difficult to fund and harder for individuals to engage in (pp.17-22). Also mentioned were programming

and computing skills useful for the generation of automation technologies. Respondents saw a rise in individualised self-learning (e.g. through online courses), and the increasing availability of coding and programming classes (p.15). This served as a starting point for our student survey of students' decisions regarding future careers, in which many reported developing certain computational skills for their future prospects.

Finally, Susskind and Susskind hypothesised that within 10 to 20 years, all professions will display these trends, leading to a "post-professional" society in which people will be trained for skills rather than jobs (2015:263). Accordingly, only a small fraction of individuals will continue to work as they previously did since their expertise and talent will not be automatable (p. 264).

However, given the ever-increasing development of technology and the shift towards better-performing AI, the literature is composed mainly of predictions or to-date effects of automation, which are continually changing. Individuals' perceptions of these changes are evolving and therefore have yet to be documented, and the aim of our research is therefore to explore these responses.

## Methodology

### Survey

The survey was conducted online in 2017. Respondents were recruited via social media among undergraduates and graduates at both, UK and foreign universities. The first part of the survey asked about gender, household income level, future career choices, and the importance assigned to several factors while making such a choice. The second part asked about the choices regarding programming and coding courses, and explored the reasons why the respondents may choose or not to learn such skills. The third part of the survey, after providing basic definitions of automation and AI, asked respondents to rate their understanding of the recent developments in the two categories, the degree of positive or negative impact they thought such developments would have in their chosen prospective career, and how much importance they attached to such impact while (1) choosing the career in the first place and (2) choosing to learn (or not learn) a programming or coding skill.

### Qualitative interviews

Semi-structured qualitative interviews with working individuals or with at least one year work experience allowed us to ask about specific topics based on pre-existing knowledge, while taking the

form of a conversation, with flexibility in adapting our questions to the flow of the discussion (Mason, 2002:62-63). Since our aim was to delve into individuals' own perceptions and experiences, we allowed them to voice their beliefs and attitudes, with less constraint than specific close-ended questions (Savage, 2010:186). While our questions were non-suggestive (see full list in Appendix), we acknowledge that no data is ever fully objective; interpretation being an on-going process involving the choice of topic, questions, sample and analysis. We therefore do not claim that our findings are generalisable, but rather that they provide an in-depth window of understanding into the views of our participants. Interviews were in 2017, all were in London but the taxi drivers (Milton Keynes) and the interpreter (France).

We interviewed one teacher, two tube drivers, three taxi drivers, two retail supermarket workers, one interpreter, one prospective solicitor, one prospective investment banker, and a computer-engineering student. Interviews were conducted in person in locations convenient for our interviewees or over the phone, and were, all but three, recorded with the informed consent of respondents. Confidentiality and anonymity were protected and ensured through consent forms signed by both parties. Interview data was coded using hybrid thematic analysis incorporating an a priori approach based on prior research, with an inductive one (to a greater extent) based on participants' answers (Fereday and Cochrane, 2006). Coding the interviews, we identified three main themes: 'Degree of automation', 'Temporal estimations of automation', and 'Role of institutions in professional security' (see Analysis).

## Analysis

### Survey

*For sample demographics see Appendix.*

The survey was completed by 106 respondents and had an almost proportionate mix of genders, income levels, and countries of origin. However, the pool of respondents is restricted (albeit to a small extent) by the socio-economic and cultural backgrounds of extended friend circles of the researchers. It is therefore advisable to treat this as a survey not of undergraduate students of all possible international demographics, but rather as a somewhat restricted pool of undergraduates with some international exposure – perhaps more aware of global culture and developments than the average UK undergraduate. This, though restrictive, is still a very varied and influential demographic to study.

44.3 % of respondents were learning some form or programming electively (unlike required by

degree regulations). Comparing sector-wise, the difference between percentages of students learning programming for each sector was significant at the 5% significance level, with those in the banking, finance and consultancy sector being most likely, and those in the politics, civil services and diplomacy sector being least likely to learn it (see Figure 1).

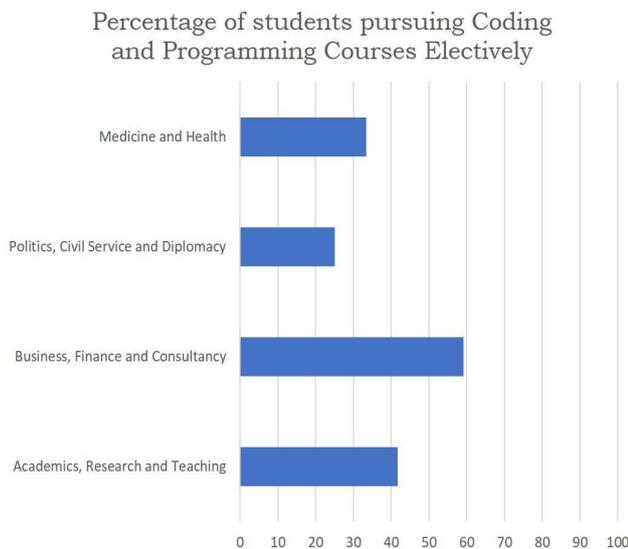


Figure 1.

When asked about why they choose to learn it, “strengthening future career” was the most important reason across all sectors of intended future careers, with the highest mean value being computed for those intending to work in banking, finance and consultancy sectors (The value was assigned from a 1 to 5 scale, with 1 being “Not important” and 5 being “Extremely important”). Furthermore, of all respondents, those who wanted to go into banking, finance, or consultancy, found coding most relevant to their career. Those who did not learn any programming were asked why they chose not to learn it. Those in the banking, finance, and consultancy sector were significantly more likely than any other sector to state the only reason being that they were “not skilled enough”, and least likely to say because it was “not relevant to their career” or that they were “not interested” (see Figure 2).

Those intending to work in the medicine and health sectors have assigned the maximum mean value (following the same scale) of 3.5 to how much importance the future role of automation and AI had on their choice of career. This could be interpreted in accordance with the idea that healthcare roles such as doctors, psychologists, therapists, nurses, etc. are less likely to be impacted by automation and AI, particularly in the near future, since they require characteristics of empathy and feeling to satisfy patients. Therefore, those intending to work in those sectors feel that automation and AI will only have some positive impact on their future careers.

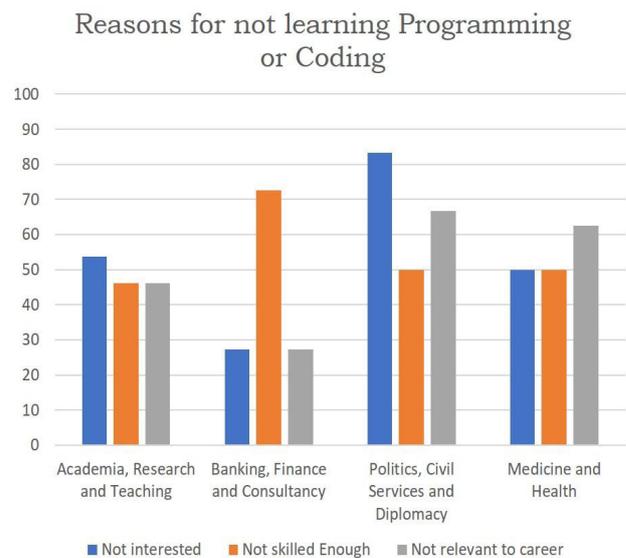


Figure 2.

Similarly, they seem to assign less importance than all other sectors (excluding, understandably, politics and diplomacy) in the said impact being a factor in their choice to pursue programming, something those in academia, teaching, and banking and finance give greater importance to.

The mean perception of impact of automation and AI on their own career was calculated by sector, with the scale ranging from -5 being “extremely negative” to +5 being “extremely positive” (see Figure 3). Notably, no sectors’ mean value was negative. This, while a broad generalisation, could be explained somewhat by the fact that in reality as of today, jobs most immediately threatened by automation and AI tend to be jobs that are not usually occupied by those who shall be graduating from university, and thus in general, such students on average have a positive outlook – perhaps expecting advances in ease and accuracy to supplement their own intended jobs as opposed to replacement or competition from automation and AI. A limitation of this finding is of course that it does not capture more basic, non-AI forms of automation.

A median split on interaction of gender and income on the perception and nature of the impact of automation and AI on their careers was performed. The result showed that in the upper 50% of the income distribution (above £25,000 household income p.a.), there was no statistically significant effect of gender on perceptions, but in the lower 50%, females seem to think the impact of automation and AI on their career will be somewhat positive (mean=2.2), while males seem to think the impact will be limitedly negative (mean= - 0.98),  $p=0.02$ . This may be due to a female bias toward (automation-safe) soft skill jobs.

The literature does not indicate if females tend to certain jobs because of soft skills or other factors. For example, being a secretary requires some soft skills and 98% of UK secretaries are female (ONS 2017), but instead of soft skills, females could also go (or be pushed) there because it offers lower barriers to entry after parental leave.

|  | <b>Mean</b>                                       | <b>Standard Deviation</b> |
|--|---|---------------------------|
| Academia, Research and Teaching        | 0.982<br>(Limited positive impact)                | 2.45                      |
| Banking, Finance and Consultancy       | 0.92<br>(Limited positive impact)                 | 2.95                      |
| Law                                    | 1.6<br>(Some positive impact)                     | 2.04                      |
| Engineering                            | 2.49<br>(Moderate to significant positive impact) | 2.1                       |
| Medicine and Health                    | 1.58<br>(Some positive impact)                    | 2.6                       |
| Politics, Civil Services and Diplomacy | 1.625<br>(Some positive impact)                   | 1.6                       |

**Figure 3.**

### Qualitative Interviews

#### Degree of Automatability

All respondents but the taxi drivers stated that automation will change or replace their job. The majority thought their job could only be supplemented, not automated, while a minority anticipated a replacement of their job. The former group justified their projection with the fact that their job involves skills no machine could ever do. Most of these were “human skills” mentioned in the literature review such as empathy and building rapport and trust. Rapport is crucial to make the customer buy, as noted by a retail manager: “[shop assistance] is about the lasting impression the customers have”. He did not think it viable that shop assistance could be automated entirely, and drew on experience with self-scan machines, which he and the other respondent said had neither destroyed jobs nor led to wastage in their stores. The interviewees’ response is highly aligned with the ‘productivity effect’ argument stated by Petropoulos (2017) as well as being consistent with the view that jobs with ‘cognitive and social skills’ are less likely to be replaced by automation. Additionally, trust was pointed out as a factor for gaining investment banking clients as well as for taxi-driving: “Business people won’t trust driverless pods to drive them around.” Apart from the above non-automatable skills, one interpreter added the skill to review translations which she thought could never be done by a machine.

The minority which expected complete replacement was composed of the tube drivers (however, they relied on alternative jobs guaranteed by their union, see Role of Institutions) and the teacher. Although human skills are required for teaching itself, the teacher thought that a lot of other teacher tasks were automatable. Answering student questions in writing could be done by an AI teacher displaying capacities beyond those it had been programmed for, as demonstrated at a teachers’ conference: “The students were learning things that they wouldn’t have learned from an actual physical teacher”. In turn she thought that “[E]ven the jobs that we assume are safe, that we assume require soft skills and human communication (...) are not safe”.

The interviewees’ minority perception agrees with a minority of students who think that automation will reduce their career prospects. The positive interviewees however, those whose jobs would be supplemented, did not express that it would also increase their job or progression prospects. This disagrees with the other part of students, who thought it would have a positive impact. Overall, only two out of 106 students responded automation would have no effect on their career prospects at all, and 80% indicated an effect of 3 or higher on our 1-5 scale.

#### Estimations of How Soon Automation will be a Reality

In asking respondents about potential worries regarding the degree of automation in their own lives and across society generally, feelings of uncertainty mentioned were to a large extent influenced by how soon they thought it would be implemented. Although Transport for London (TfL) services aim to implement fully automated tube trains by the 2020s (The Independent, 2014), both tube drivers we interviewed reported thinking this was an ‘ambitious’ project, and that it would take longer to introduce driverless trains on all lines without any human presence to supervise. Moreover, some tube and taxi drivers reported that if driverless transportation was likely to affect future generations, their own age and upcoming retirement meant that their job stability would not be affected. Regarding AI, one computer engineering student reported that the current levels of this technology were not yet developed enough to fully replace human jobs, but that this was a real possibility, especially with the introduction of quantum computing. This eventuality was seen as an impending threat by the teacher mentioned above who had attended a conference displaying an AI teacher. The fact that this technology already existed was a source of worry for herself and other colleagues who feared that their implementation might replace ‘physical teachers’ in the near future,

a similar concern to that found by the Pew Research Center’s pessimistic responses about any jobs ever remaining that would not be automated (Rainie and Anderson, 2017:22).

**Role of Institutions**

During the interviews we conducted, workers across sectors revealed their personal perceptions regarding the role of different institutions in the age of automation, which we hypothesised might be a vital factor affecting people’s degrees of uncertainty about their jobs. With regards to the government’s plan to invest in driverless cars, a taxi driver in Milton Keynes said: “They’re going to spend [...] £56 million on these driverless pods, I think half of that’s going to be paid by the government. We’ve got people living on the streets, do you really think we should be affording that? It’s not going to work.” However, this might be interpreted as “driverless pods are not economically feasible”. Furthermore, concerns about the likely impact of government policies were observed in tube drivers. In addition, respondents tended to think that authorities were more likely to invest in automation if its profitability was significant. One Bakerloo Line tube driver commented: “Bakerloo [line] is not very profitable [...], the line that makes the most money will get changed earlier”. A similar opinion was also conveyed by a university teacher we interviewed, who believed that if automation seems profitable, it will happen. Moreover, organisations like labour unions may impact people’s perceptions regarding the uncertainty of their job. Both of tube drivers we interviewed perceived the union’s power as strong, and showed less concern about job-loss, due to their belief that the union would protect their interest. In contrast, the teacher who perceived the teachers’ union as having weak power seemed more worried about automation, as she did not think it would be able to secure teaching jobs if those were to be automated. Her opinion that the institution representing her sector did not really care about her job security was mirrored in a taxi driver’s claim that the council was not doing anything to protect them against competition from another city: “They’re affecting our livelihood. And that’s why I haven’t earned any money.”

**Conclusion**

Perhaps the sampled professionals underestimated the effect of automation on their job. Most interviewees, especially taxi drivers and the interpreter, did not see the potential immediacy of changes as suggested by Frey and Osborne (see Table 1). This might indicate that they irrationally underestimate the risk to their job, however it could also be explained by the way Frey and Osborne

calculate automatability. Their probabilities only indicate technological feasibility, not economic feasibility. Accordingly, self-driving taxis may very likely be feasible by 2020, but still be too expensive to pose any threat to taxi drivers.

In contrast, the undergraduate students surveyed generally seemed to attach greater importance to the advances of automation and AI and were more likely to adjust their career decisions and skill sets accordingly. Intuitively, such observations make sense due to the facts that (1) the undergraduate students are at a more flexible stage of their career where they can pivot their activities around developments as they become more apparent but that (2) because they do not yet have full time jobs, they are more uncertain about securing a job in the future as opposed to those interviewed, most of whom already have a job. A further finding is that gender has an effect on how automation is perceived in the lower income bracket – women have a positive and men a negative view. We hypothesise that this may be due to a female tendency to choose professions that require extensive soft skills, which are inherently less automatable. If not, then this might signal that females underestimate the effect of automation compared to males. Further research should try to control for the skillset of the jobs women and men are pursuing.

| Profession          | Automation probability (Frey and Osborne 2013) | Interviewees: Automation will...                  |
|---------------------|--|---|
| Taxi Drivers        | 0.89   | Not replace my job because people do not trust it |
| Tube Drivers        | Not available                                  | Replace my job entirely                           |
| Retail Managers     | Not available                                  | Complement my job to a low degree                 |
| University Teachers | Not available                                  | Replace a large part of my job                    |
| Interpreters        | 0.38   | Complement my job to a low degree                 |
| Financial Analysts  | 0.23   | Complement my job to a low degree                 |
| Lawyers             | 0.035  | Complement my job to a low degree                 |

**Table 1.** Source: Interviews, Frey and Osborne 2013

Professionals’ and students’ underestimation of automation, should it be substantiated, could be addressed by both public awareness campaigns and by career advisors in job centres and university

career services. However, we recognise that our research is not detailed enough to establish this substantiveness, given the time and resources available. However, our survey findings can help devise a quantitative survey of professionals. A questionnaire for professionals should be structured similarly our student questionnaire, asking if respondents learn coding and why. However, a first part should disentangle the actual effect on fear of job security of automation fear, from other factors such as the business cycle, local competition, or outsourcing. Questions could include adapted versions of our interview questions, e.g. "How confident are you in the stability of your job on a scale of 0 to 10?". The survey should also control for union membership and its strength, as three of our interviews identified union membership as a potential bias.

## References

- Acemoglu, Daron, and Pascual Restrepo. (2017). 'Robots and Jobs: Evidence from US Labor Markets'. w23285. Cambridge, MA: National Bureau of Economic Research. doi:10.3386/w23285.
- Deloitte LLP. (2015). 'From Brawns to Brains: The Impact of Technology on Jobs in the UK'. London: Deloitte. <https://www2.deloitte.com/uk/en/pages/growth/articles/from-brawn-to-brains--the-impact-of-technology-on-jobs-in-the-u.html>.
- Eleftheriou-Smith, Loulla-Mae. (2014). "'Driverless" Tube Trains: See inside TfL's New Fleet for London'. The Independent. October 9. <http://www.independent.co.uk/news/uk/home-news/driverless-tube-trains-see-inside-tfls-new-london-underground-fleet-9785034.html>.
- Fereday, Jennifer, and Eimear Muir-Cochrane. (2006). 'Demonstrating Rigor Using Thematic Analysis: A Hybrid Approach of Inductive and Deductive Coding and Theme Development'. *International Journal of Qualitative Methods* 5 (1): 80-92.
- Frey, Carl Benedikt, and Michael Osborne. (2013). 'The Future of Employment: How Susceptible Are Jobs to Computerisation?' Oxford: Oxford Martin School. <http://www.oxfordmartin.ox.ac.uk/publications/view/1314>.
- Handel, Michael J. (2016). 'The O\*NET Content Model: Strengths and Limitations'. *Journal for Labour Market Research* 49 (2): 157-76. doi:10.1007/s12651-016-0199-8.
- Keynes, John Maynard. (1963). *Essays in Persuasion*. Norton Paperback. New York: Norton.
- Lacity, Mary Cecelia, and Joseph W. Rottman. (2008). *Offshore Outsourcing of IT Work: Client and Supplier Perspectives*. Technology, Work and Globalization. Basingstoke [England]; New York: Palgrave Macmillan.
- Mason, J. (2002). *Qualitative Researching*. 2nd edition. Sage Publications.
- O\*NET Resource Center. (2017). 'Questionnaires'. Accessed June 6. <https://www.onetcenter.org/questionnaires.html>.
- ONS. (2017). 'EMP04: Employment by Occupation. April to June 2017'. Office for National Statistics (ONS). <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentbyoccupationemp04>.
- Petropoulos, Georgios. (2017). 'Do We Understand the Impact of Artificial Intelligence on Employment?' Bruegel Blog Posts. April 27. <https://search.proquest.com/docview/1893850011?accountid=9630>.
- Rainie, Lee, and Janna Anderson. 2017. 'The Future of Jobs and Jobs Training'. Pew Research Center. <http://www.pewinternet.org/2017/05/03/the-future-of-jobs-and-jobs-training/>.
- Savage, Michael. (2010). '1951: The Interview and the Melodrama of Social Mobility'. In *Identities and Social Change in Britain since 1940: The Politics of Method*. Oxford University Press.
- Susskind, Richard E., and Daniel Susskind. (2015). *The Future of the Professions: How Technology Will Transform the Work of Human Experts*. First edition. Oxford, United Kingdom: Oxford University Press.
- Willcocks, Leslie P., and Mary C. Lacity. (2016a). *Service Automation: Robots and the Future of Work*. A Steve Brookes Publishing Book. Warwickshire: Steve Brookes Publishing.
- Willcocks, Leslie P., and Mary C. Lacity. (2016b). 'Businesses Will Increasingly Use Robots to Deal with the Explosion of Data'. LSE Management. February 2. <http://blogs.lse.ac.uk/management/2016/02/02/businesses-will-increasingly-use-robots-to-deal-with-the-explosion-of-data/>.

**Appendix**

**Survey respondent demographics**

**Respondents by Gender**

|        | Frequency | Percent |
|--------|-----------|---------|
| Female | 66        | 62.3    |
| Male   | 39        | 36.8    |
| Other  | 1         | .9      |
| Total  | 106       | 100.0   |

**Respondents by Annual Household Income**

|                        | Frequency | Percent |
|------------------------|-----------|---------|
| Below £10,000          | 21        | 19.8    |
| £10,000 to £25,000     | 25        | 23.6    |
| £25,001 to £50,000     | 13        | 12.3    |
| £50,001 to £100,000    | 12        | 11.3    |
| £100,001 to £250,000   | 9         | 8.5     |
| £250,001 to £500,000   | 2         | 1.9     |
| £500,001 to £1,000,000 | 2         | 1.9     |
| Above £1,000,000       | 1         | .9      |
| Don't know             | 13        | 12.3    |
| Prefer not to say      | 8         | 7.5     |
| Total                  | 106       | 100.0   |

**Respondents by region of origin**

|                | Frequency | Percent |
|----------------|-----------|---------|
| East Asia      | 18        | 17.0    |
| Middle East    | 5         | 4.7     |
| South Asia     | 27        | 25.5    |
| Southeast Asia | 32        | 30.2    |
| USA            | 1         | .9      |
| West Europe    | 23        | 21.7    |
| Total          | 106       | 100.0   |

**Respondents by place of study**

|            | Frequency | Percent |
|------------|-----------|---------|
| UK         | 45        | 42.5    |
| India      | 19        | 17.9    |
| Malaysia   | 17        | 16.0    |
| USA        | 6         | 5.7     |
| France     | 5         | 4.7     |
| Germany    | 5         | 4.7     |
| Singapore  | 2         | 1.9     |
| China      | 1         | 0.9     |
| France     | 1         | 0.9     |
| Germany    | 1         | 0.9     |
| India      | 1         | 0.9     |
| Israel     | 1         | 0.9     |
| Kazakhstan | 1         | 0.9     |
| Lebanon    | 1         | 0.9     |
| Total      | 106       | 100.0   |

**Respondents by intended sector of career**

|  | Frequency | Percent |
|--|-----------|---------|
| Academia, Research and Teaching        | 23        | 21.7    |
| Banking, Finance and Consultancy       | 30        | 28.3    |
| Creative Industry                      | 4         | 3.8     |
| Engineering                            | 7         | 6.6     |
| Interpersonal relations                | 1         | .9      |
| Journalism                             | 2         | 1.9     |
| Law                                    | 5         | 4.7     |
| Medicine and Health                    | 12        | 11.3    |
| Other                                  | 14        | 13.2    |
| Politics, Civil Services and Diplomacy | 8         | 7.5     |
| Total                                  | 106       | 100.0   |

**Survey questionnaire**

- What is your age?
- What is your gender?
- What is your country of origin?
- Which country do you currently primarily reside in?
- What is your approximate annual household income level?
- What is your current level of education?
- What subject/degree do you plan on pursuing/are you currently pursuing?
- Why do you want to pursue the degree or subject you have mentioned in the previous answer?
  - o Below we have listed some common reasons. Please pick a number from 1 to 5 for each of these reasons according to their importance in making your decision, with the key being: 1: Not important 2: Somewhat important 3: Moderately important 4: Quite important 5: Extremely important.
  - o Personal interest
  - o Family's opinion or choice
  - o Future employment stability
  - o Future earning prospects
  - o Leaves scope for experimenting in different career paths in the future
- Do you have any other particular reason?
- What career/profession do you plan on having in the

future?

- Are you currently doing or planning on doing any coding or programming courses by choice?

- o If yes:

- Which programme(s) do you plan to learn/are you learning? (Mention “undecided” if not sure of which programme)

- Where do you plan to learn it/are you learning it?

- At school/college/university

- In an online course

- At a separate institution or from a personal tutor (ie, not at current school/college/university)

- Why are you learning it or planning to learn it?

- Below we have listed some common reasons. Please pick a number from 1 to 5 for each of these reasons according to their importance in making your decision, with the key being: 1: Not important 2: Somewhat important 3: Moderately important 4: Quite important 5: Extremely important.

- Personal Interest

- Strengthening future career prospects

- Trying to expand skills

- Common choice among peers

- Family’s choice or advice

- o If no: Why do you not learn such a programme? (check all that apply)

- Not interested.

- Not skilled enough at programming or coding.

- Not relevant to my career plans.

- How informed, in your opinion, are you about recent developments in the fields of automation and the concept of Artificial Intelligence (AI) in general?

- o Use the scale of: 1: Not informed at all 2: Somewhat informed 3: Moderately informed 4: Reasonably well-informed 5: Extremely well-informed

- Here we have provided definitions and short explanations of two concepts. Please read them before proceeding to the next section.

- o Automation:

- o It is the use or introduction of automatic equipment in a manufacturing or other process or facility.

- o For most of documented history leading up to current times, machines and automatic equipment gradually replace corresponding manual labour by humans. In most cases, due to such replacement, skill sets of the labour force accordingly adjust over time to meet newer types of skills demanded in production processes.

- o Artificial Intelligence (AI):

- o This is a subset of automation that has seen significant progress in recent years. Essentially, machines that have AI operate independently, perceive their environment, adapt to change, and create and pursue goals to achieve the best expected outcome. A significant characteristic that sets AI apart from conventional automation is that while regular automation usually replaces mostly physical work carried out by humans, AI essentially replaces more and more sophisticated functions of the human brain.

- Quick comprehension question: What aspect of AI is different from conventional automation? (Only proceed to next section until correct answer selected: AI mimics brain functions more than conventional automation does.)

- Having read the information provided, how informed, in your opinion, are you now about the concept of AI in general?

- How much impact do you think AI will have in the future prospects of the career/profession you have previously mentioned that you wish to pursue?

- In your opinion, will this impact generally be of a positive or negative nature?

- How much did you take into account your idea of any such impact while making your choice of such a career?

- How much did you take into account your idea of any such impact in deciding to learn or planning to learn (or deciding not to learn) any programming?

## Interview questions

### *Tube drivers:*

1. Do you mind telling us your age?
2. How many people live in your household? How many of them are earning money?
3. What kind of work are you doing? Can you briefly describe your job? What does the job require you to do?
4. How long have you been working in this job? Had you been working in the same field before that?
5. What made you go into this field and job?
6. What kind of steps did you take to get there? (probes: education, vocational training, contacts etc.)
7. What do you value about your job?
8. How confident are you in the stability of your job? Would you be able to rank that on a scale of 1-10?
9. Are you aware of any impending risks to your job in the near future?
10. (depending on answer to (3))Have you driven a train on either Jubilee, Central, Victoria and Northern line? Are we right that these trains only require drivers to open/close doors?
11. How is working on these trains different from other lines? pay?
12. Are you aware that Transport of London intends to introduce driverless tube trains on the Central, Bakerloo, Piccadilly, and Waterloo & City lines by the mid-2020s?
13. Do you have any alternative plans in the case that you should be replaced in your job because of automation?
14. What does this imply in terms of your financial prospects?
15. How do you think the trade union is going to affect your level of stability in terms of jobs sustainability.. What role do you think the trade union will play in the age of automation?

### *Supermarket middle managers:*

1. Age, how long have you been working in this line
2. How many people live in your household? How

many of them are earning money?

3. What kind of work are you doing?
4. How long have you been working in this job? Had you been working in the same field before that?
5. What made you go into this field and job?
6. What kind of steps did you take to get there? (probes: education, vocational training, contacts etc.)
7. What do you value about your job?
8. How confident are you in the stability of your job? Would you be able to rank that on a scale of 1-10?
9. British Retail Consortium predicted UK's 900,000 shop jobs would disappear by 2025 as companies use technology instead of people. Are you aware of potential job loss in the next decade?
10. How soon do you think that the self service kiosk will completely replace cashiers? It is claimed that self-service check-out/kiosk...
  - Is more convenient (for companies like Mcd- can improve order accuracy)
  - Can save labour cost
  - As the fight for a higher minimum wage continues, some argue that higher labor costs will force companies to cut staff. What is your opinion on this?
11. Are you aware of any impending risks to your job in the near future?
12. How is working as a cashier different from other lines (with automated tills different from work with classic tills)? Pay?
13. Do you have any alternative plans in the case that you should be replaced in your job because of automation?
14. What does this imply in terms of your financial prospects?
15. Are you a member of USDAW? Any other union? Y What do you think this union's role will be in ensuring the sustainability of your job?

### *Prospective Investment Banker / Economics Student:*

1. Age, degree, year of study
2. Household composition and professional status

3. Reasons for choice of degree
4. Ideas of future jobs/prospects
5. What kind of courses do you take and additional knowledge of technological and computing skills do you have?
6. Knowledge of AI (how do you understand it and how it's being introduced in society and the labour market, do you think it's more of a positive or negative thing etc)
7. Do you think AI is a potential threat to certain professional sectors? How soon do you think this will be an important reality?
8. How confident are you in the stability of jobs you might be interested in? On a scale of 1-10
9. If it turns out that fields you are interested in are increasingly replaced by AI, what alternatives are you considering looking into?
10. Are you confident when planning your professional future? (Probe: any uncertainties, doubts, back-up plans etc)

*Taxi drivers:*

1. Age
2. How many people live in your household? How many of them are earning money?
3. What kind of work are you doing?
4. How long have you been working in this job? Had you been working in the same field before that?
5. What made you go into this field and job?
6. What kind of steps did you take to get there? (probes: education, vocational training, contacts etc.)
7. What do you value about your job?
8. How confident are you in the stability of your job? Would you be able to rank that on a scale of 1-10?
9. Are you aware of any impending risks to your job in the near future?
10. We found out that recently, a few months back, driverless pods were tested in Milton Keynes, which is why we came up here today. The initial trials will be developed into a larger scale programme that will see a fleet of 40 self-driving pods on pedestrianised streets and road-based autonomous vehicles in

Milton Keynes and Coventry.

Do you think things like this would affect the stability or future of the job that you do?

11. Do you have any alternative plans in the case that you should be replaced in your job because of automation?
12. What does this imply in terms of your financial prospects?
13. Are you part of a trade union?
14. How do you think the trade union is going to affect your level of stability in terms of jobs sustainability.. What role do you think the trade union will play in the age of automation?

# When Digital Technologies Migrate: Innovation from an Anthropological Perspective

Juan Felipe Forero

MSc Digital Anthropology  
Department of Anthropology  
University College London

## KEYWORDS

Digital technologies  
Anthropology  
Innovation  
Movement  
Appropriation

## ABSTRACT

Nowadays, digital technologies are revolutionizing innovation processes, as they are multiplying the production of novel solutions, and they are spreading those solutions to people all over the world. In this paper, I focus on the analysis of digital technologies' migration, in order to rethink innovation both in production and diffusion terms. I argue that innovation is a complex process that happens in different ways, and in different moments and places. Using a varied set of ethnographic examples taken from the anthropological literature, I show how the intention and the logic through which digital technologies are created as innovations also migrate. This innovation logic can be contested, as digital technologies are repurposed in different contexts, and digital technologies can even be the spaces where these different sorts of innovations happen. I conclude by suggesting that an anthropological contribution is precisely to show the volatility of innovation as a concept.

## Introduction

The aim of this article is to examine the implications of travelling digital technologies as part of various innovation processes.<sup>1</sup> This is important because, as historian Patrice Flichy notes, analysis of technological innovation through a social sciences lens focuses either on the design/production, or in the spread/use of the object after it is produced (2007, p.vii). What happens, then, if we create an analysis that takes into account both, in order to understand the spread of digital technologies into different cultures?<sup>2</sup> And even more, what would this analysis look like if we include the specificity of digital technologies in that production-use approach? My argument is that such analysis is useful to understand innovation in a more complex way, in the sense that innovation is composed of multiple processes in different moments and places. In other words, digital innovation involves design, but it also involves appropriation and re-use (thus, another type of innovation) when it travels. Furthermore, if we take seriously the

specificity of digital technologies to be re-edited and re-ordered, then we would also need to argue that digital technologies themselves become a 'space' for negotiating the emergence of even more innovations.

My analysis will be mainly anthropological, since anthropologists have long tried to show that what may appear to be 'innocuous' movement (of people as well of things) generates further implications in the social world. Specifically, my analysis is based on Elizabeth Povinelli's (2011a) term of "embagination". With this concept, the author suggests that social worlds – what other authors call networks or systems – are at the same time solidifying (acquiring shape) and emerging through movement and circulation. In Povinelli's words, "Routes figure space" (2011a, p.5). Established routes of intercultural exchange are the elements of social worlds through which other elements of those worlds (institutions, rituals, infrastructure, and so on) are created and woven into each other (like a bag), but at the same time, those routes are the slits through which further elements

<sup>1</sup> As the reader will note, the sole objective of this paper is to rethink the definition of innovation and where it happens. However, what is certain about my definition of technological innovation is that it is not only referring to the product as such, as it is involving several actors, processes, and social relations, that can have outcomes different to the product itself.

<sup>2</sup> I define culture as "the way people draw analogies between different domains in their worlds" (Strathern, 1992, p.47). Culture is the way people draw together the artificial and the natural, the social and the material, the economic and the political, and so on. I use this definition because it goes beyond national and heritage boundaries, and can apply to other contexts such as organizations or expert communities. However, I do recognize that my framework focuses mainly on Western and non-Western boundaries, as my paper is limited to anthropological research and this discipline has historically used this distinction as its leitmotiv. The implementation of this framework into other sorts of boundaries (experts to laypeople, for example) would be an interesting topic for a future paper.

can emerge (like the opening of the bag). Abstract as it is, this theoretical framework is useful because it allows us to understand that a digital (or non-digital) innovation is both what it was thought to be by its creators, and what it can (and will) become when it is circulated in different places.

Even though I have used terms such as movement and circulation, I prefer to use the word 'migration' from here-on, because it evokes specific stages in the process of movement: it is arriving to point B from point A (arrival), but it is also packing luggage in point A (departure), and passing through a border between A and B. Therefore, the structure of this paper will play with this basic definition of migration. In departure, I will show that there are specific ideas and relations travelling with digital technologies. In arrival, I will analyse how the re-use of the same digital technologies contests those established logics that travel with them – therefore, innovating through technology in a different way. In border, I will suggest how digital technologies become a space where innovations also emerge. In all three parts I will use a varied set of ethnographic examples taken from anthropological literature: gambling machines, internet forums, social media, and indigenous databases (amongst others).

### Departure: Travelling Logics

We cannot understand a specific technological (or other type of) innovation without taking into account social dynamics, cultural backgrounds, organizational processes, and human (and non-human) actors involved. As Flichy (2007) argues, "the innovative process consists in stabilizing relations between the different components of an artefact, on the one hand, and between actors of the technological activity, on the other" (2007, p.155). So, what are the implications of this idea of digital innovation depending on socio-material networks? In this first stage of the process of migrating digital technologies, I suggest that digital technologies are migrating alongside the logics and intentions of their creators, and thus, a specific type of innovation is travelling as well.

Sociologist Bruno Latour (1988, 1991) explains the condition of any technological artefact (from a door-closer to the first daguerreotype) of carrying logics and social relations through the concepts of inscription and black-boxing. For this author, technology is a tool to which we delegate specific tasks, and through which we translate specific intentions in a durable way. In other words, a door-closer is replacing someone in charge of opening and closing doors, and at the same time it is translating the imperative 'keep the door closed' (Latour, 1991, pg. 300). This is what Latour calls "inscription": a translation that "goes from a provisional less reliable one to a longer-lasting one" through objects (1991, p. 306). Furthermore, this goes beyond a simple one human-one object linear relation, as it can involve several human and non-human actors – as a sort of chain or network. The innovation of Kodak cameras, using Latour's (1988) example, involves several human actors including different sorts of inventors

and publics, but also different objects such as patents and prototypes (Latour, 1988, p.110-113). The problem is, precisely, the characteristic of technology that Latour (1988, p.110) calls "black-boxing": by examining the finished product, we cannot see that chain of human and non-human actors that ended up in the development of that innovation. By translating intentions and delegating tasks to technologies, objects are transporting those as a black box.

Natasha Dow Schüll's (2014) ethnography of gambling addiction is a useful example of Latour's concept of inscription. Dow Schüll shows how digital gambling machines are transporting an ideology (profit increase) through the design of specific modes of interaction between machine and users, accompanied by the spatial arrangement of lights, decorations, pathways, and walls. This inscribed idea constrains the actions of the 'user,' and builds their subjectivity in specific ways (2014, pp. 17-21). The problem of addiction, then, is not a consequence of deviant individuals, but more of a distributed agency in which machines, gamblers, designers, and spaces are involved in the problem. As a rather extreme case, Schüll's ethnography shows how certain imperatives of control are being inscribed on digital technologies. For many anthropologists, then, a cultural and socio-material approach to innovation processes means that technology is not only caused by social and material relations, but it carries social and material relations as well.

If on the one hand Latour or Dow Schüll focus their analysis on this capacity for inscription as something that digital and non-digital technologies share, then there are other anthropological perspectives that focus on the specificity of digital technologies to arrive to a different conclusion: digital technologies' characteristics are precisely to be opened and changed. Kallinikos et al. (2010) propose a set of properties – openness, interactivity, editability – that make digital objects malleable in a way that their structural properties can be accessed and modified, thanks to their numerical property (binary code). Digital technologies, we may say, are designed to be redesigned.

Nonetheless, we might also say that this idea of opening and re-opening is a situated idea, and it is travelling with migrating digital technologies. In other words, digital technologies respond to a specific cultural logic of what the society should be and how to achieve this. In his ethnography about the 'cultural logics' of Free Software, Chris Kelty (2008) proposes the concept of "recursive publics" to show how the development of Internet and the Open Source Software Movement (OSSM) are simultaneous and related. With recursive publics he means that moral orders and discourses of freedom and openness cannot be understood without the technical practices and the material infrastructures that sustain it (p. 9). Thus, the Internet has been both developed through these ideas of what the public is and should be, and allowing its existence at the same time. The idea that the Internet (and digital technologies in general) are

open and free comes from a very specific moral stance from liberal and libertarian ‘geeks’ from Silicon Valley and other Western technological centres. If Western libertarian morals and digital technologies are in a recursive relationship, then it is inevitable that digital technologies carry logics, social relations and intentions with them.

Open as they are, digital technologies also transport ideas. In Leach and Wilson’s (2014) words, “technological innovations (...) embody, reify, and articulate social relations” (2014, p.191). As we have seen, digital technologies are black-boxing (Latour, 1991) and white-boxing (Corsín Jiménez, 2014) at the same time: they are leaving their components open to editing possibilities, but they are closing (and sustaining) the processes and relations that configured them like that in the first place.

### Arrival: Appropriations and Emergent Innovations

In the last section, we have seen that cultural, social and material elements are mobilized by various actors in order to generate technological innovation – a product to solve a specific problem or need – but also that the logics, intentions and relations blackboxed in that product travel with it. However, anthropologists have long ago examined how an object’s produced status of ‘commodity’ change throughout its social life (c.f. Kopytoff, 1986). In other words, they have shown how what we consider to be an established status of an object (say, a good or a commodity mass produced and only designed to be bought, used, and discarded), acquires other types of status and uses during its life cycle – they can become gifts, sacred objects, or be recycled. In this section, then, I suggest that this technological black-box does not necessarily continue when digital technologies travel, as other innovations can emerge when they are appropriated.

Daniel Miller and Heather Horst (2011) use the term “proliferation of difference” to understand this changing condition of digital technologies. They start their analysis by defining the digital as a process of translation into binary code. Next, they compare this process with money: as abstractions, they are modern efforts to simplify social life and create a universal framework of measure. However, the authors use Hegel’s dialectics to argue that these abstract universals bring the possibilities for multiple particulars. In other words, they propose an analytical stance in which we (as analysts) should focus on the ways “digital technologies are proliferating a vastly increased field of cultural forms” (2011, p. 6). Miller et al. (2016), for example, use the concept of ‘polymedia’ to show the shift that digital media has brought, in which people are able to scale their communication practices from private to public, and from individual to group, through the use of different platforms. However, they argue that this should lead us to study social media as social phenomena that is appropriated, and thus changing, within different cultural contexts and through different processes of sociality. In short, they are showing how digital technologies also afford new uses and are changed by those as well.

So what does it mean, in practical terms, that digital technologies afford new uses? It means that it is possible to change the main need that a technological innovation was designed to solve, as well as the logics and intentions that travelled with it – what is commonly understood as appropriation or conversion (Leach and Wilson, 2014). Alberto Corsín-Jiménez’ (2014) ethnography of open software and hardware in Madrid depicts this process. Through the concept of “the prototype,” Corsín-Jiménez shows how digital technologies’ properties of openness and editability can be actively used to allow grassroots projects to transform Madrid’s infrastructures. Playing with Latour’s concept of black-boxing, Corsín-Jiménez argues that Madrid’s grassroots projects are “white-boxing” innovations: they take a finished innovation (say, a bicycle designed to transport heavy loads), think how it was designed (reverse-engineer), and then create a digital ‘how to build’ guide to find out the ways that innovation can be reproduced and changed. Corsín-Jiménez shows how the appropriation of the Open Source Software Movement (OSSM) ideas and procedures into urban design projects helped grassroots initiatives to appropriate the parks, plazas and roads of Madrid. Thus, digital technologies are prototypes in the sense that they are always open to new transformations, and can help other objects to become prototypes as well. Through the re-uses of both digital technologies and non-digital artefacts, people can solve needs that were not anticipated by the creators of those technologies.

Digital technologies can even be appropriated to challenge the idea of freedom and appropriation itself. In other words, people also use digital technologies to challenge the libertarian ideas that come black-boxed with them. The case of Mukurtu, the digital archive developed by Kimberly Christen (2012) in collaboration with Australian aboriginals is revealing in that sense. As Christen noted, celebratory discourses of openness and freedom that come with open source technologies are, ironically, oppressive to aboriginal ideas of information access and circulation. Thus, by creating a binary of information freedom (as something good for humanity in general) against closure (as something good only for companies and their own interests), they are reproducing the colonial past of theft and silencing aboriginal cultural knowledge (2012, pp. 2872-5). Through a digital archive in which ‘cultural protocols’ are in-built in the code so that they protect the access of certain information to outsiders, they were trying to expand the notion of openness without appealing to universal goals (p. 2889).

Taking into account the ethnographic examples of Corsín-Jiménez (2014) and Christen (2012), we can say that digital technologies can be re-used in the sense that people both replace or directly challenge the logics and intentions that come with them, by adapting them to their locally-specific needs. In that sense, we can also say that there is a second process of innovation, that is subsequent to the innovation process that generated a digital technology in itself. Authors such as James Leach and Lee Wilson (2014)

suggest the concept of “exaptation” to define this second process of innovation, as it looks more like a remix than a carefully planned and staged process: “structures that may have evolved for one purpose are co-opted for quite different functions for which they happen to come in handy” (Ingold, 1997 in Leach and Wilson, 2014, p.17). Even if digital technologies are a network of inventions and planned processes and functions, they can also become tools for improvised re-use and adaptation.

### **At the Border: Digital Technologies as Spaces of Innovation**

So far, we have seen that digital technologies are part of a complex set of relations that compose innovation processes in terms of production, and even if we assume the openness of digital technologies, that set of relations travels with them. Then, we have seen that when digital technologies migrate, they also become part of another innovation process in terms of use: digital technologies are transformed, remixed, or re-thought through locally-specific needs and locally-specific cultural logics. In this last section I focus on what happens at the border – that is, when those culturally-different logics and parallel innovation processes meet. Furthermore, what are the implications of the openness of digital technologies in that process? I suggest that digital technologies are not only part of different innovation process, but digital technologies can also generate innovation processes within them.

In order to unpack this idea of innovation within digital technologies, here I come back to the contributions of Elizabeth Povinelli (2011a) that I outlined in the introduction to this paper. Apart from the recognition that moving things create social worlds – “Routes figure space” – Elizabeth Povinelli (2011a, p. 5) notes that the anthropology of exchange and circulation also shows that those routes “are figured by figured space.” She argues that those social worlds (networks and systems) created by the circulation of things are never sealed, and it is precisely through those moving routes that the social world remains open for emerging phenomena (p. 7). Nonetheless, she adds that “no world is actually one world” (p. 7), in the sense that there are worlds between and within worlds. Emergence happens when social worlds exchange or circulate elements between them – when a digital technology migrates from one culture to another, for example. However, emergence can also occur inside one social world – i.e. when digital technologies are used as virtual spaces and people from different cultures interact in them.

Let me exemplify how the interaction between the production process and the re-use process happens, through Fred Myers’ (2004) analysis of the commercialization of indigenous paintings in Australia and the controversies that arose around them. He suggests that the paintings and designs are both a) making part of an “art-culture system” in which they circulate; and b) keeping an ontological status of sacrality (p. 7). Controversies arise because indigenous paintings are produced within a context

of sacred relations between aboriginal artists, land and ancestors, but are then circulated in a Western context where those same objects are considered as commodities – therefore, indigenous paintings are what he terms “promiscuous objects” (p. 6). However, rather than a cause of incompatibility – two incommensurably different ways of understanding the same object –, from an Indigenous point of view this boundary between regimes of value is not a reason for closure, but for negotiation. Indigenous artists allow their works to become commodities in as much as the buyers recognize the importance of the artist’s ancestors and cultural traditions. In other words, the interaction between two innovation processes (one related to production and one related to use) is a constant negotiation in which more processes can emerge.

Coombe and Herman (2004) also discuss the case of a clash between Western ideas of property and indigenous understandings of cultural transmission of knowledge, but this time it happens inside an online forum between Maori activists and Lego fans. The authors analysed how Maori sacred words and terms were appropriated by Lego and used as brands for some of their specific products. This triggered discussions and arguments between Maori activists and Lego fans, because Lego fans were appealing to the ‘freedom’ of those terms to be used by anyone, whereas Maori activists interpreted that latter argument as ignoring the specific importance of those words in their communities. To analyse this controversy, the authors use the concept of “contact zone” in order to show how the digital world is a social space of negotiation between two cultures separated otherwise, but also “a performative space of the negotiation of emergent identities.” (p. 571). The authors argue, then, that the digital world allows the emergence of different responses to “corporate territorialisation of the Web” (p. 570). In other words, digital forums allow the emergence of other ways of understanding digital property that are different to the ones used by the corporations promoting their products in the Web. Thus, the negotiation of different ways of using digital technologies happens within digital technologies as well.

With the last two examples, we have seen the exchange between social worlds (Myers, 2004), but also the exchange of social worlds within digital technologies (Coombe and Herman 2004). Nonetheless, Elizabeth Povinelli (2011b) herself shows us how there are not only exchanges (and their negotiations) between social worlds, but also there are emergent innovations within digital technologies. She does that by analysing a digital archive that she developed alongside Australian aboriginal communities, designers, and Web developers. What they were trying to do with the digital archive was not to escape from the dynamics of digital information (yes/no; if/then) – to look for an ‘outside’ of digital technologies’ binary logic that could better represent Australian aboriginal knowledge and traditions. Rather, the project tried to use a specific matrix of circulation to model a novel form of sociality in it (2011b, p. 160). In other words, they

designed the archive so that the user could not have access to all content; but to access specific elements in the archive according to the user's status, gender, and previous experience with the archive's content – what Aboriginal communities term “acquiring social skin.” Thus, Povinelli is showing how digital technologies are not only objects migrating between Western and non-Western cultures, but they also provide a space in which Western logics (it is either True or False; it is either Public or Private) can co-exist with (or be the grounds to) completely different worldviews and social dynamics.

## Conclusion

In this paper, I have analysed the ‘migration’ of digital technologies from a perspective that takes both production and use into account. Digital technologies can be understood as important elements (and products) of many innovation processes occurring nowadays, because they have revolutionized the way we create new interactions with people, objects, and cultures. Therefore, we can also complexify social sciences’ ideas of innovation, by complexifying the analysis of digital technologies’ migration between cultures – through both perspectives of design and circulation.

In the first part I have explored the ideas of inscription and black-boxing. I showed how digital technologies are not the only things that travel when they are used in other contexts and cultures, through the examples of digital gambling machines and the Internet. Cultural ideas of their creators, inscribed intentions (like profit increasing), and functions for specific needs are also migrating. Therefore, the socio-material elements involved in the innovation process of production are not erased, but are black-boxed in the object. In the second part I examined the processes of re-use and appropriation by approaching the cases of social media and ‘open hardware’ projects. My point was that digital technologies can also be re-built and re-mixed according to local contexts and needs. Thus, this evidence forces us to think about innovation from another perspective: one that is messier, improvised, locally functional, and even political. Finally, in the third part I have used ethnographic approaches to aboriginal paintings, virtual forums, and digital archives in order to understand how the characteristics of ‘the digital’ can help us understand migration and innovation in yet another sense. Migration is more than an object crossing a border, as the border can be built (or negotiated) inside the object. Similarly, digital technologies are more than a product, and innovation is more than the process that generates that product: innovation can emerge within that product, due to the structural openness of digital technologies.

Many anthropologists have dealt with the term of innovation in various ways. Some have tried to define it as the engine of every cultural expression (public or private), by relating it with terms such as imagination (c.f. Robins, 2010). Others have problematized the idea of innovation as a completely new and path-breaking discovery, by showing its complex relation

to already existing traditions (c.f. Lohman, 2010). Complementing this critique of the ‘out-of-nowhere’ inventions, other authors have critiqued the popular idea that innovation can only be achieved through controlled and organized processes (c.f. Leach and Wilson, 2014). As I have shown in the second part of this paper, I agree with this latter perspective in the sense that innovation should be rethought as more improvised than it looks. However, I disagree in the sense that this cannot be the only way of seeing innovation either. A perspective of varied ethnographic cases shows us that innovation is actually plural: there are many innovations in the same process of migration – so why not leave the meaning of innovation open to many co-existing ways of defining it? In my opinion, this is the way an anthropological and ethnographic perspective can contribute to the interdisciplinary debate on digital technologies and innovation, as this helps us to challenge monolithic understandings of concepts, and open them to alternative and productive analyses.

## References

- Christen, K. (2012). Does information really want to be free? Indigenous knowledge systems and the question of openness. *International Journal of Communication*, 6, pp. 2870-93.
- Coombe, R. & Herman, A. (2004). Rhetorical virtues: Property speech and the commons on the World Wide Web. In *Anthropological Quarterly*, 77(3), pp. 559-74.
- Corsín Jiménez, A. (2014). The right to infrastructure: a prototype for open source urbanism. *Environment and Planning D: Society and Space*, 32(2), pp. 342-362.
- Flichy, P. (2007). *Understanding Technological Innovation: A Socio-Technical Approach*. Cheltenham: Edward Elgar
- Kallinikos, J., Aaltonen, A., & Marton, A. (2010). A theory of digital objects. *First Monday*, 15(6).
- Kelty, C. (2008). *Two bits: The cultural significance of Free Software*. Durham: Duke University Press.
- Kopytoff, I. (1986). The cultural biography of things: commoditization as process. In A. Appadurai (Ed.), *The social life of things: Commodities in cultural perspective*. Cambridge: Cambridge University Press.
- Latour, B. (1988). Mixing Humans and Nonhumans Together: The Sociology of a Door-Closer. *Social Problems* 35(3), pp. 298-310.
- Latour, B. (1991) Technology is society made durable. In J. Law (Ed.), *A Sociology of Monsters: Essays on Power, Technology and Domination*. London: Routledge.
- Leach, J., & Wilson, L. (2014). *Anthropology, Cross-Cultural Encounter, and the Politics of Design*. J. Leach and L. Wilson (Eds.), *Subversion, Conversion, Development: Cross-Cultural Knowledge Encounter and the Politics of Design*. London: MIT Press.

Lohmann, R. (2010). Introduction: The anthropology of creations. *Anthropological Forum* 20(3), pp. 215-234.

Miller, D., & Horst, H. (2011). The digital and the human. In D. Miller and H. Horst (Eds.), *Digital Anthropology*. London: Bloomsbury Publishing.

Miller, D., Costa, E., Haynes, N., McDonald, T., Nicolescu, R., Sinanan, J., Spyer, J., Venkatraman, S., & Wang, X. (2016) *How the world changed social media*. London: UCL Press.

Myers, F. (2004). Ontologies of the image and economies of exchange. *American Ethnologist*, 31(1), pp. 5-20.

Nafus, D. (2014). Design for X: Prediction and the embeddedness (or not) of research in technology production. In J. Leach and L. Wilson (Eds.), *Subversion, Conversion, Development: Cross-Cultural Knowledge Encounter and the Politics of Design*. London: MIT Press.

Povinelli, E. (2011a). *Routes/Worlds*. *E-Flux*, 27, pp. 1-12.

Povinelli, E. (2011b). The woman on the other side of the wall: Archiving the Otherwise in postcolonial digital archives. *Journal of Feminist Cultural Studies*, 22(1), pp. 146-171.

Robbins, J. (2010). On imagination and creation: An afterword. *Anthropological Forum* 20 (3), pp. 305-313.

Schüll, N. D. (2014). *Addiction by design: Machine gambling in Las Vegas*. Princeton: Princeton University Press.

# The Reinforcing Loop: An Exploration of Filter Bubbles in Social Platforms

Kadriann Pikkat

MSc in Information Systems and Digital Innovation  
Department of Management  
London School of Economics and Political Science

## KEYWORDS

Social media  
Social platforms  
Filter bubbles  
Echo chambers  
Facebook

## ABSTRACT

A 'filter bubble' – a term originally coined by Internet activist Eli Pariser – denotes the dynamic in which people are only exposed to a small subset of ideas and perspectives. More alarmingly, there is the threat of an extrapolated version of reality where individuals only see content that is already familiar and accepted by them. This paper seeks to analyse the creation and development of such filter bubbles in social platforms by conceptualising the phenomenon within the theories of encoding and computed sociality. Using the example of Facebook News Feed, it will be shown that personalisation can, through the algorithmic process of filtering, lead to a situation in which the bubble becomes reinforcing and ever narrowing. The filtering system, therefore, becomes a cycle that both shapes and is shaped by user behaviour. Further, it is argued that the starting point in this cycle is already a heavily mediated state.

## Introduction

Social media platforms were once welcomed as harbingers of a free and networked world in which the power lies with the users. Recently, however, the illusion of disintermediation in the newly empowered networks appears to have started to fade. In light of recent electoral shocks in Europe and the US, the influence of social platforms both on and off the Web has been widely questioned. There has also been a growing recognition of the way such platforms can shape knowledge and behaviour. Chamath Palihapitiya, a former senior executive at Facebook, has recently accused the platform of 'ripping apart the social fabric of how society works' (Stanford Graduate School of Business, 2017). One of the aspects debated in this 'techlash' (Rajan, 2017) is whether social platforms can create online filter bubbles – a dynamic in which an individual is only exposed to a small subset of ideas and perspectives. More alarmingly, there is the threat of an extrapolated version of reality where users only see content that is already familiar and accepted by them. If this pattern is reinforcing, users could experience a continuously narrowing spectrum of information. Without being exposed to opposing views, social media becomes a metaphorical echo chamber of the self. Filter bubbles are powerful both at the level of the individual, shaping user practices and beliefs, as well as society, possibly leading to ideological segregation and harming democracy itself.

This paper seeks to explore the processes through which filter bubbles can be created and sustained.

By examining the case of Facebook, perhaps the most well known social media platform, it will be shown that the circular logic embedded in its News Feed algorithm can lead to a reinforcing and narrowing bubble. The rest of this paper is structured as follows. First, a literature review will connect the key concept of personalisation to filter bubbles. Next, this is conceptualised using the theories of encoding and computed sociality. Finally, this theoretical framework is applied to the case of Facebook News Feed to illustrate the dynamics of a filter bubble.

## Literature Review

### 1. Personalisation

The rapid growth of social networks has resulted in a struggle to manage the constant stream of information that users have access to. Adam Mosseri, Facebook's senior executive, has recognised that there is simply 'far too much information for any one person to consume' (Newsroom, 2016b). In this new 'attention economy', human attention is a resource in limited supply (Davenport & Beck, 2001). In an attempt to make the experience more enjoyable for the user and thus catch a larger share of their attention, platform providers have turned to personalisation through algorithmic filtering. In this context, the filter is a software-based tool that operates based on an algorithm specified by the platform owner (Parker, Van Alstyne & Choudary, 2016). The aim of a filter system is to ensure that out of the vast quantities of content available, each individual user will be presented with information that is most relevant and valuable to them. The technical process behind filtering is explained in more detail in the third section using the example of Facebook News Feed.

Corresponding Author  
Email Address: k.pikkat@lse.ac.uk (K. Pikkat)

Naturally, there is no single metric to determine what constitutes ‘relevant’ or ‘valuable’, making it a fundamentally subjective judgement. Twitter, for example, identifies certain topics that are ‘trending’ at any given moment. The process behind this, however, is a less straightforward calculation than one would perhaps expect. Instead of being a universal measurement of popularity, trends in this context are tailored to an individual user based on, for example, their interests, location, and the users they ‘follow’ (Gillespie, 2014). Twitter also maintains the power to ‘consider the newsworthiness’ and whether or not it is ‘in the public interest’ (Twitter, 2018). These judgements, whether embedded in Twitter or Facebook, as will be seen, are as subjective as they are fluid.

## 2. Filter Bubbles

‘Filter bubbles’ – a term coined by Internet activist Eli Pariser – denote the dynamic in which an individual is only exposed to ideas and perspectives confirming those that they already hold. Homophily, that is the process of selecting the people and information that appeal to one’s interests, is a natural and inevitable part of human lives – both online and offline. It has, for example, been found that individuals are more likely to select and read news stories that are anticipated to support their own positions (Garrett, 2009; Iyengar & Hahn, 2009). Looking specifically at social platforms, one could reasonably expect that in the digital world – free from the geographical constraints that exist in the real world – there is greater exposure to a wider variety of information. Online filter bubbles, however, introduce three new characteristics: they are ‘individual’, ‘invisible’ and ‘involuntary’ (Pariser, 2011). The individual aspect means that due to personalisation, people are alone in the metaphorical bubble that has been curated for them. That bubble is invisible because users do not knowingly and consciously select the criteria according to which information is either selected or ignored. As Eli Pariser puts it, ‘from within the bubble, it’s nearly impossible to see how biased it is’ (ibid., p. 10). Finally, it is involuntary as users do not choose to enter or exit the bubble. To some extent, these characteristics can also be apparent in an offline setting. For instance, one can recognise an involuntary filter bubble when thinking about the likelihood of children following their parents’ political or religious leanings. In an online scenario, however, these factors can fundamentally alter the way individuals obtain and interact with information, effectively representing a shift away from the individual to the platform in terms of selective power. The threat at the individual level is an entirely familiar and comfortable world in which there is nothing to learn or disagree with; at the society level, it is one with no common baseline of facts.

Some empirical evidence exists to support the existence of filter bubbles. Yet, the findings are often inconclusive and constrained by methodological issues, such as the difficulty measuring existing beliefs. The matter is further complicated by the interplay of two separate filtering mechanisms: personalisation

and self-selection. The former denotes the content curated for and displayed to a user by the platform’s filtering algorithm, whereas the latter refers to the user’s decision of which content to interact with. In a rare attempt to separate the effect of self-selection from personalisation, Bakshy, Messing and Adamic (2015) find that algorithmic ranking on Facebook resulted in users being shown 15% less cross-cutting content (personalisation), of which they clicked on 70% less than like-minded content (self-selection). Other studies offer a less convincing account. For instance, Vicario et al. (2017) find that in the lead up to the Brexit referendum in the UK, news consumption on Facebook was polarised into two distinct groups. However, they do not distinguish between the effects of personalisation and self-selection. Nikolov et al.’s (2015) finding of a narrow spectrum of information on social platforms is also subject to this limitation. Similarly, Flaxman, Goel and Rao (2016) find that news stories found through social platforms and search engines are narrower in ideological stance than those read when visiting news sites directly. Although this seems to suggest the presence of a filter bubble, the authors also report that social platforms and search engines do, in principle, expose individuals to a wider selection of information. Heatherly, Lu and Lee (2017) find evidence of social media facilitating both cross-cutting and like-minded interactions, but fail to consider how filtering affects the content that the user is even able to interact with.

Despite the lack of concrete empirical evidence, a sufficient theoretical base has been established which allows for conceptualisation of filter bubbles and the mechanisms through which they may arise. One can reasonably expect that alongside the emerging debate in society, the empirical evidence too will shed more light on the concerns about filter bubbles that have been expressed to date.

## Conceptual Framework

In order to conceptualise the creation of filter bubbles in social platforms, the theories of ‘encoding’ (Alaimo & Kallinikos, 2016; 2017) and ‘computed sociality’ (ibid.) are utilised.

### 1. Encoding

There are different types of data produced on social platforms. In order to understand the theory of encoding, it is necessary to distinguish between two types: ‘user-generated content’ and ‘social data’ (Alaimo & Kallinikos, 2017). In the context of social platforms, user-generated content refers to content – including text, photos, videos and comments – created, as the name suggests, by users themselves. Social data, on the other hand, denotes the act of this content creation. It is generated as the unconscious by-product of users’ (hopefully) conscious actions on a website, effectively capturing their behavioural data footprint. As will be seen, however, this behaviour itself is shaped and moderated by the platform. This distinction is necessary because although the former type of data is more visible to the user, it is the latter that is typically more valuable to the platform owner

(Alaimo & Kallinikos, 2016).

The translation of social interactions into data is made possible by encoding. This is a way of structuring information inherent to social platforms, which can be defined as ‘the technological codification and stylization of social activities into particular clusters or classes’ (Alaimo & Kallinikos, 2017, p. 177). By standardising activities and social interactions, aspects of user behaviour are rendered countable, with individual users essentially becoming the sum of their performed clicks. The behavioural footprint on social platforms, therefore, is highly structured and moderated. As Van Dijck (2013, p. 12) puts it, the term ‘social’ in this context appears to denote ‘both (human) connectedness and (automated) connectivity’.

## 2. Computed Sociality

Encoding, therefore, effectively allows platform owners to engineer social interaction which adheres to computational logic and fits pre-conceived structures. The sociality captured online is not a direct reflection of offline behaviour and thus does not record reality as such (Van Dijck, 2013). This intermediated social interaction has been called ‘computed sociality’ (Alaimo & Kallinikos, 2016, p. 78; 2017, p. 177) or ‘sociality coded by technology’ (Van Dijck, 2013, p. 12). In the context of filter bubbles, personalisation – enforced through algorithmic filtering – effectively adds another layer on top of this engineered sociality. Algorithms, in the broadest sense, are ‘encoded procedures for transforming input data into a desired output, based on specified calculations’ (Gillespie, 2014, p. 167). The specification of these calculations, however, requires initial human input. Thus, despite the ‘carefully crafted fiction’ suggesting otherwise (ibid., p. 179), algorithms appear to be neither automatic nor neutral but rather represent ‘opinions embedded in code’ (O’Neil, 2017). Hence, social platforms are not neutral, but socio-technical ensembles in which human input is shaped by computed output, and the same would apply conversely (Van Dijck, 2013, p. 13-14).

In the following section, the conceptual framework of personalisation, encoding and computed sociality will be applied to the case of Facebook News Feed to illustrate the dynamics of a filter bubble.

### Case Analysis: Facebook

For some time now, Facebook – the dominant social media platform – has been in the media spotlight over its wider societal influence. At the behavioural level, the platform has been claimed to be addictive in nature (Embury-Dennis, 2017) with the power to manipulate moods (Griffin, 2014). At the political front, the issues of ‘fake news’ (Connolly et al., 2016) and election tampering (McCarthy, 2017) have surfaced. All of these matters can, to some extent, be connected to filter bubbles and conceptualised within the framework introduced earlier. This section seeks to analyse how the logic of encoding and the process of personalisation through algorithmic filtering can

create filter bubbles on Facebook.

## 1. Methodology

Data was collected through two primary methods: author’s own observations as a user of the platform and a review of the relevant updates posted on Facebook’s press website (Facebook Newsroom). In addition, interviews with Facebook executives were read to gain further insight. Data was collected in March and April 2018 and, given the fast evolving mechanics, focused on the most recent statements. In some cases, however, the author has sought to demonstrate how these factors have changed over time.

## 2. Personalisation

For users, News Feed is the central element on Facebook. It is the list of user-generated content on the home page, visible immediately after logging in. This News Feed is individual to users in two ways. First, the majority of the information displayed – that is, everything apart from paid advertorials – is limited to content generated by those users and pages which the user has connected with on the platform. Secondly, the content is filtered by Facebook’s algorithm in an attempt to offer the user a better experience. In 2014, Facebook estimated that News Feed displays each user approximately 300 stories out of the more than 1,500 they would see without the filter (Facebook Business, 2014). What populates this landing page, and in what order, is tailored to each individual user. The News Feed, therefore, is not a *news feed* in the intuitive sense, but a personalised collection of content curated by an algorithm.

Facebook’s original News Feed algorithm was called EdgeRank, and its relevance calculations were based on three elements: ‘affinity’, ‘relative weight’ and ‘time’ (Pariser, 2011). Affinity means that the more User A interacts with User B, the more likely User A would be to see User B’s updates in News Feed. Interaction in this context can take various forms, including visiting someone’s profile, commenting on photos, or exchanging messages. Of course, if the interaction is mutual then the effect will be the same for User B. Relative weight refers to a pre-defined ranking for different types of content, determined by previous behaviour recorded for the user. For example, a person who spends a lot of time looking at photos would be shown more of them. Finally, the time element implies that recent posts would be weighted higher.

Over time, this algorithm has evolved and Facebook has, in fact, stopped referring to it as EdgeRank, using the term ‘ranking’ instead (Newsroom, 2018a). An algorithm still exists, and is likely to include the three original factors, but has grown considerably more complex. In 2013, Facebook’s Engineering Manager for News Feed Ranking claimed that over 100,000 factors were used in these calculations (McGee, 2013). Since then, Facebook has introduced several additional factors. These include, to name a few, the device used and the speed of Internet connection

(Newsroom, 2015), the loading time of linked websites (Newsroom, 2017b) and, in case of videos, how much of it is watched, and whether that is in full-screen or with the sound on (Newsroom, 2017a). Another recent announcement claimed that Facebook would, going forward, prioritise ‘posts that spark conversations and meaningful interactions between people’ (Newsroom, 2018a). Among other changes, this value-laden proposition means that content by close friends and family is ranked higher than public content:

News and video will always be an important part of Facebook. But when people are spending so much time passively consuming public content that it starts taking away from the time people are connecting with each other, that’s not good (Facebook, 2018).

In an apparent attempt to address the ‘fake news’ accusations, Facebook has also announced prioritising news that are ‘trustworthy’ and ‘informative’ (Newsroom, 2018b). Naturally, the use of such loaded language suggests that these decisions are bound to be subjective judgements based on arbitrary data points. As demonstrated by the seeming contradiction between Facebook’s corporate mantra of building a ‘global community’ (Facebook, 2017) and the recent decision to prioritise news from local sources (Newsroom, 2018c), these values are also fluid in nature. Therefore, what users see on their News Feed is determined by both their participation on the platform as well as a myriad of other factors entirely independent of their behaviour.

### 3. Encoding

The environment hosted by Facebook is highly organised and includes features unique to a digital environment. ‘Tagging’, ‘liking’, ‘following’ and ‘sharing’, for example, have no real equivalents in an offline scenario. Further, ‘friends’ in this context denote both strong and weak ties, including family, close friends, acquaintances, and possibly even strangers. The ‘like’ button introduced by Facebook allows users to interact with content using a single click. The number of ‘likes’ and the list of users who have ‘liked’ a post are then displayed under it. This simple feature, however, is not neutral. For instance, it can favour positive posts over negative. Further, the action does not convey a single, straightforward meaning. A person pressing the ‘like’ button on a Facebook post about war crimes could, for example, signal that they enjoyed reading the story, recognition for covering the topic, approval of these crimes, or perhaps something completely different. In 2016, Facebook extended this feature to cover other types of reactions, comprising five pre-defined emotions: ‘love’, ‘haha’, ‘wow’, ‘sad’ and ‘angry’ (Newsroom, 2016a). In the race for users’ finite attention, these features are designed to encourage participation. Chamath Palihapitya provocatively refers to them as a ‘short-term dopamine fuelled feedback loops’ (Stanford Graduate School of Business, 2017).

Taina Bucher (2012) has compellingly presented the ‘threat of invisibility’ as a powerful perception

governing user actions on social media. As Facebook’s recent News Feed tweak towards ‘meaningful content’ demonstrates, a good user does not passively consume content produced by others, but actively reacts to it (Facebook, 2018). Encoding allows for these actions to be counted and used for filtering. For instance, after a user has pressed ‘like’ on a post, the algorithm assumes that they would like to see more of similar content from similar users, and their News Feed will be adjusted accordingly. As every additional action will re-adjust the personalised News Feed, a kind of ‘informational determinism’ emerges in which past actions determine the content that will be visible in the future (Pariser, 2011, p. 16). But these past actions also restrain future actions – in order for users to react to something, the content must be visible to them in the first place. This ‘circular logic’ embedded in the filter (Bucher, 2012, p. 1169) presents the risk of producing an ever narrowing loop of content in which users inevitably reinforce the assumptions. When navigating the personalised News Feed, users are likely to react to these stories – chosen for them – thus involuntarily decreasing the material scope of their personalised content. The filtering system, therefore, becomes a reinforcing cycle that both shapes and is shaped by user behaviour. Figure 1 below visualises these dynamics.

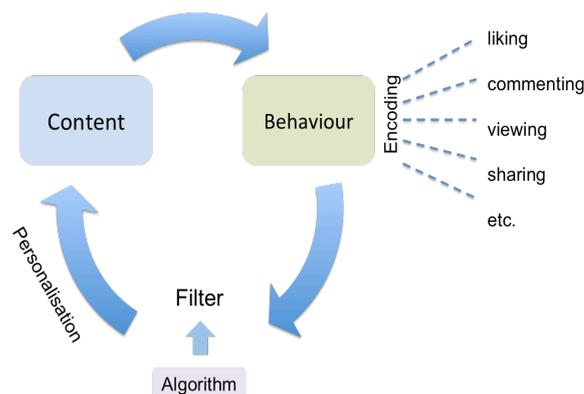


Figure 1. The circular logic of a filter bubble

By reducing the complexity of social interaction to its bare minimum, this moderated version of reality portrays users as a simplified version of themselves. Further, it ignores the likely gap between what users seem to like, what they actually want to see, and what they should see. Being exposed to differing opinions is necessary in order to facilitate healthy debates in society. Further, it is inevitable that some stories require more cognitive effort to process than others and are thus less likely to be clicked on, particularly in a social media environment where news consumption is perhaps not users’ primary focus. Compare, for example, a story about the war in Syria against one about a talking parrot saying funny and inappropriate things. In most traditional media, this gap is bridged by displaying a combination of ‘want’ stories with ‘should’ stories – even if someone is more likely to read certain stories, they will still be made aware of the others. The Facebook News Feed, however, curates the content for its users largely in

secrecy.

## Discussion

Historian Niall Ferguson has compellingly argued that the expectation of a hyperconnected world as a safe and stable place is not supported by the historical proposition that networks eventually and inevitably become polarised systems (Ferguson, 2017a; 2017b). By connecting the theoretical framework of encoding to the mechanics of algorithmic filtering, the technical basis on which such polarisation can emerge has been demonstrated. Using the example of Facebook News Feed, it was shown that personalisation can lead to a situation in which each user exists in an individual universe of information – a filter bubble – carefully curated for them by the platform. This is likely to lead to a reinforcing and ever narrowing bubble. Personalisation implicitly assumes that identity shapes one's choice of information (Pariser, 2011). Yet, what if the reverse causality also holds true? If the choice of information also shapes identity – as can be reasonably expected – the filtering forces at play effectively select and reinforce only parts of this identity. Further, following the theories of encoding of computed sociality, the starting point in this cycle is already a heavily mediated state.

The contribution of this paper comes with some limitations. First, the components of Facebook's current News Feed algorithm are largely surrounded by secrecy and therefore difficult to unpick. Perhaps like Netflix (Madrigal, 2014), even Facebook itself does not fully understand the forces at play in their entirety. However, the information available tends to show the complexity and ever-evolving nature of this algorithm. Secondly, this paper does not attempt to prove or quantify filter bubbles, but provides a theoretical account to deepen the understanding of the underlying processes. Finally, due to the limited scope of the paper, the paper has been largely focused on the theory of encoding. The issue could also be fruitfully conceptualised within other frameworks; commensuration, for example, may represent an opportunity in this regard.

## References

Alaimo, C. and Kallinikos J. (2016). Encoding the Everyday: The Infrastructural Apparatus of Social Data. In C. R. Sugimoto, H. R. Ekbja & M. Mattioli (Eds.), *Big Data is Not a Monolith* (pp. 77-90). Cambridge, MA: MIT Press.

Alaimo, C. and Kallinikos J. (2017). Computing the everyday: Social media as data platforms. *The Information Society*, 33(4), 175-191. doi:10.1080/01972243.2017.1318327

Bakshy, E., Messing, S. & Adamic, L. A. (2015). Exposure to ideologically diverse news and opinion on Facebook. *Science*, 348(6239), 1130-1132. doi: 10.1126/science.aaa1160

Bucher, T. (2012). Want to be on the top? Algorithmic power and the threat of invisibility on Facebook.

*New Media & Society*, 14(7), 1164-1180. doi: 10.1177/1461444812440159

Connolly, K., Chrisafis, A., McPherson, P., Kirchgaessner, S., Haas, B., Phillips, D., Hunt, E. & Safi, M. (2016). Fake news: an insidious trend that's fast becoming a global problem. *The Guardian*. Retrieved from: [https://www.theguardian.com/media/2016/dec/02/fake-news-facebook-us-election-around-the-world?CMP=fb\\_gu](https://www.theguardian.com/media/2016/dec/02/fake-news-facebook-us-election-around-the-world?CMP=fb_gu)

Davenport, T. & Beck, J. (2001). *The Attention Economy: Understanding the New Currency of Business*. Boston, MA: Harvard Business School Press.

Embury-Dennis, T. (2017). Man who invented 'like' button deletes Facebook app over addiction fears. *The Independent*, 6 October. Retrieved from: <https://www.independent.co.uk/life-style/gadgets-and-tech/facebook-like-inventor-deletes-app-iphone-justin-rosenstein-addiction-fears-a7986566.html>

Facebook. (2017). Building Global Community. Facebook post, 16 February. Retrieved from: <https://www.facebook.com/notes/mark-zuckerberg/building-global-community/10154544292806634/>

Facebook. (2018). 'We just announced our quarterly results and community update. [...]'. Facebook post, 31 January. Retrieved from: <https://www.facebook.com/zuck/posts/10104501954164561>

Facebook Business. (2014). Organic Reach on Facebook: Your Questions Answered. Retrieved from: <https://www.facebook.com/business/news/Organic-Reach-on-Facebook>

Ferguson, N. (2017a). The False Prophecy of Hyperconnection. How to Survive the Networked Age. *Foreign Affairs*, Sep/Oct 2017, 96(5), 68-79.

Ferguson, N. (2017b). *The Square And The Tower: Networks, Hierarchies And The Struggle For Global Power*. New York: Allen Lane.

Flaxman, S., Goel, S. & Rao, J. M. (2016). Filter bubbles, echo chambers, and online news consumption. *Public Opinion Quarterly*, 80(S1), 298-320. doi: 10.1093/poq/nfw006

Garrett, R. K. (2009). Echo chambers online?: Politically motivated selective exposure among Internet news users. *Journal of Computer-Mediated Communication*, 14(2), 265-285. doi: 10.1111/j.1083-6101.2009.01440.x

Gillespie, T. (2014). The Relevance of Algorithms. In T. Gillespie, P. J. Boczkowski & K. A. Foot (Eds.), *Media Technologies: Essays on Communication, Materiality, and Society*. Cambridge, MA: MIT Press.

Griffin, A. (2014). Facebook manipulated users' mood in secret experiment. *The Independent*, 29 June. Retrieved from: <https://www.independent.co.uk/life-style/gadgets-and-tech/facebook-manipulated-users-moods-in-secret-experiment-9571004.html>

- Heatherly, K. A., Lu, Y. & Lee, J. K. (2017). Filtering out the other side? Cross-cutting and like-minded discussions on social networking sites. *New Media & Society*, 19(8), 1271-1289. doi: 10.1177/1461444816634677
- Iyengar, S. & Hahn, K. S. (2009). Red Media, Blue Media: Evidence of Ideological Selectivity in Media Use. *Journal of Communication*, 59(1), 19-39. doi: 10.1111/j.1460-2466.2008.01402.x
- Madrigal, A. C. (2014). How Netflix Reverse Engineered Hollywood. *The Atlantic*, 2 January. Retrieved from: <https://www.theatlantic.com/technology/archive/2014/01/how-netflix-reverse-engineered-hollywood/282679/>
- McCarthy, T. (2017). How Russia used social media to divide Americans. *The Guardian*, 14 October. Retrieved from: <https://www.theguardian.com/us-news/2017/oct/14/russia-us-politics-social-media-facebook>
- McGee, M. (2013). EdgeRank Is Dead: Facebook's News Feed Algorithm Now Has Close To 100K Weight Factors. *Marketing Land*. Retrieved from: <https://marketingland.com/edgerank-is-dead-facebooks-news-feed-algorithm-now-has-close-to-100k-weight-factors-55908>
- Newsroom. (2015). News Feed FYI: Building for All Connectivity. Retrieved from: <https://newsroom.fb.com/news/2015/10/news-feed-fyi-building-for-all-connectivity/>
- Newsroom. (2016a). Reactions Now Available Globally. Retrieved from: <https://newsroom.fb.com/news/2016/02/reactions-now-available-globally/>
- Newsroom. (2016b). Building a Better News Feed for You. Retrieved from: <https://newsroom.fb.com/news/2016/06/building-a-better-news-feed-for-you/>
- Newsroom. (2017a). News Feed FYI: Updating How We Account For Video Completion Rates. Retrieved from: <https://newsroom.fb.com/news/2017/01/news-feed-fyi-updating-how-we-account-for-video-completion-rates/>
- Newsroom. (2017b). News Feed FYI: Showing You Stories That Link to Faster Loading Webpages. Retrieved from: <https://newsroom.fb.com/news/2017/08/news-feed-fyi-showing-you-stories-that-link-to-faster-loading-webpages/>
- Newsroom. (2018a). News Feed FYI: Bringing People Closer Together. Retrieved from: <https://newsroom.fb.com/news/2018/01/news-feed-fyi-bringing-people-closer-together>
- Newsroom. (2018b). News Feed FYI: Helping Ensure News on Facebook Is From Trusted Sources. Retrieved from: <https://newsroom.fb.com/news/2018/01/trusted-sources/>
- Newsroom. (2018c). News Feed FYI: More Local News on Facebook, Globally. Retrieved from: <https://newsroom.fb.com/news/2018/03/news-feed-fyi-more-local-news-on-facebook-globally/>
- Nikolov, D., Oliveira, D. F. M., Flammini, A. & Menczer, F. (2015). Measuring online social bubbles. *PeerJ Computer Science*, 1(34). doi: 10.7717/peerj-cs.38
- O'Neil, C. (2017). The era of blind faith in big data must end. [Video file]. Retrieved from: [https://www.ted.com/talks/cathy\\_o\\_neil\\_the\\_era\\_of\\_blind\\_faith\\_in\\_big\\_data\\_must\\_end#t-100996](https://www.ted.com/talks/cathy_o_neil_the_era_of_blind_faith_in_big_data_must_end#t-100996)
- Pariser, E. (2011). *The Filter Bubble: What the Internet is Hiding from You*. Penguin: London.
- Parker, G. G., Van Alstyne, M. W. & Choudary, S. P. (2016). *Platform Revolution. How Networked Markets Are Transforming the Economy and How to Make Them Work For You*. New York: W. W. Norton & Company, Inc.
- Rajan, A. (2017). Do the technology giants finally face a backlash? *BBC*, 15 March. Retrieved from: <http://www.bbc.co.uk/news/entertainment-arts-39280657>
- Stanford Graduate School of Business. (2017). Chamath Palihapitiya, Founder and CEO Social Capital, on Money as an Instrument of Change. Retrieved from: <https://www.youtube.com/watch?v=PMotykw0SIk>
- Twitter. (2018). Twitter Trends FAQs. Retrieved from: <https://help.twitter.com/en/using-twitter/twitter-trending-faqs>
- Van Dijck, J. (2013). *The Culture of Connectivity: A Critical History of Social Media*. Oxford: Oxford University Press.
- Vicario, M. D., Zollo, F., Caldarelli, G., Scala, A. & Quattrocioni, W. (2017). Mapping social dynamics on Facebook: The Brexit debate. *Social Networks*, 50, 6-16. doi: 10.1016/j.socnet.2017.02.002

# Locke's Tacit Consent in Social Networking Sites: A Case for Tacit Online Consent

Maria Vittoria Santarelli

MSc in Information Systems and Digital Innovation  
Department of Management  
London School of Economics and Political Science

## KEYWORDS

Consent  
Informed consent  
Online consent  
Social media  
Privacy  
Data governance  
Locke  
GDPR

## ABSTRACT

As the number of users of Social Networking Sites' (SNSs) increases and the amount of data collected about people becomes massive, the issue of online consent given to these websites is central. John Locke argued that consent is given to a government simply by living in the territory of that state. This paper holds that the same can be said for SNSs: consent is given by simply using the website. The research is conducted by arguing that governments and SNSs are analogue entities. The General Data Protection Regulation (GDPR) definition of consent is explained and then used as a comparative framework for the analysis. Facebook is taken as a case study for SNSs in order to simplify the comparison process. Findings suggest that the two types of consent are indeed equal, and the conclusion states that consent given to SNSs could be defined as "tacit online consent".

## Introduction

In the last few years, usage of Social Networking Sites (SNSs) has steadily increased. These SNSs, Social Media in general, work thanks to and are fuelled by social data (Alaimo & Kallinikos, forthcoming). These social data are extremely precious for many agents, as they open new paths towards understanding individuals' and groups' social, economic and political behaviours (Bechmann, 2014, p. 21). Users do indeed produce billions of personal and sensitive data every day simply by using the services provided by SNSs. The combination of computational practices and Big Data makes social data incredibly powerful (Tufekci, 2014).

Collection, analysis, and usage of the information is conducted according to certain conditions that users have previously agreed to. Thus, it is no surprise that the issue of consent has become central even, if not especially, when framed in an online context. Consent is the key mechanism for enabling data management (Whitley, 2013, p. 165). As the amount of data collected increases and as evidence supports the belief that people are not aware of what kind of information they produce and how it is used, international organisations are trying to set new standards in order to regulate the practice of consent. Just recently, the European Union has issued a regulation – the General Data Protection Regulation, GDPR – that aims at making consent more unambiguous and explicit (European Union, 2016). However, it is still not clear what kind of consent people are giving to Social Networking Sites.

It will be held here that consent given to a SNS resembles John Locke's tacit consent. Consent has usually been studied in the fields of law and moral philosophy. The reason for which this work compares it to a political thought doctrine is that states and SNSs are indeed parallel realities and societies. In December 2016, Facebook's "population" reached 1.86 billion users (Facebook, 2016). This, plus other factors illustrated and explained later on during the course of this work, should stress the importance of considering Social Networking Sites as proper communities presenting classic social and political dynamics. Consent is one of these.

## On Consent and Tacit Consent

In traditional Western liberal societies, consent is considered a fundamental right. Even more so, property is strongly valued, and with that the belief that people should have some sort of control over what belongs to them, be it goods or data. Indeed, consent strongly relies on the concepts of control, self-determination, and respect for autonomy (Article 29 Data Protection Working Party, 2011, p. 8; Bechmann, 2014; Faden & Beauchamp, 1986).

Consent is a recognised method through which two or more independent parts enter an agreement creating obligations and conferring rights (Carr, 1990). No legitimate power can arise without consent. When consent concerns the collection of sensitive information from an individual its role and definition can be described as "*offering people genuine choice and control over how to use their data*" (ICO, 2017, p. 4). Consent is of particular importance when talking about social research or experiments conducted on Social Networking Sites, as the data controller can

Corresponding Author  
Email Address: mariavittoria.santarelli@gmail.com (M. V. Santarelli)

often use it in order to transfer his liability to the data producer (Article 29 Data Protection Working Party, 2011, p. 9).

A very important notion in the history of political thought is the one of *tacit consent*. This idea became notorious among scholar after John Locke wrote about it in “The Second Treatise of Civil Government”.

John Locke acknowledges and recognises the fact that no man can obey the rules of someone or something else without having previously given his consent. However, writing in 1690, when the majority of regimes were autocratic and people respected rules they did not agree upon, he had to justify this libertarian statement.

Thus, he came up with the doctrine of tacit consent. According to Locke, consent does not have to be expressed in order to be considered valid. He holds that a man gives tacit consent to a government simply by living in the territory in which that government operates or by benefitting from the services it provides (Locke, 1690). An individual, should he have previously given tacit consent, is free to withdraw it by leaving the territory of the state in which he is living and by renouncing his possessions within it. As long as he lives there though, he agrees with the government’s decisions.

### **Analogies between a State and a Social Networking Site**

The notion of tacit consent is very intuitive and straightforward when framed in a political context with regards to states and governments. However, the aim of this work is to prove that the concept of tacit consent resembles the kind of consent we are giving to SNS platforms, as they are characterised by the same features. Before proceeding with the analysis and comparison of the two, it is necessary to demonstrate how consent to governments relates to consent to SNSs.

*They are both communities:* the first element of collision between a state and a SNS is the definition of what they are. Although the exact definition of “state” is still debated, the most widespread and accepted one was given by Weber in a speech at Munich University (Weber, 1918). Weber defines the state as a “[...] *human community that (successfully) claims the monopoly of the legitimate use of physical force within a given territory*” (Weber, 1918, p. 1). Attention here shall be given here to the first word used by the sociologist, that being, “community”.

Both a state and a SNS are indeed communities. The former being defined as such by scholars, sociologists, and political scientists. The latter describing itself as such. The Head of Facebook’s Global Product Policy and the Vice President of Global Operations, for example, clearly state and repeat that Facebook is a community (Bickert & Osofsky, n.d.). Furthermore, simply by looking at the Community Standards of the website, the platform is defined as “a community of more than one billion people” (Facebook Community

Standards, n.d.). Other platforms defining themselves as communities include Wikipedia (Wikipedia:About, 2017); Snapchat (Snapchat Community Guidelines, n.d.); and Youtube (Youtube Community Guidelines, n.d.).

This said, it is clear that the “given territory” in the case of SNSs is not physical, but rather intangible. Facebook will exercise power over activities conducted within its web territory, meaning, its internet address.

*They both exercise political power:* political power is exercised both in states and in SNSs. Political power allows governments to make and execute laws (Locke, 1960, § 3). These laws concern regulation of property, rights and duties of the citizens, tax collection, and so on. In the same way, when it comes to SNSs, the owner of the company sets policies regarding the regulation of the website, community standards, and the right to gather and use personal data (Nissenbaum, 2010).

*They both generate money through their citizens or users:* states collect money from their own citizens in order to generate government income. The price to pay in order to be able to benefit from the services provided is translated into taxation – be it direct or indirect.

Similarly, SNSs collect personal and social data from their users, which are the “fuel” of the platform, and are the practical translation of profit online. In both cases, should consent be retrieved, people would not get back the taxes previously paid or the data produced.

The difference between a state and a SNS is that in the latter the owner of the website mainly aims at making some profit for himself. On the contrary, states mainly re-invest the money collected in order to improve themselves as collective communities. Nevertheless, if we think about how states were until a few years ago, and even about how some monarchies or dictatorships still are, we can arguably say that the same can happen on a state level: some authoritarian regimes do use part of the money coming from their citizens in order to enrich the sovereign.

### **Comparative Framework: The Definition of Consent according to the GDPR**

Having outlined the analogies between a state and a SNS, it is possible to proceed in demonstrating why and how consent given to the latter is identifiable with the notion of tacit consent.

The framework adopted in order to analyse and compare online consent and tacit consent is derived from the definition of consent outlined in the General Data Protection Regulation. This definition reflects the general understanding of what consent is. Furthermore, it is the most recent legal definition of consent to this day. The characteristics that define consent in the GDPR will be explained according to the ICO GDPR consent guidance and then used to analyse and compare both types of consent.

The legal definition of consent of a data subject as

adopted by the 28 EU Member states can be found in Art. 4.11 of the General Data Protection Regulation from 2016. Here, some basic characteristics defining consent are outlined. Consent must be “*freely given, specific, informed and unambiguous*” and must furthermore be *explicit* when concerning the processing of personal data, according to Art. 9.2(a) (European Union, 2016).

*Freely given*: the fact that consent must be freely given means that an individual giving consent must be able to exercise a real choice, without being forced or coerced (Article 29 Data Protection Working Party, 2011, p. 12). Another important trait of the attribute “freely given” is the fact that the individual should not be facing negative consequences in the case where he does not give consent (*ibid.*).

Freely given consent cannot, therefore, derive from a Hobson’s choice. A Hobson’s choice “is not a choice at all” (Barrett, 2009). When faced with a Hobson’s choice, individuals either fully accept what is offered (e.g. accepting every clause of T&C and accepting the service) or they do not accept it at all (e.g. not accepting T&C and therefore not accepting the service). A great example to understand what a Hobson’s choice is can be found in Henry Ford’s famous words: “Any customer can have a car painted any colour that he wants so long as it is black” (Ford, 1923, p. 72).

*Informed*: consent can be defined as informed where people fully understand what they are agreeing to and the implications of their action (Article 29 Data Protection Working Party, 2011, p. 19). It is of fundamental importance for consent to be informed, as it allows participants to make a real and proper choice (Gleibs, 2014, p. 356). Furthermore, within the scope of the informed characteristic, consent needs to be “specific”, meaning that it must be clear to people what they are agreeing to.

*Explicit*: explicit consent means that consent must be clearly confirmed by words, and that even a clear affirmative action is not enough to manifest consent (ICO, 2017, p. 24). The individual can express consent with a statement or, in the online environment, by ticking a box agreeing to the conditions (*ibid.*, p. 25). The “unambiguous” feature of consent is tied to the fact that it must be explicit. Unambiguous consent entails “clear affirmative action” (*ibid.*).

### Analysis of Tacit Consent

Analysing Locke’s doctrine, there are some interesting points that clearly emerge and pose the main ground for objections and confutations of his theory, were it to be judged according to the GDPR definition of consent. Is the consent Locke is talking about informed, freely given, and explicit?

*Informed*: Locke’s principle of tacit consent does not require the citizen to be informed about his government’s policies. There is no political obligation to be informed about them. No one forbids a citizen to be politically involved or interested in what kind of government he is giving consent to. However,

whether he actually takes part in political life or not, he is still giving tacit consent. Whether this tacit consent is informed or not depends entirely and solely on him. In any case, the law accepts no ignorance on his part.

*Freely given*: when coming into this world, an individual is bound to a given territory. This person had no choice in deciding which land he found more appropriate to spend his life. At the time of birth, he is automatically inserted into a certain social context and will shape his life according to it, following the derived laws, rules and political or social obligations.

Locke does state that should a person realise that the territory he was born into does not suit his moral or political values, that person is always free to move away from it in order to withdraw his consent to the government that rules the territory. However, there are many factors for which a person might be unable to move away from the territory he is living in. These factors might include the individual’s economic or social situation, health conditions, or simply the impossibility of leaving family attachments behind. In other words, the individual might face negative consequences when withdrawing consent. Therefore, even if an individual gives tacit consent, this consent is not freely given, as it does not derive from a conscious and/or free choice.

Furthermore, it is not possible to live in a given territory without giving consent to the government. This classifies tacit consent as deriving from Hobson’s choice. In order for the individual to benefit from the services provided by the state, he has to accept all of the rules and obligations deriving from it.

*Explicit*: Locke’s tacit consent is not explicit, as the individual does not have to express it in order to give consent to the state.

### Analysis of Online Consent given to SNSs

In order to simplify the analysis of online consent, Facebook will be taken as a case study in the following paragraphs. Facebook can be considered an adequate case study because of the popularity and importance this SNS has gained in the last years. Nevertheless, the dynamics and main points of the following analysis can be applied to the majority of most used SNSs.

A person wishing to join the Facebook community, when opening the home page without being a user yet, will be presented with a simple and quick form to fill out in order to start using the service.

Facebook explicitly states that by clicking the button “Join Facebook” one is automatically agreeing to their Terms, their Data Policy, and their Cookie Use Policy. Starting from this point, we shall thus analyse what kind of consent is given to Facebook – and what kind is not.

*Informed*: when presented with the scenario outlined above, people are not giving informed consent. Article 29 Working Party (Art. 29 WP), clearly states that information about what one is agreeing

to must be given to individuals directly and that it is not sufficient to make this information available somewhere in order to consider the given consent informed (2011, p. 20).



Figure 1. www.facebook.com

When joining the Facebook community people are just given the opportunity to click on a link redirecting them to the Terms of Use and Privacy Policy. Not only are potential users not required to read them, but it could also be argued that they are not incentivised. The process of registering is very easy and fast. The fields to fill out are big and clear to see. On the other hand, the warning regarding the fact that by subscribing, consent is automatically given, is written with a tiny font. It does not grab attention.

Should this not be enough to prove the fact that consent given to Facebook is not informed, one other aspect can be considered. It has been studied, shown, and proved, that people do not read Terms and Conditions (Stanley & Guido, 1996; Wogalter, Howe, Sifuentes, & Luginbuhl, 1999). In research conducted on informed consent, barely half of the participants read a consent document they agreed to before taking a phoney questionnaire (Varnhagen, et al., 2005). These results are not reassuring, considering the fact that the research can be regarded as conducted in a criticisable way. In fact, it should be noted that in this research (a) people had someone telling them how important it was to read Terms of Use; (b) people, when accepting the consent document, were observed from the back of the room and could have modified their behaviour because of the fear of being judged; (c) all the participants were enrolled in university, showing a high educational level; and finally (d) some participants even understood the real purpose of the experiment (ibid., p.42). Nevertheless, not only did almost half of them simply skim or not read the consent document, but the majority of the participants could not recall the main points there outlined.

To summarise, people do not read Terms of Use when specifically asked to do so. It can be inferred in the case of Facebook, where potential users are simply being told where they can find the information concerning what they are agreeing to, it is very unlikely that people will spend time analysing what they are accepting. And even if they did, they probably would

not entirely understand it (Solove, 2002). This, as stated above, classifies the consent given to Facebook as non-informed according to Article 29 Working Party (2011).

*Explicit:* the unfortunate characteristic of giving consent to Facebook is that potential users do not have to tick a box in order to express their consent. As seen above, consent is automatically given by joining the SNS. This hardly classifies consent given to Facebook as explicit, since “explicit consent must be expressly confirmed in words, rather than by any other positive action” (ICO, 2017, p. 18). The action of ticking a box can also be compared to confirming in words and therefore considered explicit consent (ibid., p. 25). Nevertheless, a clear affirmative action – such as, for example, joining Facebook – would not be considered enough to make consent explicit (ibid., p. 24).

*Freely given:* when joining Facebook, people have no choice but to give consent to its Terms, Data Policy, and Cookie Use Policy. As Facebook is an extremely convenient means that facilitates life, people are brought to prefer convenience and join the website despite wanting privacy and data protection (Nissenbaum, 2010). This phenomenon, referred to as the privacy paradox (Jorstad, 2001; Barnes, 2006), could be considered sufficient evidence for the fact that consent is somehow forced when entering the community. On the other hand, it could be argued that users do have a choice: to be on Facebook or to be off Facebook.

However, not everyone has the choice to decide whether to become part of the Facebook community or not. As Bechmann (2014) notes, Facebook has become extremely big and dominant – as mentioned before it has almost 2 billion users – and this creates a sort of necessity to be part of the community in order to participate in social life. Not having a profile on Facebook clearly means being left out of social life. Younger generations in particular, such as university students, young professionals, and so on, cannot freely decide whether to participate in the social platform or not without having some negative repercussions. As “freely given” means that the individual should not face negative consequences in the case where he should decide not to give his consent (Article 29 Data Protection Working Party, 2011, p. 12), consent given to Facebook does not classify as such.

Considering, in addition, the fact that Facebook presents many features typical of a monopoly, and that it does not have a competitor, it is clear that sometimes people really do have to be part of it. Furthermore, since it is not possible to join the community without agreeing to all of the Terms of Use and Privacy Policy, people are faced with a Hobson’s choice.

## Discussion

It has been shown that both consent given to Facebook and that given to a state according to Locke’s theory of tacit consent are not informed. In both cases the degree of information regarding consent is left up

to the individual. In both cases, the fact that the individual is not actively informed about rules, laws, or policies, does not justify him not knowing or following them.

Furthermore, in both scenarios consent is not freely given. On the one hand, Locke's tacit consent derives from a situation in which the individual did not get to choose where to live in the first place. It is also not always possible for citizens to freely move away from a territory in order to live in another state without facing negative consequences. On the other hand, it has been shown that people cannot decide whether to be a part of the Facebook community nowadays. Indeed, the Social Network puts people in a more difficult position if they are not Facebook users.

In addition, both tacit consent and consent given to Facebook are provided through a Hobson's choice, meaning that, either one entirely accepts the government's rules and policies or the Social Media Terms of Service and Data policy or they are not allowed to be part of them.

Finally, tacit consent is clearly not explicit, as it is inferred from a positive behaviour – living in the state's territory – but not expressed through any sort of verbal or written agreement. Similarly, Facebook does not require the user to tick any box or make any statement, and the individual simply signifies his consent through the active behaviour of becoming or being a Facebook user.

Thus, by comparing Locke's tacit consent and consent given to SNSs it is possible to observe how similar the two are. Online consent given to SNSs could be defined as "tacit online consent". There is, however, a crucial point that needs to be considered, since it makes tacit online consent morally ambiguous. When consent is given to a state, the individuals' privacy is not compromised. Contrarily, giving consent to a SNS inevitably means providing personal and sensitive data. This intrusive practice undermines an individual's privacy.

To conclude, despite being similar, there is a substantial moral difference between tacit consent given to a government and tacit consent used to gather and use data produced by users of SNSs. However, the aim of this work, as stated in the introduction, is not to provide moral grounds concerning the practice of consent. Consent was considered through the whole work from an analytical point of view.

### Research Limitations and Conclusion

It has been proven, by taking the example of Facebook as a case study, that consent given to SNSs presents the same key features that characterised John Locke's theory of tacit consent. As this work aimed at showing the analogies between the two, it did not deal with the moral nor legal implications of the issue. It would be ideal, for further research, to investigate whether tacit consent can be considered binding in an online environment. As stated previously, the two types of consent – the one given to governments and the one

given to SNSs – have different implications despite being both "tacit". One automatically frames the individual within a set of rules and laws. The other one does the same, making it however possible for the entity that receives consent to become intrusive in the individual's life, undermining his privacy.

Although important, the recent EU regulation fails to take into account the social value of SNSs, and does not consider the extreme level of dependency it has over people. It is clear thus that moving towards a more unambiguous and explicit consent does not offer individuals control over deciding how their data should be used. Making consent more explicit and unambiguous is a measure that merely legally transfers liability from the enterprise to the user. The problem that this work wishes the European Union will take into account in further regulations, is the issue of Facebook monopoly over SNSs and the problem of Hobson's choice.

Either individuals should be provided with other valid choices when deciding to join a SNS, or SNSs should get rid of the "take it all or take nothing" Hobson's consent they currently deploy/offer. It is undoubtedly true that the creation of a Social Media platform as important as Facebook could only happen under specific circumstances (e.g. mass migration of users to another platform). However, in the last few years, those few SNSs that started becoming popular were quickly acquired by Facebook (i.e. Instagram, WhatsApp). Those who did not accept selling the platform to Zuckerberg, like for example Snapchat, had proper online war declared on them by the company (Heath, 2016).

The EU, or other International Organisations, should therefore start treating Facebook for what it is: a monopoly. Anti-Trust regulations should be regarded as a possible means towards empowering people over their privacy when it comes to SNSs.

Should this not be a possible scenario, attention should then be given to consent. The current circumstances through which consent is given cannot be considered acceptable. A Hobson's choice, by definition, is no choice at all. And as has been shown, consent given to an SNS is undoubtedly a Hobson's choice, as the user has no choice but to accept all the Terms of Use and Data Policies. Solutions to this issue might be empowering the individual when deciding what he wishes to agree to, by for example allowing him to give consent to some measures and not to others.

Finally, it is hoped that this work will lead in the future to the analysis of Social Media consent not only from a legal or moral point of view, but under a political thought point of view as well. It is very likely that Social Media users are going to grow in the future, and given the fact that the online environment resembles social communities a little bit more everyday, the need for a political doctrine analysis arises. Online behaviours, norms, and doctrines, could benefit from the work that has been done in the past years in other fields.

**References**

- Alaimo, C., & Kallinikos, J. (forthcoming). Computing the Everyday.
- Article 29 Data Protection Working Party. (2011). Opinion 15/2011 On the Definition of Consent. Article 29 Data Protection Working Party.
- Barnes, S. (2006, September 4). A Privacy Paradox: Social Networking in the United States. *First Monday*.
- Barrett, G. (2009, April 15). What's a "Hobson's Choice"? Retrieved from A Way With Words: <https://www.waywordradio.org/whats-a-hobsons-choice/>
- Bechmann, A. (2014, March 1). Non-Informed Consent Cultures: Privacy Policies and App Contracts on Facebook. *Journal of Media Business Studies*, 21-39.
- Bickert, M., & Osofsky, J. (n.d.). Community Standards. Retrieved from Facebook: <https://www.facebook.com/communitystandards/?letter>
- Carr, C. L. (1990, October). Tacit Consent. *Public Affairs Quarterly*, Vol. 4, No. 4, 335-345.
- European Union. (2016, April 27). General Data Protection Regulation. *Official Journal of the European Union*, 1-88.
- Facebook. (2016, December). Stats. Retrieved from Facebook: <https://newsroom.fb.com/company-info/>
- Facebook Community Standards. (n.d.). Retrieved from Facebook: <https://www.facebook.com/communitystandards>
- Faden, R., & Beauchamp, T. (1986). *A History and Theory of Informed Consent*. Oxford University Press.
- Ford, H. (1923). *My Life and Work*. New York: Doubleday, Page and Company.
- Forsyth, D. (2006). *Group Dynamics*. Belmont, CA: Wadsworth, Cengage Learning.
- Gleibs, I. H. (2014). Turning Virtual Public Spaces into Laboratories: Thoughts on Conducting Online Field Studies Using Social Network Sites. *Analyses of Social Issues and Public Policy*, 14, 352--370.
- Heath, A. (2016, November 5). Facebook is finally getting serious about its 'Snapchat problem'. Retrieved from Business Insider: <http://www.businessinsider.com/facebooks-plan-fight-snapchat-begun-2016-11?IR=T>
- ICO. (2017). Consultation: GDPR consent guidance. United Kingdom: Information Commissioner's Office.
- Jorstad, E. (2001). The Privacy Paradox. *Mitchell Law Review*, 1503-1526.
- Locke, J. (1690). Chapter VIII. Of the Beginning of Political Societies. In *Second Treatise of Civil Government* (p. Sec. 119).
- Nissenbaum, H. (2010). *Privacy in Context. Technology, Policy, and The Integrity of Social life*. Stanford, CA: Stanford University Press.
- Snapchat Community Guidelines. (n.d.). Retrieved from Snapchat: <https://support.snapchat.com/en-GB/a/guidelines>
- Solove, D. (2002). Conceptualizing Privacy. *California Law Review*, 1087-1155.
- Stanley, B. H., & Guido, J. R. (1996). In B. H. Stanley, J. E. Sieber, & M. G. B., *Research Ethics: A Psychological Approach* (pp. 105-128). University of Nebraska Press.
- Tufekci, Z. (2014, July). Engineering the Public: Big Data, Surveillance and Computational Politics. *First Monday*, 19.
- Varnhagen, C. K., Gushta, M., Daniels, J., Peters, T. C., Parmar, N., Law, D., . . . Johnson, T. (2005). *How Informed Is Online Informed Consent?* University of Alberta: Lawrence Erlbaum Associates.
- Weber, M. (1918). Politics as a Vocation. Retrieved from <http://anthropos-lab.net/wp/wp-content/uploads/2011/12/Weber-Politics-as-a-Vocation.pdf>
- Whitley, E. A. (2013). Towards Effective, Consent Based Control of Personal Data. *Digital Enlightenment Yearbook*, 165-176.
- Wikipedia:About. (2017, March 19). Retrieved from <https://en.wikipedia.org/wiki/Wikipedia:About>
- Wogalter, M. S., Howe, J. E., Sifuentes, A. H., & Luginbuhl, J. (1999). On The Adequacy of Legal Documents: Factors That Influence Informed Consent. *Ergonomics*, 593-613.
- Youtube Community Guidelines. (n.d.). Retrieved from Youtube: <https://www.youtube.com/yt/policyandsafety/communityguidelines.html>

## Information Systems and Innovation within the Department of Management

Within LSE's Department of Management, we form the leading European university-based research cluster focusing on Information Systems and Innovation, and are recognised widely as amongst the top ten such clusters in the world. We have 12 full-time academics and benefit from the contributions of Visiting Professors, all of whom are scholars of international repute and leaders in the field, from Visiting Fellows who are experts in their respective fields, and from project researchers and our PhD students.

Faculty are active in the International Federation of Information Processing (IFIP), the Association for Information Systems (AIS), the UK Academy for Information Systems (UKAIS), the British Computer Society (BCS), and other national and international organizations including United Nations and European Union bodies. They are Editors-in-Chief of major journals including JIT, ITP) and variously serve as Senior and Associate Editors on most high quality refereed journals in the IS field (e.g. MISQ, MISQE, ISR, EJIS, ISJ plus over 20 others).

Teaching in Information Systems has been rated as excellent by the UK's Quality Assurance Agency and its research is recognized as internationally excellent by the Higher Education Funding Council for England. Awards and recognition are extensive and include Frank Land's Leo award of the AIS for Lifetime Exceptional Achievement, Ciborra's AIS Distinguished Member award, and Willcocks's Price Waterhouse Coopers/Corbett Associates World Outsourcing Achievement award for academic contribution to this field.

The Department of Management runs several high profile Information Systems seminar programmes. These include the annual Social Study of ICTs seminar run over two days in March which attracts over 200 international participants and has a related two day research workshop.

Information Systems faculty are actively involved in the delivery of two degree programmes offered within the Department of Management – a one-year MSc in Management, Information Systems and Digital Innovation of (MISDI) and a PhD in Information Systems. In addition they provide Information Systems knowledge within the core management BSc and MSc courses within the department.

These Faculty's research, teaching and dissemination strategies are closely interlinked and their distinctive focus on the social study of Information Communication Technologies (ICTs) and Innovation underlies a concern for policy and practice issues in six major fields (see figure). The MSc in Management, Information Systems and Digital Innovation (MISDI) draws on all items.



## LSE Information Systems Alumni Group (LISA)

LISA (LSE Information Systems Alumni) is the Information Systems and Innovation Group's official alumni group. It is dedicated to establishing, maintaining and forging new relationships between alumni, industry and the Group. It is open to any alumni of the Group's programmes (ADMIS, ISOR, MISI, MISDI, PhD) and is supported by staff within the Group. LISA has over 1000 members globally and is expanding through its regular activities.

LISA regularly organises events for alumni and current students and provides opportunities to network, socialise and learn. Some of LISA's previous activities include alumni panel discussions, expert industry and academic speaker sessions, career workshops and social events.

If you wish to contribute or participate in our activities, kindly get in touch with LISA representative.

### Communications Lead

Heemanshu Jain (MSc 2008-09)

Email: [heemanshu@alumni.lse.ac.uk](mailto:heemanshu@alumni.lse.ac.uk)

To know more about latest events organised by LISA and connect with LISA members all across the globe join us on Facebook and LinkedIn.

LISA on Facebook –

<https://www.facebook.com/groups/LSE.IS.Alumni/>

LISA on LinkedIn–

<http://www.linkedin.com/groups?gid=65057>

More information about LISA is also available on our website [www.lisa-online.com](http://www.lisa-online.com) and the latest event info can be tracked by following us on Twitter [@lisanetwork](https://twitter.com/lisanetwork)



# **iSCHANNEL**

**THE INFORMATION SYSTEMS STUDENT JOURNAL**

**VOLUME 13 ISSUE 1**

**September 2018**

Sponsored by

Department of Management  
London School of Economics and Political Science

